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NEW YORK MEDICAL JOURNAL

INCORPORATING THE

PHILADELPHIA MEDICAL JOURNAL

AND THE

MEDICAL NEWS

A WEEKLY REVIEW OF MEDICINE

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Medicine and Surgery in the Army and Navy

THE ARMY MEDICAL SERVICE.*

BY T. H. GOODWIN, C. M. G., D. S. O.,

Colonel, Royal Army Medical Corps; Member of the British Commission to the United States.

The pomp and panoply of war is a phrase, not a reality. In modern warfare there is no pomp and no outward glory. It is only when looking beneath the surface that one sees the nobility, devotion to duty, and selfsacrifice of the men in the medical service work which is done quietly and unostentatiously, often unheard and unseen except by the men doing it, and they are the last ever to talk of it.

There have been many erroneous ideas as to personal danger run by the medical service staff. One was that as noncombatants they faced none; another was that the losses in the medical personnel in this war were very severe. The former idea underestimated the truth and the latter greatly exaggerated it. The statement that 60,000 medical men had been killed could be gauged as to accuracy by the fact that the total medical force was only 12,000. It is true, however, that the loss has been serious, considered chiefly from the point of view of the value of these trained units in the army service. During three months last year fifty-three officers were killed and 203 wounded, and these figures gave a true idea of the actual situation. These losses, such as they are, are inevitable, as certain members of the medical personnel must be near the firing line and within a few miles of the front near which, of course, there are always heavy casualties. The so called danger area extends several miles behind the firing line, and it is necessary for medical officers to be there. It has been said by those anxious to conserve the medical department that its members should not be exposed to danger, but this criticism has never been brought forward by the men themselves or their relatives—mothers, sisters, or wives. It has even been suggested that it might be better to leave the wounded where they fall and save the medical staff, but it would be impossible from the standpoint of humanity alone to leave them lying without any attention until they were able to crawl to some shelter or until death came to them when they might have been saved. What would their relatives say? As it is, everyone knows that the soldiers are receiving the best care on every front and almost everyone realizes that this must fortunately be the case as long as a medical man remains in the armies. As long as the war lasts, sickness, wounds, and death will necessarily occur among the medical personnel as well as among their brother officers and this possibility will be borne cheerfully. In my experience, even young doctors, only qualified for a few months, have the highest possible sense of duty, going under shell fire to bring back the wounded to a place of safety in an expeditious way. There is no excitement to buoy them up, and it requires courage of a high order to attend to the wounded and give orders for their care under heavy shell fire. I have been so impressed by the behavior of young doctors who have gone in without previous training that I think medical training alone wonderfully effective for this duty as it teaches selfreliance and confidence in personal ability, quickness of judgment, and power to apply theory to practice in a case of emergency.

A young medical officer may find himself at a loss in dealing with the men at his command. Even leaving out length of time of service he will have a considerable number who will look to him for guidance, example, and orders, so that a few hints in dealing with this situation may be in order. The men of the United States Army are of the same stuff as those of the British Army, and I have had experience in dealing with these. They have the same ideals and come from the same stock, and I have laid down from my experience a few practical axioms: Never ask a man to go where you would not go yourself. Never ask a man to do what you would not do yourself. Don't lose your temper if you can possibly avoid it. Keep cool and keep cheerful.

It is astonishing to what an extent men place infinite faith in their medical officer; if they see him cool and cheerful, even tempered and efficient, it reassures them inexpressibly. That is an example I have seen many young doctors set. The soldiers are influenced by their officers to an extraordinary degree and the medical officers share this responsibility.

No profession has higher aims than the medical

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*An address to the Cornell Medical College faculty and students about to leave for the front. Commencement Exercises, June 14, 1917.

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profession of today, and courage, efficiency, and high ideals inspire and sustain the army at the present time. The life of a medical officer is a varied one and has opportunities for selfexpression and experience which fall to the lot of very few men. This medical work is appreciated to the fullest extent by the officers and men among whom they work, and the effect of the young medical officers in keeping up the courage, spirits, and fighting capacity of the men is enormous, to say nothing of their success in returning to life and to the ranks men who would otherwise never recover. This is realized to the full by the army, both officers and privates.

In the casualty clearing stations and base hospitals one often wishes there were more than twenty-four hours to the day. Anesthetizing, operating, dressing, treating, and curing, the doctor never goes to bed without feeling that he has done a hard day's work. He will see a great amount of terrible suffering, pain, and misery, but he will also see daily instances of nobility, patience under suffering, and selfsacrifice to duty of which he had no previous conception, and he has opportunities for gaining professional knowledge rarely, if ever, known before.

I came to this country with various duties, the foremost being to ask medical assistance for the Allies. There are tens of thousands of wounded calling for help, and a great burden resting on the medical men now in the field. I am deeply grateful for the prompt response to my initial appeal. Six medical units have gone over and are already at work. I take this opportunity to contradict directly the rumor that transports have been sunk, which is quite untrue, or that they were diverted to Mesopotamia, which there never was any hint or intention of doing. I hope that the work so splendidly begun will be continued. I have seen so much pain and suffering that I shudder to think of what will occur if the medical help falls short. Young men can do no nobler work than by joining the army. The first essential at the beginning of a war is realization, both by the nation and by the individual. Great Britain at first was ignorant of her responsibilities, but now she realizes to the full extent and over. Every man who is fighting now is insuring the peace of future generations, and the brightest memory he will be able to look back upon and tell his children will be that he bore his part and bore it well in the time of the trial and sorrow of all civilized nations.

I would like to address a special word to the ladies, the mothers, sisters, wives, and those betrothed who will be left behind. I am and always was a great admirer of the sex, but even in my most impressionable days I never admired women as much as I have in the past three years. Their general attitude has been beyond all praise. They have given up fathers, husbands, sons, and brothers, and the women of France have in addition given up houses and property. I have seen French women harnessed with ropes to the ploughs because the men had gone to war, the horses were taken, and there was no one to help with the work in the fields. I have talked to women who have lost husbands and sons in the war and I have heard no murmur from them, except that they wished they had more to give. I have conceived an admiration for the women of England and France which is beyond expression, and in this I know the women of America will share.

Honors and rewards do not fall to the lot of all, and not of necessity to the lot of those who deserve them; Fortune deals her cards in a very unexpected way, but in looking back on the careers of the best men we have known in the world, we can say with Kipling: "If you can meet with triumph and disaster, and treat those two impostors just the same . . . you are a man." You who will join the army medical corps will find the next few years a very trying and worrying period, heartbreaking and very disappointing at times, but you will eventually find after all that the risk, trouble, and selfsacrifice were worth while; that every man who went over there was really the man to be envied and not the one compelled to stay at home.

THE FUNCTION OF THE MILITARY ORTHOPEDIC HOSPITAL.

By Fred H. Albee, M. D.,
New York,
Major, Medical Officers' Reserve Corps, United States Army.

The data upon which this paper is based were obtained by the writer as the result of an extensive personal study of a score of operative clinics in various war hospitals of France and a careful survey of similar hospital facilities in England and Canada. In the summer of 1916, the writer was invited by the French War Office to visit France to demonstrate his surgical methods in her various war hospitals, and during this visit he was given exceptional and unlimited opportunity for an intimate study of the very problems with which our own Government will be confronted upon the advent of American troops on the firing line in France.

There are many aspects of the situation, of which the following are of vivid interest: 1. Intensive specialization of surgical practice has been developed and stimulated by the present world war. 2. The value of specialized hospitals for the efficient application of special surgical procedures is inestimable. 3. Specialized orthopedic hospitals are absolutely indispensable when it is considered that a large percentage of the base hospital cases which will be returned to the United States for further treatment will be bone, joint, tendon, and nerve injuries. 4. It can readily be appreciated that many of the soldiers suffering from crippling injuries will be permanently debarred from the pursuit of their previous occupations, and unless reeducated and fitted for remunerative work of a new order, will become a burden upon the State. We are therefore face to face with a very serious sociological and economic situation. If we are to discharge our duty as guardians of the public health and follow the standards of foresight and ability displayed by our country's President and by the various arms of our military service, we must intelligently and promptly prepare to restore our crippled American soldiers to the highest degree of efficiency possible.

Closest attention is invited to the following details of the situation: 1, a medical and surgical "clearing house" hospital; 2, a classification of orthopedic conditions as recognized by the Canadian Government; 3, muscular reeducation of the crippled soldier; 4, qualifications of a plant for a military orthopedic hospital; 5, the necessary elements of an ideal orthopedic war hospital; 6, the estate of Mr. Charles D. Freeman at Colonia, N. J., which he has tendered to the United States as an orthopedic war hospital.

A medical and surgical "clearing house" hospital.—The establishment of a medical and surgical clearing house hospital at the chief port of entry to this country and in its metropolis, seems imperative. Here the cases may be sorted out on the basis of their surgical and medical requirements and sent to the special hospital best designed for the treatment of their several needs. This has been arranged for by the Columbia War Hospital.

A classification of orthopedic conditions as recognized by the Canadian Government.—The demand for a purely orthopedic military war hospital is apparent when we consider that from seventy to ninety per cent. of the wounded returning from this war will have orthopedic lesions coming under the following heads, as shown by statistics of the European battlefields, according to the Canadian Military Hospital Commission of Orthopedic Conditions: 1. derangements and disabilities of joints, simple and grave, including ankylosis; 2, deformities and disabilities of feet, such as hallux rigidus, hallux valgus, hammer toes, metatarsalgia, painful heels, and flat and claw feet; 3, malunited and ununited fractures; 4, injuries to ligaments, muscles, and tendons; 5, cases requiring tendon transplantation or other measures for irreparable destruction; 6, nerve injuries complicated by fractures or stiffness of joint; 7, certain complicated gunshot injuries of joints; 8, cases requiring surgical appliances.

This list is the index to the classes of cases which the Canadian Government requires shall be entirely committed to the care of the orthopedic surgeon in the military orthopedic hospitals.

Reeducation of the crippled soldier.—Of equal importance with the physical reconstruction of the soldier's deformities is the vital problem of his reeducation, both psychological and vocational. This aspect of the situation is of paramount importance from a sociological, governmental, and personal standpoint. That the infirm soldier who has been injured while fighting to uphold his country's honor is a dependent upon the State until his remunerative powers are partially or completely restored, is selfevident. The decision as to the particular vocation for which the individual soldier is to be reeducated is of such importance that it should be rendered by a board of examiners—a vocational bureau—after due consideration of the merits of the case.

The peculiar psychological attitude of these injured men requires close attention. A soldier who has been injured while fighting for his country often feels that the burden of his future maintenance and of his dependents will necessarily fall upon the State. From long reflection upon his injuries he has been brought to believe that he is unable to resume his former occupation and he is certain to become introspective, unhappy, and dissatisfied with his lot, and with this mental obliquity is a burden to society. Dependence and idleness are the natural foes of ambition and productive labor. The problem of reeducation is very broad. Its solution involves functional and vocational reeducation, and in the process the distorted psychological state becomes automatically dispelled.

Functional reeducation comprises the restoration to a normal working condition of joints whose movement is restricted by adhesions, of tendons shortened by adaptive contracture, of muscles weakened by atrophy and disuse, the coordination of muscular movements, and of the greatest importance, the use of artificial limbs, particularly complicated artificial hand and fingers. This functional or therapeutic reeducation should be executed by means of hydrotherapy, electricity, and massage. Special apparatus and training by individual instructors to encourage physical movements and mental processes disturbed by injury or shock, are equally necessary. Psychotherapeutics can also be administered during orthopedic convalescence under the direction of a psychologist appointed for the hospital for the treatment of psychoneuroses, hysterical paralyses, tremors, etc.

Having secured the confidence of the soldier and otherwise restored his mental equilibrium, and having trained his reconstructed limbs to the highest point of efficiency, he must now be prepared for some remunerative employment. In determining the occupation for which he is best suited, the mental adaptability and capacity of the individual must be considered, as well as the particular infirmities which he has sustained from injury or disease contracted on the battlefield. As has been said, this question is of such vital importance that it should be decided by a board of examiners after very careful consideration. A vocational bureau working in connection with the hospital may arrange courses leading to remunerative occupations of which the following are examples: Care and operation of automobile; general course in electricity; machine shop practice; telegraphy, traffic orders, train rules; testing of cement and steel; cabinet making, wood turning, construction carpentry; commercial courses, bookkeeping, typewriting, shorthand; courses for those wishing civil service preparation; power machine operating; shoemaking and repairing; drafting, architectural and mechanical; plumbing and steam fitting; pottery making; painting and decorating; lettering; designing and illustrating; clay modeling; steam and gas engines; short courses in chemical analysis; assaying and milling, for former miners especially; poultry farming; flower growing; sanitary inspection; and other courses to be added later.

Qualifications of a plant for a military orthopedic hospital.—To meet the needs of the crippled soldiers adequately, as outlined in the preceding pages, a plant to be suitable for a military orthopedic hospital must possess the following qualifications: It should be located in the country away from the noise and confusion of the city. The country site should, however, be near an important portal of entry and easy of access by transportation lines from the clearing house hospital of the metropolis, following the precedent of France, England, and Canada. It should be back in the interior far distant from a possible firing line, where the facilities for food supply, sanitation, and transportation are of the best. In the case of our own particular problem in this country, the site should be selected on a large artery of travel, near an important portal of entry from abroad. It should have extensive acreage to allow expansion to meet the complicated requirements of such an institution. Its altitude must be sufficient to insure good drainage. Accessibility to reliable gas, electricity, and water mains is indispensable.

The necessary elements of an ideal orthopedic war hospital.—The patients to be treated in such an institution are necessarily chronic cases, and hence an abundance of fresh air, sunshine, and the quiet of the country is ideal. In a general way, the main building must be spacious, the beds so arranged that each patient receives an adequate amount of air. It must be high studded, with numerous large windows, and be provided with ample veranda space which may be utilized by wheeling chairs or beds from the wards to it. This latter feature is extremely important, because many of these patients have major injuries of the bones or joints and in some instances cannot be moved from their beds for a period of months. The hospital should be thoroughly equipped with modern, up to date materials of every description. It must have a traction fracture table, an electrooperative bone outfit, and various materials for splints, braces, etc., such as plaster of Paris, steel, aluminum, aluminum bronze, Monell metal, etc. It must be supplied with adjustable superstructures to go over the beds, controlled by traction with pulleys, weights, counterweights, etc., in the position of neutral muscle pull for fractures. These have proved of inestimable value in the French war hospitals. The best is one devised by Dr. Joseph Blake, used by him in the American Hospital at Ris-Orangis. An outfit for applying the Carrel-Dakin solution to wounds, and a thoroughly up to date x ray equipment with a suitable localization outfit for the detection of foreign bodies, bullets, shrapnel, etc., are essential. A room should be equipped with Zander's, or other type of apparatus, for the mechanical correction of restricted motion, exercise, etc., in selected cases, and there should be a gymnasium with selected types of apparatus. A large athletic field is a feature which has proved to be important in similar institutions in France and Germany. Here the favorably progressing patient can recover his agility by playing football, handball, throwing the discus, putting the shot, and innumerable other games productive of a *mens sana* as well as a *corpus sanum*.

The reeducational department requires the services of those versed in the art of psychotherapy and muscle training, as well as artisans for each of the special vocational branches already enumerated. A factory for braces and artificial limbs should form an integral part of the institution. In England and Canada attempts were made to have this work done by contract with independent manufacturers. It was soon found, however, that some of these concerns were offering rewards to the soldiers for requesting their particular make of apparatus. The preparation of amputation stumps and the manufacture, application, and use of apparatus and artificial limbs to fit these stumps should all be correlated under the immediate supervision and guidance of the surgeon. It occasionally happens that a stump is too conical or the bone too directly beneath its bearing surface, so that after a patient has worn an artificial limb for some time it may be necessary to perform some plastic procedure to render the apparatus efficient. A splendid artificial limb is useless unless its possessor can use it freely and painlessly.

Stirred by a fine patriotic fervor and actuated by motives of intense loyalty and devotion to their country, Mr. and Mrs. Charles D. Freeman have tendered to the United States Government, through the writer, their magnificent estate in Colonia, N. J. This estate of 800 acres, of easy access to New York by the Pennsylvania Railroad, is situated on high ground, far from the noise of the city, possesses all the above mentioned facilities for orthopedic, vocational, and functional reconstruction and reeducation, and can accommodate from 500 to 2,000 men if necessary. This estate and the details of its transformation into a war hospital will be more fully described and illustrated in an article soon to appear in this JOURNAL.

Deafness of Soldiers.—Reports from war hospitals show that many soldiers suffer from deafness following the shock from high explosives, as well as from direct injuries of the head and the ear and from diseases of the ear due to exposure; and though no enormous number lose all hearing, yet there are many whose hearing in one or both ears is seriously and perhaps permanently impaired. These latter are classified as hard of hearing and discharged or relieved from active duty. Because of the entire absence of external indications of defective hearing the deaf soldier rarely receives the consideration extended to those whose deprivation may actually be far less, yet appears the greater.

Experience proves that the surest and the quickest way to restore these hard of hearing persons to their normal place in any line of human endeavor is to aid them to learn to read the lips as rapidly as possible. The teaching of lip reading to the adult hard of hearing who has a good command of language is a profession promising beneficial results that justify educated hard of hearing women who possess the faculty of imparting information to others in taking the normal training course that will enable them to become proficient teachers of lip reading. This may be a way in which cultured hard of hearing women may be able to serve their country to good purpose. The Volta Bureau, 1601 Thirty-fifth Street, Washington, D. C., will send free literature to all who are inclined to engage in this patriotic service.

It does not teach lip reading, but it will send the names of the nearest teachers qualified to give instructions, and it will assist in the formation of local associations or of a national association to teach lip reading to deaf soldiers.

A SUMMARY OF MEDICOMILITARY FACTS DEVELOPED BY EXPERIENCES ON EUROPEAN BATTLE FRONTS.*

By Henry K. Loew, M. D.,
First Lieutenant, Medical Reserve Corps, Fourth Infantry.

In this discussion of medicomilitary topics, the progress made in sanitary science, and kindred subjects that have been developed by experience at the front in Europe, I have made every effort to acquire all information possible from whatever source. I have found it impossible, so numerous were the sources of information, to credit their origin except in a few instances. Suffice it to say that my material has been derived from the writings of original investigators whose information from personal contact and experience at the front is authoritative.

Medical Conditions.

Typhoid fever.—Typhoid fever is an infectious and communicable disease in which the causative agent is a germ, the typhoid bacillus. Infection takes place through the introduction of this bacillus into the alimentary canal. The bacteria abound in the dejecta, the urine and feces, of active cases, while certain individuals, known as carriers, bear and disseminate the germs. They are themselves healthy, go unsuspected, and are sources of grave danger to massed troops. The common modes of transmission of the disease are by ingestion of infected water, milk, and shellfish; flies may carry the infection on the feet and transmit it to food. There are many measures of prevention practised in our army: 1. In active cases drugs that destroy the germ in the urinary bladder and in the intestine are administered. 2. Dejecta from patients is properly disposed of. 3. Quarantine is maintained. 4. Carriers are searched for and segregated until rendered harmless. 5. Danger from flies is avoided by well known measures in and about latrines and by screening of kitchens and mess halls, protection of foods, incineration of refuse and garbage. 6. Modern science has developed the method of artificial immunization of every man in or associated with the army by the exhibition of typhoid vaccine, the greatest boon to armies yet discovered, to which alone may be ascribed the comparative freedom of the European troops from this scourge, only those regions proverbially deficient in sanitary science, the Balkans, Macedonia, and Albania, having suffered. The American Red Cross Sanitary Commission by the utilization of this method early stamped out the disease in these places.

Paratyphoid fever occurs in two forms, designated A and B to facilitate description. They are so closely allied to typhoid and so similar to one another that differentiation can only be made microscopically. Generally speaking, it is less fatal than typhoid. Preventive measures are the same as those for typhoid, except that a specific vaccine combining the two forms is used to immunize against it. Experimentation is now being carried on in our army laboratories to perfect a mixed product, the administration of which will protect against the three diseases, a method being utilized abroad.

Typhus fever.—Throughout the ages typhus fever has been a concomitant of war. It is extremely fatal and rapid in its spread, and already on the Serbian front it has caused more than 135,000 deaths and is epidemic in Montenegro and endemic in Galicia and the Balkan States. The reason of its coincidence with war, science has but recently disclosed. Typhus is a disease of filth. Hurley says: "It thrives in times of squalor, congestion, confusion, and despair." The disease should not become a menace to the American armies, and should it gain a foothold among us, the onus of the most inexcusable guilt will be deserved. An absolute preventive is known beyond peradventure; it is transmitted only through the medium of the louse and habits of cleanliness instilled into our men, both as to person and raiment, insistence of organization commanders upon frequent bathing and the use of insecticides will positively prevent typhus. Of these the most effective, gasoline, benzine, turpentine, and kerosene, will doubtless be readily accessible even at the front. That constant attention to this detail is essential is proved by the statement of Peacock, that "ninety-five per cent. of the men among English troops examined in 1916 were found to be infested with lice." A further proof of the importance attached to this menace in armies is the development of mobile bathing and disinfectant units sent as near as possible to the front which the men are privileged or compelled to utilize while their apparel is being subjected to sterilization. Delousing stations, besides, more or less permanent, are established.

Smallpox.—The discovery of Jenner in 1796 gave to the world the first vaccine, the universal use of which has rendered practically harmless one of the great menaces to massed troops. The only locality in which this disease has been epidemic in the war zone is Galicia among the unvaccinated citizenry, yet to prove the efficacy of vaccination, it is reliably reported that the perfectly immunized German and Austrian troops during their occupancy of this infected territory, suffered but little from smallpox. American soldiers are or will be adequately protected, the authorities already having taken especial cognizance of its importance, and issued orders accordingly.

Cholera.—The original home of cholera is in the lowlands of India. Since the first authentic report of the disease in 1817, according to Osler, it has repeatedly encircled the globe, few sections of the earth and no European country having escaped at one time or another visitations of this dread scourge in which over half of its victims succumb. Its cause is a definite specific organism, and the mode of conveyance, as in typhoid, is by ingestion of infected foods and water, the infection being carried long distances solely through the medium of man. Osler has ascribed the spread of the two diseases alliteratively to food, fingers, and flies. Forchheimer divides the prophylaxis against it into communal and individual measures, the two being intimately bound together, however. With pure water and food cholera cannot exist, and since the germ is peculiarly unresistant to heat, the boiling of water, cooking of foods, protection of both from subsequent contamination by handling and flies, with sterilization of table utensils, will afford adequate protection in the presence of the disease. I quote a point mentioned by Forchheimer, because it seems important in dealing with large bodies of men and is a good, rational, and sufficient reason for adopting prohibition measures in the field in contradistinction to the sentimental ones advanced by would be reformers: "The use of alcoholic beverages is to be especially condemned, for subacute and chronic gastritis (inflammation of the stomach), whether due to this or other causes, is most certainly an open sesame to the cholera vibrio."

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*Lecture delivered to line officers at Fort Brown, Texas.

The following paragraph (1) is interesting as showing both the occurrence of cholera in Germany during this war and the prompt and heroic measures adopted to stamp it out: "On cholera appearing in M——— a hospital for cholera cases and suspects was established, the streets where cases occurred were isolated, intercourse between citizens and troops inhibited, streets and yards were sprayed, etc., etc. Prophylactic inoculation was begun on the day following the appearance of the disease and the second dose had been given to all by the ninth day." The last sentence may cause the soldier to shudder in anticipation of still another series of "shots in the arm" as protection against cholera, to which he will undoubtedly be subjected if it is necessary.

Dysentery.—Those who served during the Spanish-American War will recall the ravages made by diarrheal diseases among the troops, even those encamped in our own cities. What has been said of typhoid, the paratyphoids, and cholera, can be applied to this class of disease with equal force. In enforcing prophylactic measures it might be well to emphasize that no less stringent measures should be adopted. Among the diarrheas suffered by the English troops, certain of the cases were designated "sand diarrhea"; they followed sandstorms and were ascribed to the irritation of the bowels by the sand, or to the dissemination of the germs by the winds. In either case it would seem that protection of foods and utilization of, perhaps, the gas mask while such storms raged would prevent the occurrence of these cases.

Tuberculosis.—The white plague has so long been a subject of universal dread and popular discussion that I can add little to the information already well known of the measures advocated for its prevention, but because of the importance it is assuming as a decimator of men in the trenches, it is essential to emphasize certain rules to prevent its further inroads. "Of sixty British soldiers discharged from a London hospital as no longer fit for service, twenty-two were marked down by the examining medical board as suffering from chronic tuberculosis." All evidence tended to prove that these men had been lung sound when they enlisted. The British experts who canvassed the subject concluded: "Modern trench warfare, with its terrible exposure to extremes of heat and cold, under the most unhealthy conditions, is bound to cause an excess of pulmonary complaints among men not up to the strain" (2). The last point incidentally is an eloquent argument in favor of adequate physical training and hardening of the men.

I have followed with some interest in the daily press in recent months articles alleging an alarming increase of consumption in France. Our enemies have even been accused of having barbarously inoculated noncombatants in captured territory, so great was the number of victims of the disease discovered in regions recently vacated by them on their retreat. The tremendous stress of work incident to the recruiting of large numbers of men hurriedly will inevitably result in the enlistment of many incipient and latent cases of phthisis, each one of whom under the circumstances of trench life will become a potential danger to the men with whom they come in contact. Considerable time has been spent in trying to determine if these men are themselves benefited or injured by their military service. I believe that the question would be influenced by the conditions of such service; however, the real importance of their exclusion lies in the avoidance of the menace they constitute to their trench mates. So universal is the disease that it is safe and fair to assume that each organization contains one or more tuberculosis carriers; such measures as the prohibition of the use of the common drinking cup and the interchange of utensils should be rigidly observed, and rules against promiscuous expectoration, particularly in the confined areas of the trenches, actively enforced. Men observed to have a chronic cough or to be visibly losing in weight or strength, those who repeatedly complain of afternoon fever, or whose cheeks are characterized by a hectic flush, should be sent to the rear to be placed under observation of the surgeon. If company officers in constant and intimate contact with their men could acquire the habit of zealous observation of them, they would greatly increase the efficiency of their organizations as fighting units: no easy task, I admit, but perhaps worth a thought.

Malaria, yellow fever, and dengue.—A volume might be written on the first; the latter two are not so important, for their rarity in European countries renders unlikely any widespread epidemic of either among troops transported to Europe. Malaria is transmitted from human carriers through the intermediary host, the Anopheles mosquito. Sanitation having for its object the eradication of breeding places by drainage, oiling, avoidance of improper camp sites, protection against mosquito bites by the use of bars and nets, and the periodical exhibition of quinine as a prophylactic for the uninfected and a curative agent for the carriers will prevent its occurrence.

Venereal disease.—I do not believe that measures applied to individuals in our army to limit this class of disease can be improved. The regulations governing venereal prophylaxis are as adequate as present day knowledge can dictate; every effort is made to enforce them. Any régime, however, can be but relatively effective. To further safeguard our men stringent regulation of prostitution in the neighborhood of camps and control of camp followers must be inaugurated or promiscuous intercourse between soldiery and citizenry controlled, if, in view of reports of the alarming increase of venereal disease in Europe, we are to profit by the experience of the allied armies.

Bubonic plague.—It is desirable to call attention to the possibility, not the probability, of its introduction through the agency of infected flea infested rats. It is the function of sanitary officers to guard against such a contingency.

Insanity and nervous diseases.—These disturbances have been not uncommon among the troops at the front. If each case were subjected to careful analysis, it would doubtless be shown that all occurred in individuals who had previously manifested, if not active symptoms, at least stigmata of mental or nervous disorders. It is easily conceivable, however, that men subjected to the alternate excitement of battle and restraint of trench life, the anxiety, uncertainty, and physical stress incident to war, under more or less unhealthy physical conditions, might succumb. I am impelled to advocate in order to preserve the integrity of the mind that the men be provided with a sufficient quota of work, a goodly measure of rest, respite from trench duty, and recreation.

SURGICAL CONDITIONS.

Poison gases.—Although condemned by the Hague Convention in 1899 as a barbarous agent in warfare, these tactics, fiendishly revived by the Germans, deserve more than passing consideration. I can readily conceive situations in which first aid in cases of asphyxiation may devolve upon the line officer; a condition in which prompt succor may mean life or death, recovery or a future of invalidism, where he may be called upon actually to administer early treatment, or even carry the case on to its termination. From exhaustive analyses and numerous clinical observations, Kruglesky in accord with others has come to the conclusion that the gases used in warfare at present are mainly chlorine and bromine, analogous elements, the former existing as a greenish yellow gas, the latter as a dark red liquid which vaporizes at ordinary temperatures. Both are pungent, irritating, suffocating, and heavier than air. The symptoms produced by their inhalation are premonitory: detection of the peculiar odor, burning sensations in the eyes, irritation of the mucous membranes, painful cough, sensation of oppression, and palpitation of the heart. Following these are the symptoms of asphyxia: difficult breathing, restlessness, air hunger, dizziness, cyanosis, unconsciousness, edema of the lungs, or the filling of the air paces with fluid, manifested by a rattling sound with each inspiration and an abundant frothy expectoration. Removing the victim from the environment of the vitiated atmosphere and supplying oxygen, recovery might be expected, depending, of course, upon how profoundly he had been affected. According to the experience of many, the patient often feels able to return to duty several hours later; however, he may suddenly again develop serious pulmonary edema. Later, what may be described as terminal symptoms occur, lesions in the lungs, bronchitis, congestion of the lungs, bronchopneumonia, even gangrene, in association with failure of the general health and a variety of complications. The only prophylactic is the use of the gas mask or the respirator. The gas mask consists in its simplest form of a perforated covering for the nose and mouth, held tightly to the face with appropriate straps. A more effective type is like a helmet and contains gauze saturated with the chemical antidote for the gas, sodium hypochloride with glycerin to maintain the moisture of the material. As protection from the irritating properties of the gas to the eyes, goggles are worn or a window is provided. The respirator is a more complicated apparatus, similar to that used in mines which occludes the vitiated air and substitutes oxygen, derived from a central supply or individual tanks. The immediate treatment must be applied without delay: Removal to a pure atmosphere, application of artificial respiration by the Schaefer method, remembering that the poison gas is heavier than air and that effort to rid the lungs of it, as of water in cases of drowning, must be made. This accomplished, I should say that if there be any efficacy in the pulmotor, this would be an ideal opportunity to demonstrate its usefulness. Vomiting should be induced by any method not too depressing. Immediate bleeding to prevent the edema of the lungs is advocated very highly by Lion, and is an operation requiring so little technical skill that in an emergency I should not hesitate to recommend its performance by any intelligent layman. It is performed by ligating above the bend of the elbow, painting the site of the proposed stab with iodine, sterilizing a sharp instrument by flaming, boiling, or immersion in an antiseptic, and nicking one of the prominent veins of the arm. After about a teacupful of blood has been removed, the bleeding can be easily controlled by the application of a fairly tight first aid dressing.

Trench foot.—The causative factors of the condition that has come to be known as trench foot, to judge by the varied expressions of opinion of the authorities, have not been definitely determined. A letter from Paris quotes a paper by Doctor Raymond and Doctor Parisot on Freezing of the Feet, Commonly Called Trench Foot, a title which seems to class it as a frostbite, while a London letter written in the same year, 1916, stressed the point made by Leonard Hill in a lecture on Science of Clothing and Prevention of Trench Foot that the condition was not, *per se,* caused by cold. He said it "was induced not by the cooling of the surface alone but by the loss of vitality of the entire limb through water soaking into the tissues." Yet in May of the same year apparently convincing evidence proved the condition to be caused by a fungus or mould which had been found in the soil, straw, and manure in the trenches and was recovered from the lesions. It thrived best at a low temperature and with moisture, and was introduced through excoriations or abrasions of the unbroken but macerated skin into the waterlogged tissues. I would be inclined to combine as essential causative factors all of the foregoing, taking into account the fact that the low degree of vitality induced by inactivity, cold, and water soaking would favor infection. The disease as described is an inflammation of the peripheral nerves, the local symptoms, briefly, being pain and swelling, or edema, the occurrence of blebs or blisters, eschars, and gangrene. The condition does not necessarily remain a local one, but causes systemic symptoms, septicemia, and serious end results.

Methods of prevention are very important. The first is the matter of foot gear—a detail that the individual organization commanders can best oversee. It is recommended that the socks in use in the American army be discarded, and the foot covering used by the Italians substituted, wrappings of squares of fabrics soaked in grease. Waller and Rideal, of the Royal Army Medical Corps, recommend salted lard; other experts advocate dipping the fabric in melted paraffin; still another favors the adoption of Labradorian footgear, which consists of two or three layers of elastic, watertight skins. As the result of the experience of these men, I should be inclined to combine the good qualities of all and should advocate the use of a wader sufficiently large to admit the wearing of three pairs of socks—an inner, light pair soaked in a salted ointment or other unguent, and two heavy woolen outer pairs dipped separately in paraffin. It is essential that the circulation be unimpeded; hence leggins or shoe laces should be loosened frequently. If our army adopts the spiral woven cloth puttee, it should be remembered that they are said to shrink one fifth their length.

The second important preventive measure is care of the feet. Scrupulous cleanliness, attention to treatment of even insignificant sores and abrasions, and anointment with grease of legs and feet before beginning a tour of duty in the trenches should be observed. An ointment containing camphor and boracic acid that has proved most efficacious in the treatment of trench foot should be used for this purpose, as "foot powder" now is in our army.

Shell shock.—Shell shock is a complex affection of the nervous system caused by the air concussion of high explosive shells bursting in proximity to men in the trenches. It occurs without actual trauma and would seem to be the result of molecular changes in the brain and fluids produced by the powerful detonations. Neurasthenia and hypochondriasis, spasms or partial paralyses, a dazed condition or temporary loss of consciousness, with tricks played upon the special senses, most commonly the sight or speech, result.

An important point in this condition is that it subsides after a variable period of time, ranging from hours to generally a few days, except in occasional cases of long standing, with no further treatment than complete rest and quiet, and that, as emphasized by von Sarbo, interference, as by unnecessarily frequent examinations, treatments, and I would add, the manifestation of too much sympathy, is harmful and liable to breed a superimposed hysteria.

Wounds.—There can be said to be no prophylaxis against wounds from a medical standpoint. Measures to safeguard the soldier being purely military, the newly introduced steel helmet, steel goggles, crawlers, armor plate however utilized, come within the province of the military authority rather than the medical. I will not classify wounds; there is little difference in the principles involved in first aid treatment, however they may have been inflicted, whether by fragment of shell, shrapnel, rifle or pistol bullet, bayonet, or sabre. We can as well, then, treat the subject in general, studying particularly, however, the complications most frequently met on the European fields of battle and the measures developed for their prevention. The indications for the application of first aid dressings are: 1, avoidance of soiling of the wound; 2, control of hemorrhage; 3, prevention of surgical shock. To put the cart before the horse, I propose to detail first the complications being met abroad for the purpose of emphasizing the importance of surgical cleanliness in handling them and the rôle played by those who apply the first aid dressing. In discussing this, I shall quote from the report of an extemporaneous lecture delivered by the incomparable Carrel, recently at the Army Medical School. Infection, as applied here, means the introduction of disease producing bacteria, i. e., those germs that produce suppuration, gas gangrene, and tetanus, the three wound complications that have been responsible for the high mortality and unfavorable results reported from the European battle fronts during the first years of the war. The reasons for the enormous incidence of infection, practically 100 per cent., should be intensely interesting. Consider that the areas over which the battles of the great war are being fought were previously thickly inhabited; it might be expressed as an axiom that man and disease germs coexist on terms of unfortunate intimacy. The lands over which open battle is being waged have been tilled for centuries and kept productive by the constant use of fertilizer. They are now cut up by myriads of trenches, and rain is frequent. There are thus formed, adding warmth, the most favorable conditions for the luxuriant propagation of bacteria. Environment, then, is one important factor in the occurrence of infection. Other causes are: 1, the skin of the men who are wounded is dirty; 2, their clothes are contaminated, as has been actually demonstrated by bacteriological experiment, by sweat, the germ laden mud of trenches, and often human filth; 3, missiles carry into the wounds foreign material, dirt, splinters of wood, bits of clothing, etc.; 4, the character of the injuries, those caused by shell and shrapnel contusions and lacerations, result in lessened resistance because of the lowered vitality of the tissues; 5, among the common microbes encountered are those known as anaerobes that thrive in the absence of air. Penetrating wounds or those filled with clotted blood afford ideal conditions for their growth, as do ragged wounds with deep recesses.

All familiar with infected wounds, perhaps by painful experience, would recognize ordinary pus, and are acquainted with the symptoms produced by the presence of the common germs of suppuration—pain, swelling, heat, and redness. The seriousness of the extension of the process is manifested by the appearance of red streaks leading to the nearby glands or "kernels." All, also, know the danger of general blood poisoning. To prevent this train of symptoms, leading often to a fatal termination, the careful application of first aid is necessary.

In gas bacillus infection the germ, so states Surgeon Fauntleroy, a military observer, "has seemed to be omnipresent." Its mere presence in a wound does not necessarily produce its characteristic symptoms; certain of the conditions related above must coexist, for it belongs to the class of anaerobic bacteria. Under favorable circumstances, however, it becomes a virulent poison, producing its peculiar manifestations with alarming rapidity. A disgusting odor develops, to which nurses at the front have become acutely sensitive, calling it "the death smell." The tissues become filled with gas so that they crackle on pressure. This condition, at first local, extends, gangrene and a general systemic poisoning supervene, and death may result within a comparatively few hours, or at least extensive operative interference may be required to save life, after perhaps insignificant wounds or minor injuries.

Tetanus, or lockjaw, is caused by a specific microbe that enters the body through the wound. This germ, like the preceding, is an anaerobe and to grow and flourish must find lodgment under circumstances that deprive it of air. Punctured wounds, wounds that become filled with clots, or jagged ones with deep recesses are ideal. Parenthetically, let me here state that the popular fear of the "rusty nail" in connection with lockjaw is unfounded as far as the rust is concerned, but justified because of the character of wound it produces and the likelihood of its being infected with tetanus. The disease develops after a variable period ranging from a week or less to several weeks; it causes no manifestations at the seat of inoculation, but becomes general through the dissemination of the toxins through the nervous system, and produces characteristic convulsions. From the fact that these begin in the muscles of the jaw and prevent opening of the mandible, the popular name, lockjaw, has been derived. The disease, particularly in its acute form, is very fatal and is always painful and superlatively distressing to victim, friends, and attendants. Treatment of wounds resolves itself into, 1, general prophylaxis; 2, the principles involved in the application of first aid; 3, special prophylactic measures for the prevention of the complications noted above. Under general prophylaxis is included cleanliness of person and clothing. The practice of the Japanese during the Russo-Japanese War, of causing each soldier to take a full bath before going into action, proved wonderfully effective in limiting infection. The entire change into clean raiment, under similar circumstances, is of at least equal importance. In connection with this I regret that I have been unable to obtain the details of a method of treatment of the clothing of soldiers, originated and advocated by a woman doctor in France, the object of which is to sterilize them by soaking in an antiseptic solution. Experimentation has proved that they remain germ free for several weeks.

The trench is the ultimate source of the great percentage of wound complications. They should be kept dry and the men should be made to understand that the labor incident to doing this is actuated by the law of selfpreservation. Lining trenches as a measure of comfort and safety is well worth the trouble and expense entailed. Finally with some hesitancy I propose to advance what I believe is a new idea, the issue of a waterproof trench suit, fashioned after a child's sleeping garment, with closed feet and gloves, made of a light, rubberized material, fitting tightly around the neck with a bellows tongue, and to be worn as an overall. It would be discarded immediately before leaving the trench and donned on entering it. Experimentation with such a garment would determine whether the deprivation of air to so much of the body might not prove too great a discomfort. There might, too, be economic reasons for not adopting it.

The treatment of wounds on the field, not necessarily by the trained men of the medical corps, but by the fighting men, I have suggested, may determine the outcome of the case. As officers have already been familiarized with the indications for first aid, have been drilled in the use of the tourniquet for the control of hemorrhage, and know about the use of stimulants, the benefits of the action of warmth and posture to combat surgical shock, and have been drilled in bandaging, immobilization of fractures, etc., I shall only call attention to a few important factors. Success in the treatment of wounds received in battle is in direct proportion to the rapidity of evacuation of the wounded to the rear; the shorter the time that elapses between the reception of a wound and the application of the first emergency dressing and transfer through the various sanitary units to the base, the better the chances for rapid and perfect recovery. The dressing of wounds should be attended with as little discomfort to the patient as possible. This can be accomplished by locating the wound without undue movement of the victim, exposing it fully to view by ripping or cutting the clothes covering it, and by having the dressings ready and accessible. Iodine is the antiseptic par excellence. Wounds must not be handled nor should any extraneous substance be allowed to even touch them. Dressings should be applied as lightly as possible; they should be sufficiently voluminous to soak up the discharges and entirely cover the wounded area.

Special prophylaxis concerns the measures for the prevention of gas gangrene and tetanus. It must be recalled that the germs of both require deprivation of air for their growth, therefore the access of air will prevent the development of either. To this end wounds should be opened freely and no dressing permitted to remain after it had become so permeated with clotted blood that air was excluded. This is a factor of such importance that in my opinion when necessary, as on occasions where the evacuation of the wounded is delayed, anyone should assume the responsibility of redressing such a case. For the prevention of tetanus there is an antitoxin of proved utility. Experience has taught, however, that the earlier its exhibition, the more certain its efficacy; it should be given, if not on, at least immediately after, removal from the battlefield, not to selected ones, but to every wounded man. The technic is simple and could be easily acquired by anyone.

Before concluding this résumé I am going to describe briefly the essentials of the method of treatment that has been developed in France to combat infection that has distinguished the battle wounds and has been the cause of the high rate of mortality. It was evolved as the result of the untiring labors of Doctor Carrel and Doctor Dakin. Doctor Carrel concluded that some bactericide must be devised that would kill the microbes without seriously injuring normal tissues. Experimentation by Dakin discovered a number of substances which, being but slightly caustic for the tissues, could be used in a wound in a sufficiently strong concentration and during the time necessary to bring about sterilization. Of these, the simplest, an alkali free, 0.5 per cent. sodium hypochlorite, was selected. The technic for its use consists in opening the wound widely, removing dead tissue and foreign bodies, and inserting small perforated rubber tubes in every recess of the wound. Every two hours the wound is flushed with the Dakin fluid, this being continued until all microbes have disappeared, as proved by repeated bacteriological examinations of the discharges. When both the clinical and bacteriological examinations prove the wound sterile, in from forty-eight hours for small wounds to six to ten days for extensive ones, the edges are stitched, and healing takes place in a few days.

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DISTAL OSTEOPOROSIS OF THE UPPER EXTREMITY.

Its Cause and the Influence of Position.

By Dudley J. Morton, M. D.,
Chevy Chase, Md.

During my four months' service in Hospital B of the American Ambulance Hospital of Paris, at Juilly, S. et M., France, in the summer of 1916, our staff, of whom Dr. R. C. Bryan, of Richmond, Va., was chief, was greatly concerned about the extensive decalcification which followed all severe injuries of the arm, particularly those below the elbow. This decalcification extended too far beyond the acutely inflamed area to be explained by simple inflammatory rarefaction and, with the accompanying changes in the soft structures, so grave was the ultimate result that I cannot too earnestly emphasize the seriousness of the condition. The hand became rigid, deformed, and practically useless.

Our interest once aroused, there was no single problem upon which more thought was spent nor one in which we felt more helpless, for it appeared in case after case in spite of the fact that we employed all standard measures in the treatment of these patients. The patients were all men in their physical prime, their ages ranging from twenty to the early thirties, and while we were not equipped to make Wassermann tests, the absence of all other forms of venereal disease among our patients and consistent presence of the process with this type of injury reasonably excluded syphilis as a possible cause.

A general description of such a case is as follows: On admission about a week or ten days after the occurrence of the injury the case presented a large septic perforating wound in the forearm or wrist, involving the bone structures as a compound fracture. There was an extensive and diffuse cellulitis and edema, the latter showing particularly beyond the distal side of the wound. The hand was enormously swollen and bluish in color; the fingers were conical in shape. The large blue hand was typical at the stage. Decalcification of the bones of the hand and wrist was discernible about three weeks from the time of injury, manifesting itself first in the carpal and about the epiphysis of the metacarpal and phalangeal bones. The ends of the radius and ulna were also involved if they lay within the inflammatory zone or if the wound was situated in the forearm. The rarefying process continued, the bones becoming more and more ghostlike in appearance in successive x ray studies, the shafts also showing a like involvement, but more slowly. The infection was usually of mixed form, staphylococci predominating. All structures of the part transversely were affected by the acute inflammation—muscles, tendons, nerves, and bones.

When the acute symptoms had subsided, which was usually after some weeks, and the accompanying edema had largely disappeared, the hand appeared long and tapering. The nails were thick and horny, their convexity, both longitudinal and transverse, increased, and they seemed closer to the ends of the fingers on account of the atrophied finger pads. The joints showed various degrees of enlargement and rigidity owing to the thickening of the joint ligaments and changing of the serous exudate within the joints and tendon sheaths to a plastic form. When the sheath had been eroded, the tendon became fixed to the surrounding scar tissue. The temperature of the hand was low and its appearance splotched. Beside the vasomotor disturbances demonstrated, there were numbness, tingling, acute pain, and hyperesthesia in areas; motor and sensory paralysis was present if division of the nerve had taken place through the injury or subsequent sloughing, or if the nerve was included in scar tissue growth. Bony deformity often persisted owing to inability in some cases to control the position of the fragments because of the cellulitis and swelling or because of the essential care of the infected wound. Growth of involucrum and atrophy of the soft structures increased the deformity.

In the worst cases the hand was useless or at best capable of only limited function, the wrist and fingers being stiff and more or less rigid. Massage and baking were resorted to as early as seemed advisable, but gave little and very slow improvement. Forced movements could not be employed owing to danger of rupturing encapsulated infected foci and of causing a return of the acute suppurative process. All the cases of this general character showed the same changes varying mostly in degree. While a large part of the changes and impairment of function was due to the destructive action of the injury and infection on the structures within the wounded and acutely involved area, the changes beyond, both in bone and soft tissues, yield tangible evidence of more subtle factors which were equally if not even more responsible for the unhappy results.

In regard to the early treatment the wound or wounds discharging large quantities of pus, were kept open and drained with tubes or gauze wicks and dressed once or twice daily. The more severe cases were kept in a continuous bath of bichloride or magnesium sulphate. When permissible, the latter patients, in order that they should not be confined indoors, were given large dressings saturated with one of the above solutions and a suitable splint for mobilization, and the arm was kept in a sling. Opening and free drainage of pus cavities were carefully observed. The relief of the acute symptoms was very slow, cellulitis and marked swelling of the injured area persisting for several weeks, or until the infected osteitis within had been overcome. The edema of the extremity kept pace with the condition above it, and with its gradual subsidence the hand appeared as already described.

From the twenty-seven cases of osteoporosis of the hand and wrist studied, several have been selected which show most typically the changes at different stages, and present characteristics which have a distinct bearing on different phases of the process. Summarizing the features presented in the illustrations: 1. The extreme swelling of the soft tissues is outlined in the early plates of all these cases. 2. The decalcification lies within the zone of inflammatory reaction and beyond. 3. The earliest and most notable changes are seen in the cancellous portion of the bones which are richer in blood supply and normally contain the greatest activity. 4. The relatively normal density of the small sequestrum in Case IV, compared to that of the distant osteoporosis, shows that the latter is the result of the activity of living cellular tissue. 5. Osteoporosis may exist without the presence of infection as demonstrated in Case V of simple fracture with constricting bandage. 6. Absence of function as shown in Case VI does not produce the same decalcification which characterized the cases under consideration.

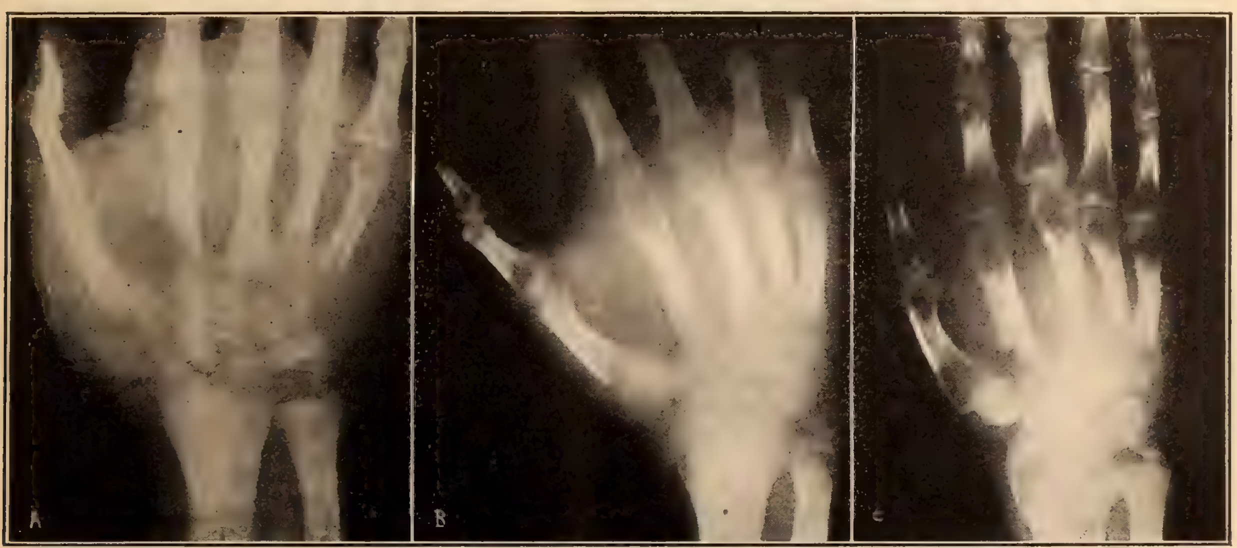

Fig. 1.—Case I, F. G., age 21. Wound in carpal and metacarpal region. A, two weeks after injury, showing extreme swelling of the soft tissues, and injury. B, ten weeks; decalcification advanced, loss of outline of the carpal and ends of the metacarpal bones. C, twenty-four weeks; rarefaction markedly advanced in the metacarpal and phalangeal bones.

The causes of a local, progressive decalcification are inflammation and tumor. The latter need not be discussed, as the condition under consideration yielded no signs of neoplastic growth nor did inquiries bring to light any case showing such an ultimate result. In the inflammatory condition, loss of bone salts is due to cellular activity produced directly by the causative agent, traumatism, infection, etc., and is immediately surrounded by other involved tissues showing their characteristic inflammatory changes which become less marked as the tissues are at a greater distance from the centre of infection. This process is distinctly different from the general diffuse bone softening due to disturbances in metabolism, as in rickets, where the fault lies in the nourishment furnished by the blood.

The decalcification seen in our cases was distant to the acutely inflamed area and consequently not produced by its active irritants, and was local in extent, only involving the bones between the wound and the extremity, but diffuse and uniform in character, involving all these distal and proximal bones about equally. These characteristics indicate a local form of metabolic disturbance such as could be produced by stagnant blood supply in the part beyond the wound, a condition whose presence was fully borne out by the external appearance, notably the enormously swollen blue hand. The effect of such stagnation would be to deprive the tissues of their usual nourishment and means of growth and repair and to stimulate metabolic activity through the irritation caused by the accumulated waste from the living and dead tissues. The factors which produced this relative stasis are constriction of the veins due to the marked swelling of the soft tissues beneath the tense skin in the injured part and the effects of gravity upon the obstructed flow of blood. The rarefaction then is directly the result of these mechanical factors and quite distinct from, and only secondarily due to, the inflammatory process. So closely has the influence of gravity in effecting the condition been observed in this study that, following the explanation of the process which occurred when the part was kept in a pendent position, a brief discussion of its inverted action, when the part is kept elevated, will be given to demonstrate its therapeutic importance in the care of cases of this character.

A brief account of the circulatory phenomena may be of value. Circulation of the blood is maintained by the inequality of pressure in the vascular system created by the heart pulsations. The greater pressure exists in the arterial system so that a direct flow toward the venous channels from the arteries naturally follows, seeking, as it were, to equalize the pressure in the two structures. This cannot take place as long as the heart's action continues. The pressure is decreased as the stream advances because of the increased total volume of the innumerable channels into which it passes. The propulsive force is diminished by the resistance encountered in the bifurcations, the more extensive peripheral friction, and the tortuosity of the channels; the velocity is likewise affected, but both are sustained in part by the pulsations which extend through the arteries to the capillaries.

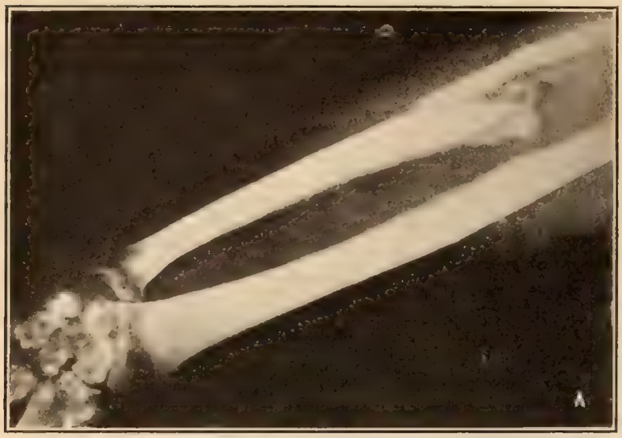

FIG. 2.—Case II, F. R., aged 29 years. A, two weeks; compound fracture of the ulna in upper third, distinct rarefaction of the carpal bones and lower ends of the radius and ulna.

Gravity has a marked influence upon velocity and propulsive force according to the degree as afforded by position in which the bloodstream flows to join with or oppose this influence; velocity and pressure are increased when it flows in the direction of gravity, and decreased when the stream takes an upward course. This applies to both venous and arterial systems.

Inflammation yields well known circulatory changes illustrated in the diagram, Fig. 7.

Section A presents in the vast majority of these cases a perforating wound with more or less extensive comminution of the bone and sepsis deeply established. Marked active hyperemia, acute cellulitis with its rapid hyperplasia and cellular swelling, migration of blood cells and plasma facilitated by the thinned and distended capillary walls, and engorgement of lymph channels and intercellular spaces, all act to distend the skin covering and, under the limiting influence of the latter, to raise the internal pressure upon all these structures. This greatly increased internal pressure so clearly demonstrated by the tenseness of the skin, causes the swollen tissue to encroach upon the space occupied by the venous channels of the part because of their collapsible walls and the relatively negative pressure within them, thereby interfering with the passage of venous blood from the extremity.

Dilatation of the small arteries and arterioles is acomplished by the vasomotor irritation and deflects an increased flow of arterial blood with greater pressure and propelling force into their capillaries at the expense of the flow to the extremity. This greater power given to the stream in the inflamed area yields to it greater advantage over the stream from below to pass into constricted veins, thus further blocking the latter. Gravity inhibits lymphatic drainage of this part and promotes gravitation of free intercellular material toward the extremity.

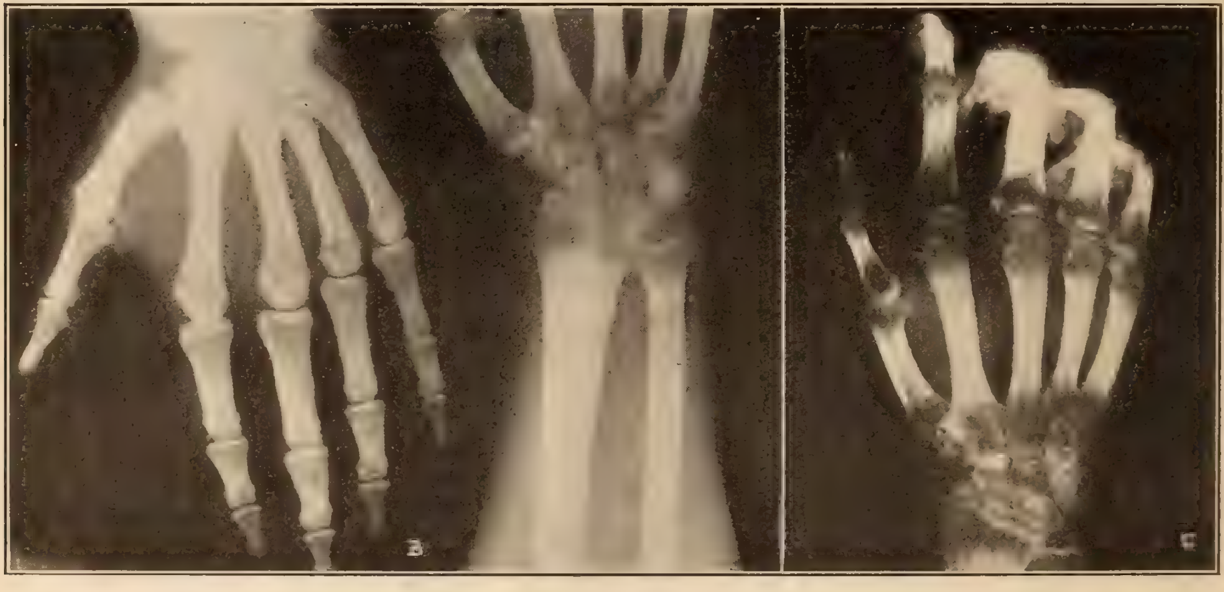

FIG. 2. (*Continued*).—Case II, B, twelve weeks; comparative density the bones in the affected and unaffected wrist. C, twenty-two weeks; advanced decalcification of the carpal and ends of the metacarpal and phalangeal bones.

In section B, the bloodstream lessened in pressure and power, after passing through the capillaries and collecting in the veins, advances to the obstructed part. Not having sufficient pressure to overcome that which constricts the veins, only that part of this stream may proceed to which available space or passage remains, such as is afforded between the diminished lumen and space occupied by the stronger streams from section A. Even this passage will become closed to the distal return under the increased outside pressure at A, unless the pressure of this stream is increased to overcome it. To accomplish this, an engorgement of the blood-vessels of the extremity, beginning in the veins, must be effected until throughout the vascular channels the pressure is sufficiently raised. Under this pressure the veins and capillaries become greatly distended, exaggerated by the hydrostatic pressure of the fluid blood. Permeability of the vessel walls, especially to plasma, increasing with the distention, acts against elevation of pressure by escape of the blood constituents into surrounding tissues. They become edematous, increasing their internal pressure under the overlying skin. Ultimately the pressure within and without the vascular channels of the extremity equalizes the pressure of the structures constricting the veins in the wounded area. Into the vascular channels so markedly distended and engorged, enters a somewhat diminished supply of arterial blood which moves sluggishly through the widely dilated vessels, propelling the almost stagnant blood before it in the same leisurely manner. The tissues, both bone and soft structures, as well as the overstrained vessels themselves, are deprived of their normal nourishment and continuously bathe in their own waste and toxic products gravitating from the septic area. The result of these changes would be an enormously swollen, edematous, and bluish hand, such as our patients presented.

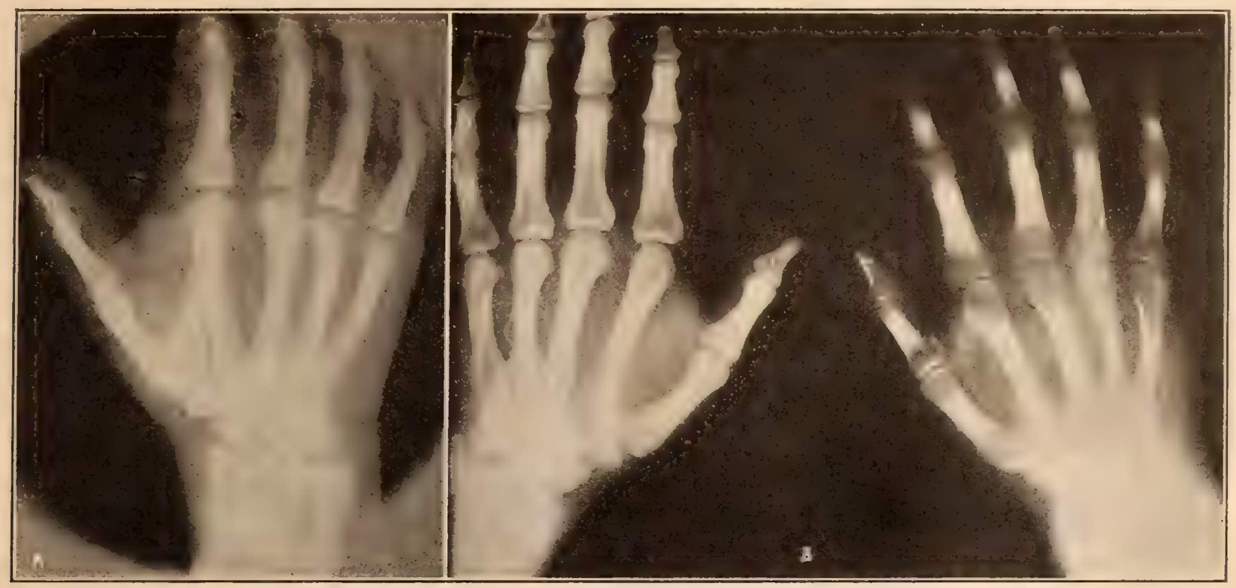

FIG. 3.—Case III, E. R., aged 26 years. Wound of carpal and metacarpal region. A, one week, showing unaffected bone density. B, sixteen weeks, comparison of the two hands.

The condition is distinctly one of venous obstruction with hypostasis. Section C would probably show no greater circulatory changes than a slight acceleration owing to the lowered venous pressure due to the constriction below. In the position just considered, it will be noted that gravity acts with the stronger arterial stream and opposes the weaker venous stream which is dependent for its movement upon the former, especially when the part is at rest. Gravity exerts a backward pressure on any accumulation of blood which may be present in the venous side when the part is pendent. Contrast this with the effects when the part is elevated. Gravity which opposes the arterial stream furnishes a correspondingly helpful force upon the return flow, and accumulation taking place in the venous channels, instead of being pulled backward, will be pulled onward. Its further helpful influences are considered more in detail with Fig. 8, representing the arm elevated.

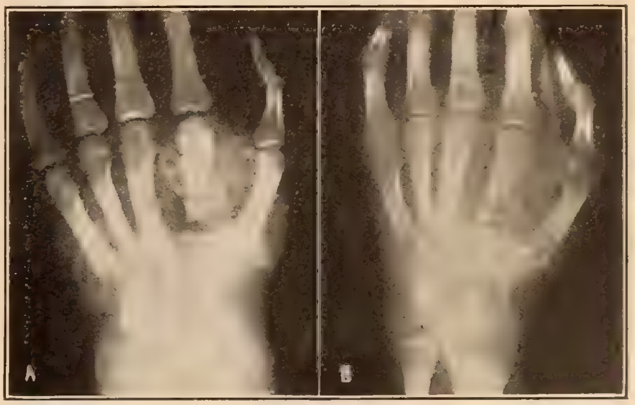

FIG. 4.—Case IV, P. D., aged 32 years. A, three weeks; marked swelling outlined and mild rarefaction. B, thirteen weeks; well advanced rarefaction, note density of fragment of dead bone at the proximal end of the second metacarpal.

Section A shows the wounded and infected area, swollen and hyperemic. The same cellulitis, hyperplasia, swelling, and migration of blood constituents takes place as in the former description; the resultant swelling, however, is less on account of the influence of gravity facilitating lymphatic drainage and gravitation of the free blood plasma in the tissues toward the shoulder. Control of the swelling in the inflamed area prevents the venous constriction. The action of gravity upon the vascular system, directly, is a decrease of the pressure throughout the entire section A. The acute hyperemia is consequently diminished, less tension placed on the capillary walls, relief in excessive transudation of blood afforded also free passage through the venous channels, due to absence of occlusion and increased "negative" pressure within the veins.

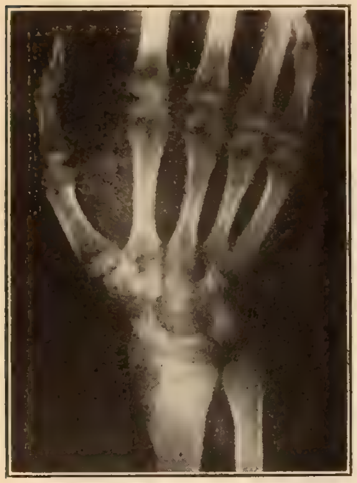

FIG. 5.—Case V, A. P., aged 21 years. Simple fracture of the ends of the radius and ulna healed. Owing to difficulty in retaining fragments in the proper position, a very tight cast was applied. Inadvertently, through transfer of patient, the cast was retained for six weeks, during which time hand had been quite edematous. X ray taken seven weeks from time of injury, after removal of the cast, shows well developed osteoporosis.

In section B the effects are far different from those seen in the former instance. The heart's action is sufficient to propel the arterial stream to the extremity, and even though its force is weakened in overcoming gravity in its ascent and by other forms of resistance, the movement is sustained by the action of gravity upon the venous column. With the lowered arterial pressure toward the extremity, naturally a smaller quantity of blood traverses this route, consequently the vessels, instead of being distended, would present a contracted lumen.

Given a case, then, presenting all the essential features of the hypostatic engorgement, by placing the part in an elevated position, gravity immediately, 1, facilitates lymphatic drainage to relieve venous constriction and edema of the extremity; 2, transforms the venous accumulation into an hydraulic wedge to force open the constriction, and, in its removal, siphons the engorged vessels of the extremity; and, 3, establishes a free and constant flow of fresh blood in place of the stasis of stagnant and toxic blood.

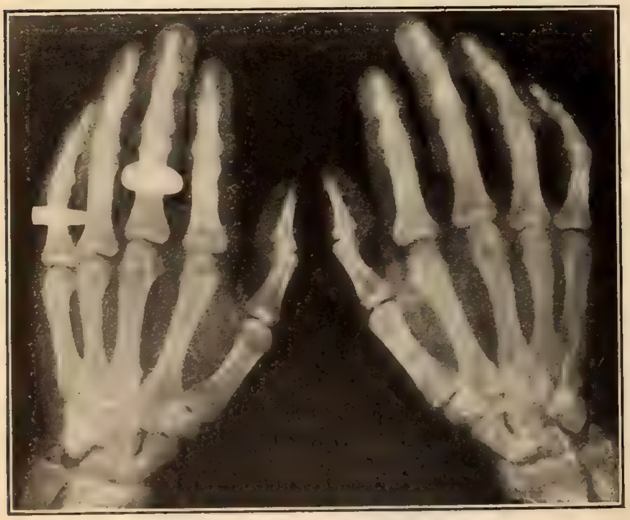

FIG. 6.—Case VI, J. M., aged 28 years. Eight weeks, case brought to hospital, right side completely paralyzed owing to penetrating wound of skull involving the left orlandic area with loss of brain substance. Function returned to leg, but very slowly to arm and hand. At the time of x ray only feeble movement of the hand and wrist joints were possible. Bone density practically unaffected.

The decalcification, which may be called "hypostatic osteoporosis," should be regarded as only one of the changes due to the catabolic progress which resulted from these circulatory disturbances. The extreme atrophy of the musculature with deterioration of their fibres, thickening and softening of the nails, and loss of elasticity of joint ligaments were more obscured or less noticeable changes. The bone changes are not dissimilar to those frequently observed in the rarefaction which develops about the metal screws in plated bone. Here the concrete foreign body causes a localized decalcification by osteoclasis through irritation. Waste products lying stagnant among the tissues, even though held largely in solution, have a similar action and yield the diffuse absorption of bone salts seen in our cases.

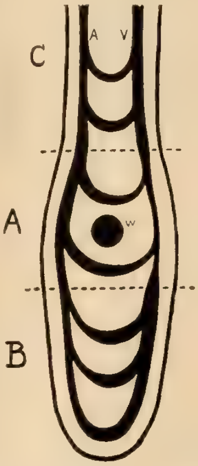

FIG. 7.—Diagram illustrating circulatory conditions in a wounded arm pendent.

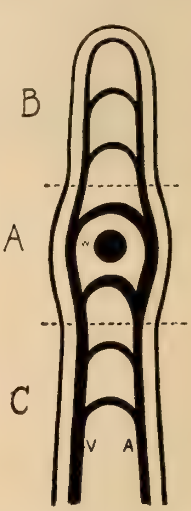

FIG. 8.—Diagram illustrating circulatory conditions in a wounded arm elevated.

While the two extremes of position have been used to demonstrate the effect of gravity on this condition, the upright elevated position of the arm is by no means recommended as the ideal position, as its influence in lowering the arterial pressure may too considerably affect the quantity of blood carried to the extremity. Rather should the conditions presented—tenseness of the skin in the wounded area and edema or anemia of the extremity—indicate the elevation required, which may be changed to maintain the most healthy appearance of the limb. In several leg and foot cases which were studied, decalcification was limited to the inflamed area. All these patients were confined to bed where at least a slight elevation was effected by the weight of the body sinking into the springs. They did not have the same edematous extremities. This indicates that at least a position level with the shoulder should be maintained, increasing the elevation by suspension or inclined plane as more acute inflammation and swelling shows. Gravitation of pus along fascial planes should be watched for, but this danger is slight if sufficient drainage is afforded. As function returns, elevation becomes less necessary.

Inquiries made among surgeons in other institutions revealed the fact that this decalcification had not been observed elsewhere. This fact does not mean that it was not to be found in other institutions, for, while in some the elevated position was employed in these cases as a matter of routine apparently for the sake of comfort to the patient or to facilitate the application of dressing—this would explain its absence—in others where the elevated position was not used, early evacuation of cases, incomplete x ray study, or deficiency in x ray material may have allowed the changes to pass unobserved.

The condition is not one which exists to the same extent in civil life, otherwise there would not be the present dearth of literature upon the subject. The fact that it does exist, however, has been borne out through investigation by the writer since his return, and is particularly seen in cases of ununited fracture of the bones of the forearm and wrist, and long standing, deep inflammatory affections in this same area. It is in military surgery that the recognition of this condition will prove of the greatest value, and while the recent wonderful advancement in surgical technic of wounds promises to overcome to a vast extent the long suppurative process with which we had to deal and which led to these results, nevertheless what has been learned from these cases will undoubtedly be of considerable benefit.

In concluding, the subject is summarized as follows: 1. In a series of cases presenting a septic compound fracture of the bones of the forearm or of the carpal area, treated with the arm in a pendent position, a diffuse progressive decalcification involving all the bones in the distal extremity of the part and beyond the inflammatory zone, was disclosed, becoming quite apparent about three weeks after the time of injury especially in the cancellous structures, the carpal bones, and ends of the long bones.

2. Changes in soft structures were associated, first appearing as a marked edema and passive congestion of the extremity which continued as long as the wounded part remained acutely inflamed and with its subsidence showed marked retrogressive changes, atrophy, and deterioration of the various structures.

3. The process is distinctly the result of prolonged hypostasis, due to venous constriction in the wounded area and the action of gravity on the circulation of the pendent arm. The changes are produced by impairment of nourishment to the tissues of the extremity and catabolic activity stimulated by the irritation afforded by the accumulation of waste and toxic products. The nature of the disturbing factor indicates the use of the elevated position not only to overcome, but also to guard against, the presence of this condition.

Large Bony Defects in the Skull.—C. Noon (*Lancet*, March 10, 1917) records three cases in which large defects in the skull were successfully repaired by the insertion of plates of silver beneath the periosteum.

LARVA MIGRANS ON THE MEXICAN BORDER.

By Charles Perley Gray, M. D.,
New York.
First Lieutenant, Seventh Infantry, Medical Corps, New York National Guard.

There seems to be a difference of opinion in the literature regarding the locale of this human parasite, which has been rarely described. Fantham, Stephens, and Theobald (1) say that Cholokowsky attributes the "wormlet" observed by Sampson and Sokolen and others to the Gastrophilus larva; it burrows into the epidermis of man by minute passages and the phenomenon is designated as skin mole, larva migrans, and creeping eruption. Professor Abraham (2) says that the occurrence of the larvæ of insects beneath the human skin is very rare in Europe, not more than three or four cases having been recorded. The presence of the maggots of the genus Œstrus beneath the skin of persons in South America, however, appears to be not uncommon. If this is the case, the literature does not tend to confirm it.

My cases and those observed by other medical officers in the Federal service on the Border during the summer of 1916, were undoubtedly due to the larva migrans from the bot fly, and one in particular proved so interesting that I had a photograph taken in New York of the patient's back before the lesions healed. The history of the cases was practically the same in all the instances.

Following a test march, called the ten day hike—100 miles—in August, 1916, a large number of men complained of an intense itching of various parts of the body. The temperature at the time was very high, ranging from 110° to 120° F., registering one day as high as 141°, and on general examination the itching was attributed to prickly heat, as in many instances the tiny eruptions appeared on the back underneath the pack which each man carried. However, as they did not heal under the ordinary lotions and ointments which had absolutely no effect, and the discomfort was so intense that the vitality was lowered owing to loss of sleep, the men were sent back to the main camp, where various diagnoses were made of eczema or dermatitis, or the one of prickly heat was confirmed. A few days later, however, close examination revealed small vesicles, from which serum exuded when they were pricked, profuse in number, but apparently segregated in small groups with patches of clear skin between them. On watching the skin closely, however, it was noticed that within twenty-four hours after these vesicles were rubbed by scratching, small serpentine furrows would develop, at the end of which another vesicle would appear, and from the tract itself sometimes serum appeared. These vesicles would at times, following various treatments, lie dormant for as long as four or five days with apparently no itching or symptoms of discomfort. Then suddenly they would begin to itch, the patient would scratch or rub with the clothing, and it seemed to take on life again and spread out in another serpiginous tract. The top vesicle would be broken by the scratching, the serum exude and spread over the skin, a tiny furrow would slowly spread in a given direction, and in twenty-four or thirty-six hours another vesicle would appear at a considerable distance, about an inch, and from that vesicle the following twenty-four hours or so would find another burrow extending another inch or half inch to be topped by another vesicle, and so *ad infinitum,* until they spread all over the body and in many instances on the arms and legs. The lesions macroscopically showed no parasite; under the microscope many polymorphonuclears and a few lymphocytes appeared, but only at one time could we detect anything resembling a living creature, animal or vegetable parasite, and then the pathologist was not positive whether or not it was extraneous matter. It had a threadlike appearance with a slight joint like a lobster's claw on the end. This was invisible under the magnifying glass. The only treatment that was efficacious was first to prevent irritation within the affected area and treat the head of each vesicle with pure phenol and then touch the spot with tincture of iodine; after which they would gradually disappear. The burrows were likewise treated in this manner.

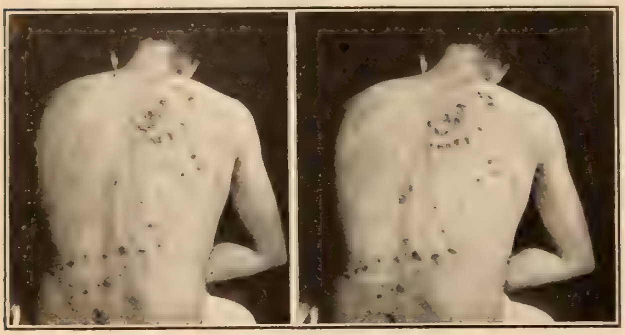
Fig. 1.—Active and late stage larva migrans from Border patrol, showing extent of lesions.

My theory that the etiological factor in this condition was some form of animal or vegetable parasite is borne out by the progress of the cycle. It was traced back to a ranch where all the men later affected camped in an old corral infested with flies and horse manure.

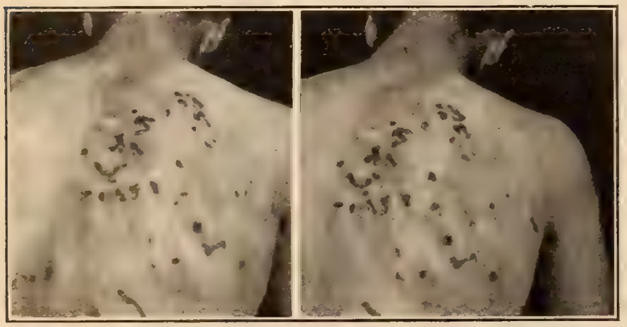
Fig. 2.—Active and late stage larva migrans, showing detail of lesions.

I personally treated over one hundred cases in two regiments during a period of over three months, though many forms of treatment were tried before we struck the one that accomplished the most good. The majority of the cases stopped immediately at first and lay dormant for a week or two, only to break out anew at the end of that time. Neglected and irritated by scratching and rubbing, their spread was unceasing. There were apparently many larvæ in one vesicle and the ones in the deeper layers of the skin escaped the effect that killed the more superficial ones nearer the epidermis. All of those in the hundred cases which I could see regularly and had under control I cured after considerable experimentation. When the cases first appeared we injected hypodermically alcohol, ether, and chloroform under the head of the vesicle. This was ineffectual and in addition produced local gangrenous necrotic areas which were hard to heal. It was discouraging to see burrows again start from the edges of these necrotic areas and extend in lesions as active as before.

Finally we evolved the one treatment which proved effective. We painted the vesicle and burrow with a fine brush with strong carbolic acid, ninety-five per cent., until the tissue turned white and then painted the surface over with ten or twenty per cent. tincture of iodine. Only the vesicle and burrow were touched. This was followed up the second day, protected by a dry, sterile dressing, the patient allowed to rest, and carefully watched for recurrence. In many cases this was sufficient, but in other cases where there was extension all over the body the individual lesions could not all be treated in this strenuous way at once, so there were a number of sittings. It took time and patience, but the reward was ample. The following case illustrates one neglected type and the serious condition that ensued.

Case.—This man was sent back to camp from the long hike with a diagnosis of prickly heat over his back where he carried his pack roll. There was intense itching, considerable inflammation, and hyperemia of the skin. When I made a close examination I saw that his back was completely covered with masses, more or less individualized, simulating vesicular dermatitis. On studying the lesions one could see here and there minute burrows extending like a white linen thread with a worm like appearance. The affected area was so extensive that in the next few days I could treat only a small part of the whole. At the end of that time I was sent to another regiment, where I found many cases and cleaned them up, and in the meantime lost sight of my old patient, who for some reason decided to try more intensive treatment. On my return in three weeks I found him in very bad condition from extensive and concentrated treatment with iodine, which had been painted over the whole surface of his back, unaffected areas and all, every day. Before this cleared up and the specific treatment had been carried on for a short while the regiment was ordered home, and on arriving in New York the accompanying photographs (Figs. 1 and 2) were taken. The intensive treatment with iodine had caused a round abscess area at least four inches in diameter, the lesions, apparently, having worked deep into the flesh. The abscess was incised and from one to one and a half ounces of pus withdrawn. There were other abscess areas and in some parts necrosis of the skin where there was not much subcutaneous fat. The abscesses were opened and drained, the isolated lesions treated with the fine brush as before, and to the eczematous parts of the skin soothing ointments were applied and the whole back bandaged with sterile gauze. This treatment was continued daily for two weeks, when the patient was obliged to leave for Chicago; he wrote me later that he was progressing satisfactorily.

Most of these cases responded to proper treatment in a short time.

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60 West Fifty-eighth Street.

THE WAR AND THE NERVOUS SYSTEM. I.

Peripheral Nerve Injuries.

By Smith Ely Jelliffe, M. D., Ph. D.,
New York,
Adjunct Professor of Diseases of the Mind and Nervous System,
Post-Graduate Medical School and Hospital.

The modern study of peripheral nerve affections due to war injuries may be said to have begun with the studies of Weir Mitchell, Morehouse, and Keen in their report on Gunshot Wounds and Other Injuries of Nerves, which were a byproduct of our Civil War. These were first published in 1864. *The Diseases of Nerves Resulting from Injury,* by Weir Mitchell, a bulky monograph, appeared in 1871, while a year later he published his most important volume, which, dedicated to Dr. William A. Hammond, contained the most important summary of our knowledge on war injuries of nerves in the English language at that time. It was in 1863 that a hospital of 400 beds was organized to be devoted exclusively to nerve injuries. Mitchell made his most important studies in this Philadelphia hospital, working with a "vast collection of wounds and contusions of nerves including all of the rarest forms of nerve lesions of almost every great nerve in the human body."

The Russo-Japanese War afforded a somewhat similar opportunity for the study of such lesions. It was not neglected, but as the results were mostly published in these languages they have been available only in small part to western students. It has therefore remained for the present world war to offer again an unparalleled opportunity for a renewal of the study of this phase of neurology, a brief glance at which is presented in the following short discussion of some of the peripheral nerve injuries. This article will refer only to injuries of the peripheral nerves of the upper extremities, reserving for another time and place a discussion of the injuries of other parts of the nervous system, such as the brain, spinal cord, midbrain, plexus injuries, and injuries of the peripheral nerves of the lower extremities.

rially from other types of injuries, for in the vast majority of cases they are infected. Furthermore the results of indiscriminate damage to anatomical structures by projectiles are quite different from those picked out by disease of the nervous structures themselves. Again by reason of the generally good physical condition of the injured person, the character of repair is usually more satisfactory than that found in peripheral nerve disease of other types of etiology.

The statistical summaries as to localization of injuries are beginning to appear in the recent literature. From these it is evident that the older statistics are being more or less accurately duplicated. The best available summary is that of Tinel (1), of Dejerine's service in the Salpétrière, who in an analysis of 628 cases, which forms the basis of one of the most valuable of the recent war studies, has found the distribution of peripheral nerve injuries as follows:

Upper extremity:	
Radial nerve	146
Ulnar nerve	84
Median nerve	67
Musculocutaneous nerve	11
Circumflex nerve	25
Lesions of the brachial plexus	27
Associated grave lesions of several of the nerves of the upper extremity	48
	409
Lower extremity:	
Crural nerve	11
Internal saphenous nerve	14
Sciatic trunk nerve	78
Sciatic, internal popliteal nerve	29
Sciatic, external popliteal nerve	37
Posterior tibial nerve	18
Musculocutaneous nerve	7
Anterior tibial nerve	4
External saphenous nerve	9
Obturator nerve	1
Cutaneous femoris nerve	3
Genitoabdominalis nerve	1
Lumbosacral plexus nerve	19
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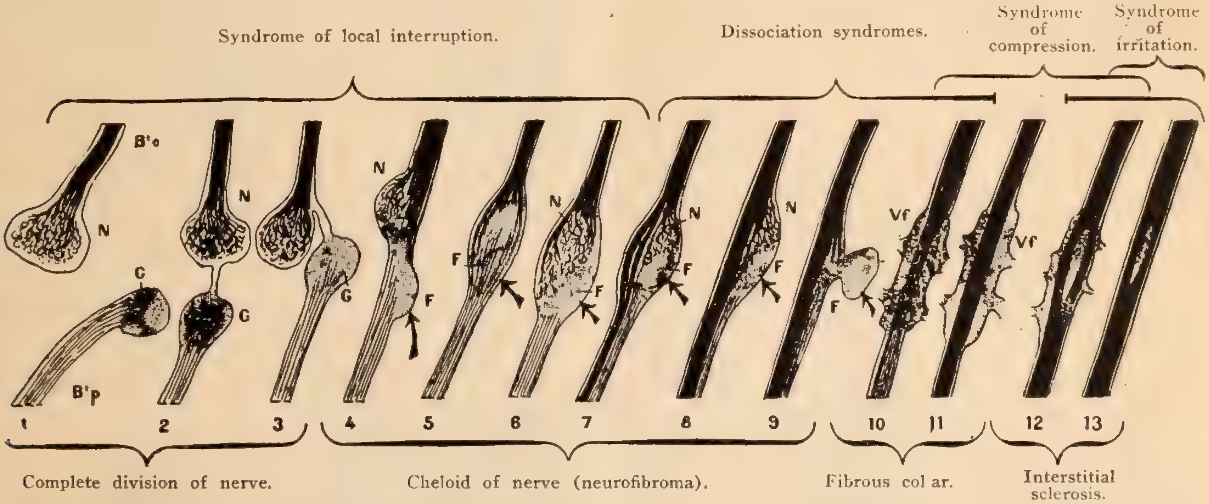


Fig. 1.—Schematic representation of the different clinical syndromes. B'c, central end of sectioned nerve. B'p, peripheral end. C, cheloid of peripheral end. F, cicatricial fibroma developing along the path of the projectile, the arrow indicating the point where the bullet has touched the nerve; at this level only a pure fibroma is present. N, neuroma where the best part of the proliferating fibres from the central stump are lost, the young axis cylindres being lost in the fibrous meshes and unable to reach the peripheral end with its empty sheaths. The work of proliferation according to each case may be nearly nil, 5-9, or very active, 4, 6, 7, 8. V f. Fibrous bridge, englobing and compressing a badly injured nerve; 10, a nerve apparently healthy; 11 or a nerve involved in interstitial sclerosis and slightly enlarged; 12, 13, simple interstitial induration, appreciable to palpation without increase in size of nerve. (J. and A. Dejerine et Mouzon.)

Recent numbers of the *Revue Neurologique* (2) have been entirely devoted to the study of war neurology and the best work of the French school is here presented. Very few systematic studies have been presented thus far from the English hospitals. The valuable study of Renfrew White (3) is the most complete thus far seen on peripheral nerves, while those of Holmes and Lister (4) on the lesions of the brain are equally noteworthy. German observations, while undoubtedly numerous, are not obtainable.

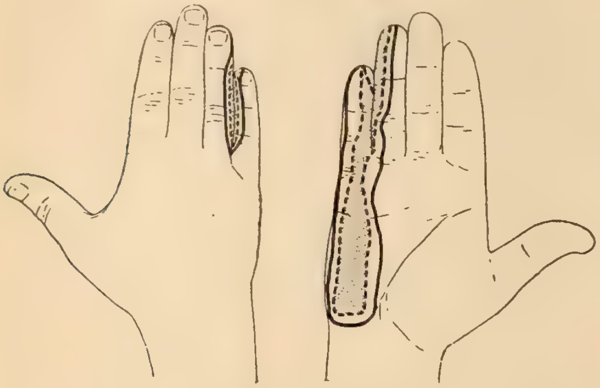


Fig. 2.—Area affected after lacerated wound of the wrist resulting in *main en griffe* with abducted little finger and loss of contraction of hypothenar muscles and of three or four interossei. (White.)

The pathological notions laid down by Waller, Duchenne, Vulpian, and Weir Mitchell have been much amplified by the recent work, and it would appear that the clinical pictures permit one to state whether the nerve fibres have been, 1, completely divided; 2, partially divided; 3, contused; 4, concussed; 5, compressed; 6, stretched or ruptured; or 7, infected and inflamed. While from the initial pictures seen the diagnosis as to these results may not be determinable only in the course of the injury, the researches of Dejerine, Mouzon, Tinel, Marie, Athanassio-Bénisty, Leri, and others have permitted the erection of four fairly clear syndromes with a fairly definite pathology. These are illustrated in the valuable study of J. and A. Dejerine and Mouzon (5). These clinicopathological syndromes are: 1, syndrome of complete interruption; 2, syndrome of dissociation; 3, syndrome of compression, and, 4, syndrome of irritation.

The examination of the wound is the first requisite. Special attention should be made to local suppurative foci and also bone injury, since both may involve other nerves which are not directly wounded. Special importance should be attached to the date of the injury, careful time records should be made concerning all peripheral nerve injuries, since valuable prognostic and therapeutical principles are bound up in the question of the length of time under consideration. Experience is accumulating to show that in war nerve injuries at least two months must elapse before the clinical examination is of maximum value.

In the early period after the injury, inhibition and blockings, functional within the nerve fibres themselves and psychogenic, are operative. Atrophy and hypotonia require several weeks to become definite; pains of irritative neuritic character commence in from one to two weeks and increase for a month or so. Formication is apt to appear in from one to two months, closely following the appearance of reaction of degeneration. It is far better to delay operative procedures as a rule until a sufficient time has elapsed. This is usually from two to three months. Immediate or secondary onset of a paralysis is an important feature to be observed. The first speaks for partial or complete section of the nerve trunk, the second of bony pressure or compression from other sources.

Certain nerve injuries seem to be accompanied by sharp, immediate, and violent pain, the ulnar, median and sciatic being examples; others give rise to a sensation of marked swelling tension in the affected limb. Cramplike sensations accompany other wounds. The evolution of the clinical course is important to record. The examination proper should follow regular neurological lines (6). Here the attitude taken by the limb is of special importance (7). The study of the voluntary musculature follows then that of the reflexes, objective examination of the muscles as to atrophy, tonus, mechanical contractility, sensibility to deep pressure and to squeezing, fibrous retraction of the muscles, contractures, and hypertonic phenomena. The vegetative neurological signs are extremely varied and important. These have been chiefly called changes in protopathic sensibility by Head. Such protopathic signs (trophic) are the result of lesions chiefly of unmyelinated vegetative autonomic and sympathetic fibres traveling in the nerve trunks to be distributed to the muscles, bloodvessels, fibrous tissues, skin, etc. Thus special attention is to be paid to changes in the skin, drying, glossiness, edema, changes in amount and chemistry of perspiration, hairy changes, ulceration in the fibrous and bony tissues, cartilage, cartilage bone, aponeuroses, and tendons. The sensory changes of the skin require special care in plotting to test for cotton wool, pin prick, thermal recognition, compass point recognition. The deep sensibility, vegetative changes to position of the joints, deep pressure, bony sensibility, are all of importance.

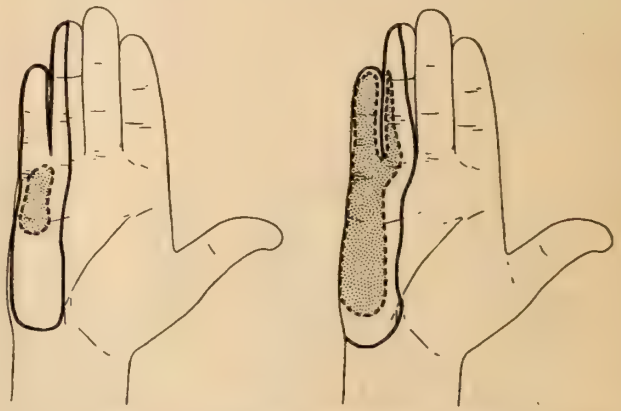


Fig. 3.—Lesion with interrupted syndrome with fibroma. (White.)

Objective examination of response of the nerve trunk itself to pressure when it develops tingling or pain or shows the presence of a neuroma or an induration is imperative. The electrical examination is equally important and should follow the usual well recognized procedures. According to the findings then of the clinical examination the chief type of syndrome present may be made out. These syndromes, as has been mentioned, are: 1, the interruption syndrome; 2, compression syndrome; 3, irritation syndrome, and, 4, restoration syndrome.

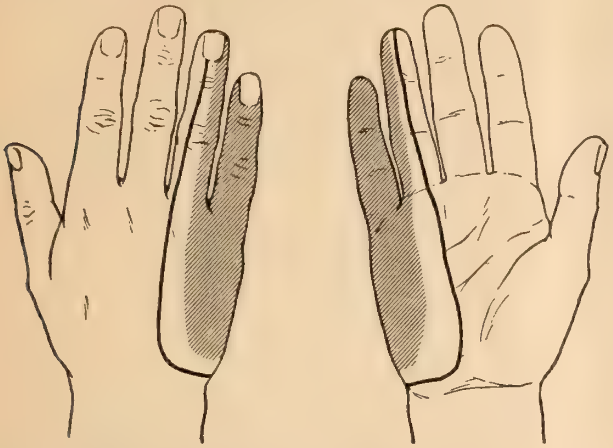


Fig. 4.—Loss of sensibility after complete division of the ulnar nerve. (Sherren.)

1. The interruption syndrome.—The interruption syndrome, when complete, causes abolition of all the functions of the nerve. Paralysis of the involved muscles is complete, tonus is lost, the limbs assume attitudes caused by the antagonist predominance. There is no pain on pressure of the muscular masses and there is muscle anesthesia. There are abolition of the tendon, osseous and cutaneous reflexes, exaggeration of the myotatic reactions, amyotrophies, deformities such as dorsal tumor of the tarsus or carpus, and modified electrical reactions.

The sensory changes need some elaboration and the principles involved apply to the other syndromes to be described later. In complete division the researches of the English school, chiefly Head and Sherren, and those of Dejerine have shown that the sensory peripheral fibres may be divided into three systems:

a. Those which subserve deep sensibility and conduct the impulses produced by pressure. The fibres of this system run mainly with the motor nerves and are not destroyed by division of all the sensory nerves of the skin. From the studies of Ranson it would appear that the fibres here involved are the unmyelinated ones of the vegetative system. They are a part of Head's protopathic system probably. Thus Head's generalizations concerning the specificity of a protopathic system must undergo some radical modifications. In a part innervated only by this system gradual increase in pressure can be recognized and pain experienced when such pressure becomes excessive. The patient can also appreciate the extent and direction of movements produced passively in all the joints within the affected area.

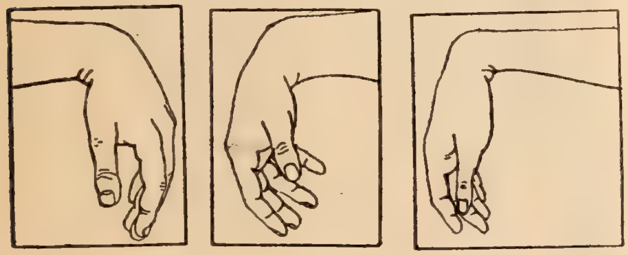


Fig. 5.—Deformity due to paralysis of the radial nerve. (Athanassio-Bénisty.)

b. Those which subserve what Head has called protopathic sensibility. This system of fibres and end organs responds to painful cutaneous stimuli and to the extremes of heat and cold; it also endows the hairs with power to react to painful stimuli. The distribution of the protopathic fibres usually overlaps greatly the area supplied by similar fibres from adjacent nerves.

c. Those which subserve epicritic sensibility. The nerve fibres and end organs of this system endow the part with the power of responding to light touch with a well localized sensation. The existence of this system enables one to discriminate two points and to appreciate the difference between mild degrees of cold and heat. The distribution of these fibres in large peripheral nerves, such as the median and ulnar, has very little overlap compared with the greater overlapping of the protopathic vegetative supply.

These changes in sensibility may be observed in division of a mixed nerve such as the ulnar. After complete division of this nerve at the wrist, if no tendons—carriers of vegetative fibres—have been divided at the same time, the patient is able to appreciate those stimuli commonly called tactile. A touch with anything which deforms the skin may be readily appreciated and correctly localized. When pricked with a pin the patient knows that he has been touched but fails to perceive the sharpness of the stimulus—deep sensibility. But if tendons are divided at the same time—involvement of the vegetative fibres—or the section involves the nerve above the point at which its muscular branches are given off, deep touch may be unperceived. These characteristics are of the utmost importance; many cases of nerve injury have been overlooked from failure to recognize these facts.

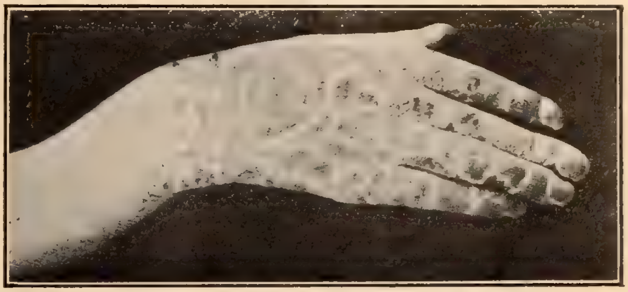


Fig. 6.—Skin manifestations due to lesions of the peripheral nerves. (Athanassio-Bénisty.)

Thus in the illustration (Fig. 2) as a result of a lacerated wound of the wrist, *main en griffe* resulted within two weeks with abducted little finger and loss of contraction of hypothenar muscles and of the three or four interossei. The nerve was found strangled in scar tissue, causing incomplete interruption. In the case illustrated in Fig. 3 there was an interruption syndrome with fibroma, which was resected, the nerve sutured, and the improvement marked. These are quite analogous to the experimental lesions of Sherren (see Fig. 4).

The point of a pin and all temperatures are unappreciated within an area which varies somewhat in each case—loss of protopathic sensibility. Surrounding this area and corresponding closely to the distribution of the nerve is a territory within which the patient is unable to appreciate light touches with cotton wool and and temperatures between about 22° and 40° C., minor degrees of temperature, and fails to discriminate the points of a pair of compasses when separated to many times the distance necessary over the corresponding position of the sound limb or the unaffected portion of the injured one, demonstrating loss of epicritic sensibility. Within this area of loss of sensibility to light touch, to which Head and Sherren gave the name of "intermediate zone," the patient is able to appreciate the sharpness of a pin prick and to differentiate temperatures below 20° and above 45° C., naming them correctly.

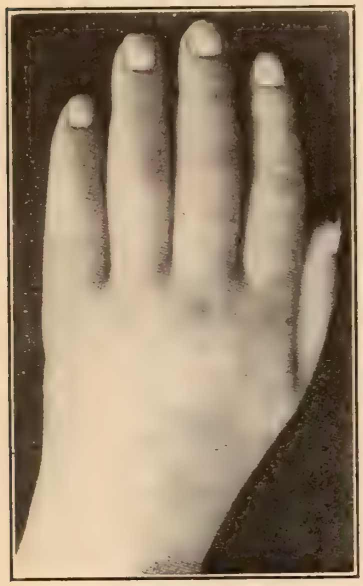


FIG. 7.—Skin manifestations due to lesions of the peripheral nerves. (Athanassio-Benisty.)

Division of a peripheral nerve produces a well defined loss of epicritic sensibility, a smaller loss of protopathic sensibility with, as a rule, ill defined limits. In many cases there is no loss of deep sensibility. Complete division of certain nerve branches produces no objective change in sensibility. These are the musculospiral below the point at which its external cutaneous branches are given off, the radial, and certain cervical anterior primary divisions.

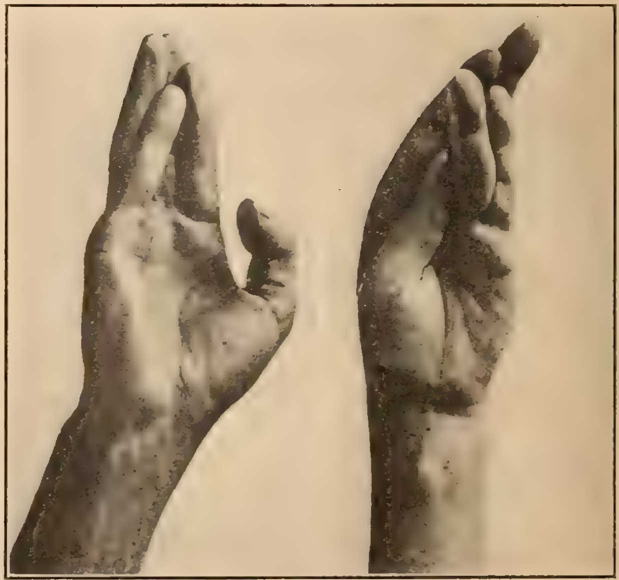
Reaction of degeneration gradually develops within two or three weeks. There is usually an absence of spontaneous pain, and pain is not produced by pressure upon the nerve trunk or muscle masses; neither does tingling or formication result by pressure on the nerve below the lesion. Tinel has shown, however, that in the interruption syndrome there is an area of tingling which is produced over a limited zone corresponding to a neuroma of the central stump which remains fixed over weeks and months and thus constitutes a sharply defined symptom of complete interruption.

Trophic disturbances are not frequently found, save for some edema, cyanosis, or a moderate degree of hypertrichosis. Grave trophic disturbances do not seem to accompany the complete interruption syndrome. Trophic ulceration may be an exception, as Dejerine has pointed out. These seem to be secondary to cutaneous traumata. They are especially frequent in sciatic lesions.

Several examinations at several weeks' intervals are necessary to determine whether there is a complete interruption syndrome. This is of importance since nothing save surgical interference will help a complete interruption syndrome, whereas surgical interference in a badly observed case, which may not have been one of complete interruption, may often be made one by surgery and thus produce a worse lesion than had the bullet primarily.

2. *Syndrome of compression.*—Here a more or less complete paralysis results, usually as marked as that seen in the interruption syndrome. Muscular atrophy takes place, but it is slower and less complete than in the case of the interruption syndrome. Persistence of the compression causes increasing atrophy. There is relative conservation of muscle tonus. This, Dejerine and Mouzon have pointed out, is a fairly good sign of the compression syndrome. When it does totally disappear it may require months, instead of weeks only, as in the interruption syndromes. Myotatic irritability is usually conserved and exaggerated. The more nearly normal are the ideomuscular reflexes the lighter the compression. Reaction of degeneration is always partial and incomplete. The anesthesiæ are variable.

Head and Sherren have shown that in incomplete division, which may also give rise to the syndrome of compression, the sensory symptoms may be nil The patient is conscious of an area altered in sensibility, and it is often possible to demonstrate this by the changed sensibility produced at its borders when a piece of cotton wool or the point of a needle is dragged lightly across the skin from the sound to the affected portions, showing a line of change. If the area of changed sensibility is well marked, response to the compass test will be defective. In more severe cases the loss of sensibility to cotton wool may be absolute with borders as well defined as after complete division. When the injury is more severe impairment or loss of protopathic sensibility



A B

FIG. 8.—A, paralysis of the adductor of the thumb due to lesion of the eighth cervical, and hypertonia of the interossei due to irritation of the first dorsal. B, "Scissors hand" due to hypertonia in the median due to incomplete section with neuroma and to hypertonia in the ulnar. (Laignel-Lavastine et Paul Courbon.)

results and the sensory loss may resemble closely that seen after complete division. Sherren has shown that, contrary to the usual teaching, the motor loss in incomplete division is not more than the sensory loss. There is usually an absence of pain and of formication and the trophic disturbances may be partial and not persisting. Cyanosis and edema may be present.

Surgical liberation is advisable, but a diagnosis can be reached only after several weeks. The amount of restoration will vary considerably, depending upon the number and quality of fibres cut off. Simple liberation here is the proper surgical procedure. Resection and suture are advisable only when the syndrome approaches closely that of complete interruption and where the compressing stricture has rendered the nerve a fibrous sclerotic band.

3. *The syndrome of irritation.*—Great variability and diversity characterize this syndrome. The chief features are a type of neuritis which may be severe, mild, or, as in the causalgia type originally described by Weir Mitchell, evidenced by severe and violent pains occurring in paroxysms. In a mixed nerve this syndrome may be accompanied by paralyses.

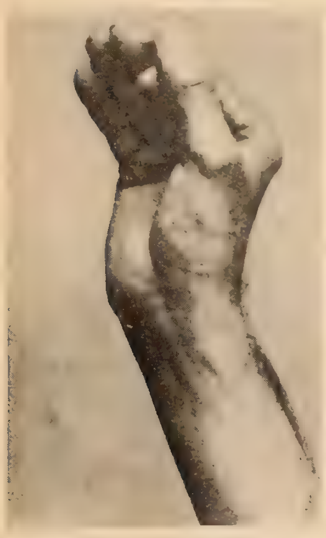


FIG. 9.—"Writer's hand" due to reflex and psychogenic contractures (Laignel-Lavastine et Paul Courbon.)

In the severe neuritic types incomplete paralyses are nearly always present. A certain amount of movement is possible and the reaction of degeneration is often variable or partial. Muscle tonus is usually preserved or even hypertonus is present with fibrous interstitial changes apparently due to autonomic overactivity, possibly from greater loss of sympathetic unmyelinated fibres by the lesion. This apparent disturbance in the reciprocal activity of the autonomic and sympathetic fibres may also cause the marked trophic disturbances in this syndrome, and also the vegetative fibre involvement account for the severe and deep pains.

These pains are the "devil's own," as the patients have described them to me. They are not only spontaneous with burning, sticking, and tearing proclivities, but they are especially vehement on motion and accompanying muscle contraction, the influence of heat or cold or even the slightest contacts. The nerve trunks are specially painful, as is pressure upon the muscles, showing vegetative nerve fibre involvement or deep sensibility.

Cutaneous hyperesthesia is usually present, and even in the presence of an anesthetic touch or pin prick may be very painful, badly localized, diffuse, irradiating, and persisting for some time. Tinal has spoken of this cutaneous hyperesthesia as almost pathognomonic of the syndrome of irritation.

The trophic disturbances are characteristic and most grave in this syndrome. The more usual signs of hypertrichosis, cyanosis, and edema are present, added to and aggravated by dryness of the skin with fibrous infiltrations—autonomic types?—or eczematous or ulceration with profuse acid perspiration which makes large fetid and running areas—sympathicotonic type. The fibrous infiltrations cause retraction of the tendons and aponeuroses with immobility of the joints. The nails become incurved, ridged, crevassed, cracked, or irregularly marked. The vegetative nerve disturbances may cause profound bony changes (8).

Notwithstanding the gravity of these neuritic types of the irritation syndrome they show a marked tendency toward spontaneous recovery. This is usually ushered in by the appearance of marked formication and tingling which takes the place, more or less gradually, of the severe and almost intolerable pains. The paralyses also begin to clear up, but there is a decided tendency for the vegetative lesion effects to persist for months, even years. Thus the fibrous retractions of the tendons and muscle masses, the tendon fixations, the joint anchyloses and the bony changes only repair very slowly and after continued mechanotherapy.

The liberation of the nerve is frequently called for surgically, which is often followed by a prompt and steadily continuing reparation, particularly of the pains and the pareses. Considerable time should be given for the reparation process, but if specially obstinate dissection, resection, and suture may be advisable.

Attenuated neuritic types, simple neuralgic forms, and the severe causalgias of Weir Mitchell belong in this group also. Of the upper extremity nerves the median is particularly prone to causalgia. This rarely comes on until three or four weeks after the initial injury. This clinical type is so well described in our literature that it requires little discussion. The chief new feature brought out is that it is chiefly conditioned by a trauma of the deep sensibility—vegetative nerve—fibres of the periarterial plexuses. Liberation of the nerve fibre rarely remedies the situation and special surgical procedures which are to reach the vegetative plexuses are being devised. The results obtained are still *sub judice* (9).

The syndrome of regeneration requires extended discussion, as do also the various dissociation types as well as that known as ascending neuritis. This will be discussed in a later article, as will also the special signs of the separate peripheral nerve lesions of the upper extremities.

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64 WEST FIFTY-SIXTH STREET.

American Red Cross Base Hospitals

Thirty-eight Units Organized—Six Already Abroad—Four on the Eve of Departure—Organized and Equipped by Private Funds—Surgeons Enrolled as Army Officers—A Million Five Hundred Thousand Dollars Spent for Equipment

SIX base hospital units, each of 500 beds, organized under the auspices of the American Red Cross, have been formed and they have sailed for France, namely: No. 2, organized at the Presbyterian Hospital, New York city; No. 4, Lakeside Hospital Cleveland; No. 5, Harvard University, Boston; No. 10, Pennsylvania Hospital, Philadelphia; No. 12, Northwestern University Medical School, Chicago, and No. 21, Washington University Medical School, St. Louis. Four additional base hospitals, similarly organized, are ready and are under orders to sail, namely: No. 6, Massachusetts General Hospital, Boston; No. 15, Roosevelt Hospital, New York city; No. 17, Harper Hospital, Detroit, and No. 18, Johns Hopkins Hospital, Baltimore. Twenty-eight more are in process of organization.

That these hospitals were brought to such a state of organization and equipment in so short a time that six are already in Europe or on the way there and four are ready to sail, is due largely to the efforts of Colonel Jefferson R. Kean, of the Medical Corps, U. S. Army, general director of military relief of the American Red Cross. Colonel Kean has long foreseen the necessity of being able to place a large number of base hospitals in service as soon as practicable after the outbreak of a war, and he has been making plans for several years to meet the demands expeditiously for hospital facilities for troops.

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Colonel Jefferson R. Kean, in the centre, and his two aides, Major R. M. Kirby-Smith and Major C. H. Connor, who aided in raising the $100,000,000 Red Cross fund.

It would naturally be supposed that the work of organizing and placing base hospitals in service would come directly under the medical department of the army and that the expenses of equipment, etc., would be met from Government funds. However, in the present instance, as the army did not have sufficient funds for the purpose and as the emergency permitted of no delay, the Red Cross undertook to meet the needs. The expense of equipping, outfitting, and otherwise making the base hospitals ready for service is being met from funds contributed from private sources for the purpose through the American Red Cross, and the hospitals are placed in condition for use and turned over to the army when organized practically without expense to the Government.

The Red Cross base hospitals are being organized at certain large civil hospitals and medical schools of recognized standing. They are composed of doctors and nurses who are accustomed to work together and already have the spirit of unity and organization. The first requirement for the organization of a base hospital is a parent institution, either a large civil hospital or a medical school, which can furnish the large professional staff and still have left a sufficient staff to carry on the work of the parent institution. Another requisite is to find the member of this staff who by seniority and professional and personal standing, is a leader who can successfully organize the base hospital.

The funds for equipping the hospitals, besides coming from wealthy friends of the parent institutions, are also raised through local Red Cross chapters, which should be strong enough in each case to contribute $25,000 and also to furnish through its committees of women the hospital linen, hospital garments, and surgical dressings required. The complete equipment of a base hospital costs from $40,000 to $60,000.

As soon as a base hospital is taken over by the army, an officer of the Medical Corps of the regular army is assigned as commanding officer and one is detailed as adjutant, an officer of the Quartermaster Corps or Quartermaster Officers' Reserve Corps is detailed as quartermaster, the members of the professional staff enter the service as members of the Medical Officers' Reserve Corps, and in the case of dentists as members of the Dental Officers' Reserve Corps. The Government, of course, pays the officers the salaries pertaining to their rank, and the salaries of the nurses and other civilian employees of the hospital.

Officers of the reserve corps receive the same pay as prescribed for corresponding grades in the regular army, which for the first five years of service is as follows: major, $3,000 a year; captain, $2,400; and first lieutenant, $2,000. Pay is increased at the rate of ten per cent. for every five year period after the first. Nurses and reserve nurses are paid at the rate of $50 a month for the first three years of service, $55 for the second three years, $60 for the third three years, and $65 after nine years of service, and they are allowed an increase of $10 a month while on foreign service.

The service of the rescue and care of sick and wounded of armies is divided into three zones: The first is called the service of the front and extends from the line of battle back to the field and evacuation hospitals. This zone is operated by the medical service of the army, and the Red Cross organizations do not usually take part in it. The second zone is that of the military base to which wounded are brought from the first zone and where they first meet the comforts and facilities of a real hospital which has good beds, trained women nurses, and a large professional staff. The third zone is that of the home country and the hospitals established at existing permanent institutions, which are called general hospitals.

Thus, the base hospital forms a link between the field hospital and the general hospital. Wounded rescued by the ambulance corps are taken to the field hospital, either directly or through first aid stations, and as soon as practicable they are sent back further to the base hospital. After a wounded man reaches the base hospital, one of three things happens to him: He is discharged as fit for service and is returned to his command; he is sent to a general hospital for further treatment; or he is sent home for recuperation or as disabled for further military service at the front.

The organization prescribed for a Red Cross base hospital is as follows: The director is assisted by an adjutant and a quartermaster, who are staff officers, a registrar, who may be an officer, noncommissioned officer, or specially qualified civilian, and such subordinate administrative personnel as may be necessary. When mustered into the United State service, the director will act as assistant to the commanding officer of the hospital, and in addition to his duty as assistant he will be chief of the surgical, medical, or laboratory service of the hospital. The surgical section includes a chief of the surgical service and eight staff surgeons, including an orthopedist and one or more specialists in the treatment of diseases of the eye, ear, nose, and throat. The medical section includes a chief of the medical service and five staff physicians, including a specialist on nervous and mental diseases. The laboratory section includes a chief and two assistants having competent knowledge of pathology, bacteriology, serology, and röntgenology. There are two dentists skilled in oral surgery; fifty nurses, members of the Red Cross nursing service, one of whom is chief nurse and one of whom may be a dietitian; twenty-five volunteer nurses' aides; 150 male administrative personnel, who may be members of the enlisted reserve corps of the army or may agree to enlist in the sanitary service when

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Staff of the Pennsylvania Base Hospital Unit, Base Hospital No. 10. From left to right: Major Matthew A. Delaney, Major Richard H. Harte, Major John H. Gibbon, Major George W. Norris, Captain Francis R. Packard, First Lieutenant Arthur H. Gerhard, Captain William J. Taylor, Captain H. L. Kidwell, First Lieutenant Henry K. Dillard, Captain Edward B. Krumbhaar, Captain Henry C. Earnshaw, First Lieutenant Joshua E. Sweet, First Lieutenant Norris W. Vaux, Captain Charles F. Mitchell.

called into active service; fifteen employees, and such Red Cross volunteers as may be authorized by the director general of military relief upon approval of the Secretary of War. The director and the chiefs of the surgical, medical, and laboratory sections have the rank, pay, and allowances of major, and the other members of the professional staffs the rank, pay, and allowances of captain or first lieutenant in the reserve corps.

The equipment of a base hospital includes a full supply of medicines such as are usually found in well equipped hospitals, stationery, motor ambulances, restraint apparatus, x ray apparatus, 500 standard medical department iron beds, 1,500 gray blankets, operating tables, surgical instruments, and cabinets therefor, an aspirating case, microscopes, ophthalmoscopes, 3,000 sheets, splints, stethoscopes, sutures, hypodermic syringes, clinical thermometers, tourniquets, venereal prophylaxis units, complete sets of surgical and dental instruments, etc.

The commissioned personnel of the six Red Cross base hospitals that have sailed is as follows, the officers being members of the Medical Officers' Reserve Corps except as stated: No. 2, Presbyterian Hospital, New York city: Major Lucius L. Hopwood, Medical Corps, U. S. Army, commanding; Captain Edward M. Welles, Jr., Medical Corps, U. S. Army, adjutant; Captain William B. O. Field, Quartermaster Officers' Reserve Corps, quartermaster; Majors George E. Brewer, director, chief of surgical service; Homer Swift, chief of medical staff; and William Darrach, chief of surgical staff; Captains Alwain M. Pappenheim, chief of laboratory section; Fordyce B. St. John and W. A. Woolsey, staff surgeons; John P. Peters, staff physician; Louis Casamajor, neurologist; Armitage Whitman, orthopedic surgeon; Willard B. Soper, staff physician; and A. R. Stevens, urologist; First Lieutenants Harold Neuhoff, surgical service; Gerhard H. Cocks, eye, nose, and throat; R. H. Kennedy, surgical service; Roderick V. Grace, registrar; Benjamin R. Allison, staff physician; Herbert H. Vermilye, pathologist; W. Barclay Parsons and William F. Cunningham, staff surgeons; and Austin Hobbs, röntgenologist; First Lieutenants Henry S. Dunning and E. H. Raymond, Dental Officers' Reserve Corps; with Rev. William R. Jelliffe as chaplain.

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Officers and nurses of Base Hospital No. 4, from Lakeside Hospital, Cleveland, being received at Buckingham Palace on May 23d by King George, Queen Mary, Princess Mary, and the Prince of Wales.

No. 4, Lakeside Hospital, Cleveland: Major Harry L. Gilchrist, Medical Corps, U.S. Army, commanding; Captain Arnold D. Tuttle, Medical Corps, U. S. Army, adjutant; Captain Charles Lohman, Quartermaster Officers' Reserve Corps, quartermaster; Major George W. Crile, director; Major Charles F. Hoover, chief of medical service; Major William E. Lower, chief of surgical service; Captains Henry L. Sanford, staff surgeon; Howard T. Karsner, chief of laboratory service; Allen Graham, staff surgeon; Gordon N. Morrill, orthopedist; Walter C. Hill, röntgenologist; Richard Dexter, medical service; First Lieutenants Thomas P. Shupe, staff surgeon; Walter B. Rogers, staff surgeon; Chester D. Christie, staff physician; Herbert B. Weirauch, staff physician; Harry V. Parysek, staff physician; Marion A. Blankenshorn, staff physician, and William R. Barney, registrar; Captains Harold K. Shawan, surgical service, and George M. Waldeck, ophthalmologist; First Lieutenant Arthur B. Eisenbrey, bacteriologist; Samuel Brock, Drury Hinton, and Benjamin I. Harrison, surgical service; and William S. Sykes, anesthetist; and First Lieutenants Allan MacLachlan and Bertram S. Rothwell, Dental Officers' Reserve Corps.

No. 5, Harvard University, Boston: Major Robert U. Patterson, Medical Corps, U. S. Army, commanding; Captain Daniel W. Harmon, Medical Corps, U. S. Army, adjutant; Major Harvey Cushing, director; Major Roger I. Lee, chief of medical section; Major Robert G. Osgood, chief of laboratory section; Captains Henry Lyman, Reginald Fitz, medical service; Edward B. Towne, surgical service; Walter B. Cannon, laboratory section; George S. Derby, ophthalmologist; Walter M. Boothby, surgery; Elliott Cutler, surgery; Charles Rund, medical service; Horace Binney, surgery; First Lieutenants Thomas S. Goethals and Samuel C. Harvey, surgical service; Henry Forbes, A. V. Brock, and John J. Morton; Frank R. Ober, orthopedist; George P. Denny, medical service; James L. Stoddard, laboratory section; Gilbert Horrax, surgical service; Oswald H. Robertson, medical service; and First Lieutenants William H. Potter and Harrison P. Parker, Dental Officers' Reserve Corps.

No. 10, Pennsylvania Hospital, Philadelphia: Major Matthew A. DeLaney, Medical Corps, U. S. Army, commanding; Captain Norman L. McDiarmid, medical corps, U. S. Army, adjutant; Captain Herbert L. Kidwell, Quartermaster Officers' Reserve Corps, quartermaster; Major Richard H. Harte, director; Major George W. Norris, chief of medical service; Major John H. Gibbon, chief of surgical service; Captains Charles F. Mitchell, surgical service; Henry C. Earnshaw, medical service; Edward B. Hodge, surgical service; Arthur Newlin, medical service; William T. Shoemaker, surgical service, ophthalmologist; J. E. Sweet, surgical service; William J. Taylor, surgical service; Francis R. Packard, surgical service; Edward B. Krumbhaar, assistant director, laboratory section; and Norris W. Vaux, surgical service; First Lieutenants Frank C. Knowles, surgical service; Arthur H. Gerhard, registrar; Henry K. Dillard, Jr., medical service; William Drayton, Jr., medical service; B. L. Frick, surgical service; John M. Cruice, laboratory section; Joseph H. Cloud, laboratory section, pathologist; and William B. Cadwalader, medical service, neurologist; and First Lieutenants Edwin Shoemaker and Charles S. Jack, Dental Officers' Reserve Corps; with Rev. Henry M. Jefferies as chaplain, and Helen Deltman as dietitian.

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Group of American doctors and nurses being entertained at New Southgate, England, by Sir Thomas Lipton (in center of group) on their way to the war zone.

No. 12, Northwestern University Medical School, Chicago: Major Christopher C. Collins, Medical Corps, U. S. Army, commanding; Captain James C. Magee, Medical Corps, U. S. Army, adjutant; Major Frederick A. Besley, director; Major Milton Mendel, chief of medical service, assistant director; Major Kellogg Speed, surgical service; Captains Walter L. Strandberg, Joseph J. Labovitz, and Payson L. Nusbaum, surgical, Martin R. Chase, medical, Cyril J. Glespel, Amos G. Sherman, Sumner L. Koch, Phillip M. Dale, and Walter H. Nadler; First Lieutenants William E. Harwood, röntgenologist, Albert H. Barnett, E. O. Ravn, C. W. Robertson, Edwin R. Talbot, Nicholas Krost, John Henkin, Robert W. Eaton, TenBroeck Bird, Hilliar L. Baker, and Marcus P. Neal, and First Lieutenants Stanley W. Clark and Charles W. Freeman, Dental Officers' Reserve Corps; with Rev. Jesse S. Dancey as chaplain.

No. 21, Washington University Medical School, St. Louis: Major James D. Fife, Medical Corps, U. S. Army, commanding; Captain Thomas C. Austin, Medical Corps, U. S. Army, adjutant; Captain Borden S. Veeder, Quartermaster Officers' Reserve Corps, quartermaster; Major Fred T. Murphy, director; Major Walter Fischel, chief of medical service; Major Malvern B. Clopton, chief of surgical section; Captain Eugene L. Opie, chief of laboratory section; Captains Lawrence T. Post, surgical staff; Sidney I. Schwab, medical staff; Meredith R. Johnston, registrar; Warren R. Rainey, surgical staff; Charles Herman Eyerman, medical staff; Harry G. Greditzer, surgical staff; Hugh McCullough, medical staff; and Nathaniel Allison; First Lieutenants Arthur W. Proetz, Roland F. Fisher, Allan M. Chesney, Frederick B. Abbott, and Philip P. Green, surgical staff, Allan M. Gilbert, Joseph W. Larimore, Levi H. Fuson, medical staff, and Howard H. Bell and Edwin C. Ernst, laboratory section; and First Lieutenants James A. Brown and Fred J. Brockman, Dental Officers' Reserve Corps; with Rev. Carrol M. Davis, as chaplain.

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Major James D. Heysinger, in command, and Major J. M. T. Finney, medical director, of Base Hospital No. 18, Johns Hopkins Hospital, in New York on their way to the front.

The commissioned personnel of the four Red Cross base hospitals that have completed organization and are under orders to sail is as follows, except as stated, the officers being members of the Medical Officers' Reserve Corps: No. 6, Massachusetts General Hospital, Boston: Major Frederic Augustus Washburn, commanding officer and director; Major Richard Clarke Cabot, chief of medical service; Major Lincoln Davis, chief of surgical service; Captains Roger Kinnicutt, bacteriologist, Zabdiel Boylston Adams, orthopedist, William Jason Mixter and Beth Vincent, surgical, Edward L. Oliver, Richard F. O'Neill, William L. Moss, Adelbert S. Merrill, and Henry Chase Marble; First Lieutenants Harold Grant Tobey, laryngologist; George Clymer, neurologist and alienist; Richard Augustus Hatch, oculist; Wade Stanley Wright and James Howard Means, medical section; George Adams Leland, Jr., surgical; Frederick C. Irving, DeWitt S. Clark, Joseph C. Aub, Alfred L. Binger, and Paul Dudley White; and First Lieutenants William H. Sherburns and William N. Gullifer, Dental Officers' Reserve Corps; with Rev. Henry Knox Sherrill as chaplain.

No. 15, Roosevelt Hospital, New York city: Major Haywood S. Hansell, Medical Corps, U. S. Army, commanding; Captain John H. Trinder, Medical Corps, U. S. Army, adjutant; Captain Henry Ward, Quartermaster Officers' Reserve Corps, quartermaster; Major Charles H. Peck, director; Major James I. Russell, chief of surgical service; Major Rolfe Floyd, chief of medical service; Captain Calvin B. Coulter, chief of laboratory section; Captains Alfred Stillman, Edward F. Kilbane, Gouverneur M. Phelps, Clarence A. McWilliams, and William C. White, surgical section; Captains Harold Barclay and Henry F. James, medical section; Captain Joseph Steiner, röntgenologist; First Lieutenants Henry W. Cave, John E. Williams, Augustus Street, John H. Carlisle, surgical section; Alexander T. Martin and Thomas C. Peightel, medical section; Robert T. Buckley, laryngologist and aurist; Lewis S. Booth, anesthetist; W. B. Hetzel, neurologist; and Ralph A. Hurd, pathologist; and First Lieutenants J. C. Vandervoort and John R. Morrill, Jr., Dental Officers' Reserve Corps; with Rev. Francis B. Barnett as chaplain.

No. 17, Harper Hospital, Detroit: Major Angus McLean, director; Major Preston M. Hickey, chief of laboratory service; Major Henry N. Torrey, chief of surgical service; Captains Roland Parmenter; Lewis J. Hirschman; William E. Spitzley; Alexander Sterling; John C. Dodds, surgical service; George E. McKean, medical service; Robert Owen, bacteriologist, and Walter D. Ford; First Lieutenants Herbert M. Rich, medical service, and Fred C. Buesser, E. J. Gregory, James Breakey, L. L. Belt, C. B. Lockwood, Hampton P. Cushman, Edward J. O'Brien, Duncan A. Campbell, and Alfred D. LaFerte; and First Lieutenants William T. Shannon and Earl C. Barkley, Dental Officers' Reserve Corps; with Rev. Max H. Wallace as chaplain.

No. 18, Johns Hopkins Hospital, Baltimore: Major James B. Heysinger, medical corps, U. S. Army, commanding; Major John M. T. Finney, director; Major Thomas R. Boggs, chief of laboratory service; Major George Walker, adjutant; Captains Eveleth E. Bridgman, medical service; William S. Baer, orthopedist; William A. Fisher, surgical service—brain surgery; Bertram M. Bernheim, surgical service; George J. Heuer, surgical service—brain surgery; Clyde G. Guthrie; Walter A. Baetjer, registrar; First Lieutenants Henry N. Shaw and Lloyd B. Whitman, surgical; John H. King, Verne R. Mason, and William M. Happ, medical service; Charles A. Waters, röntgenologist; and L. Wharton, H. B. Eaton, Benjamin S. Kline, V. P. W. Sydenstricker, and H. R. Slack; and First Lieutenants Lucien Brun and Levius Lankford, Dental Officers' Reserve Corps; with Rev. John McDowell as chaplain.

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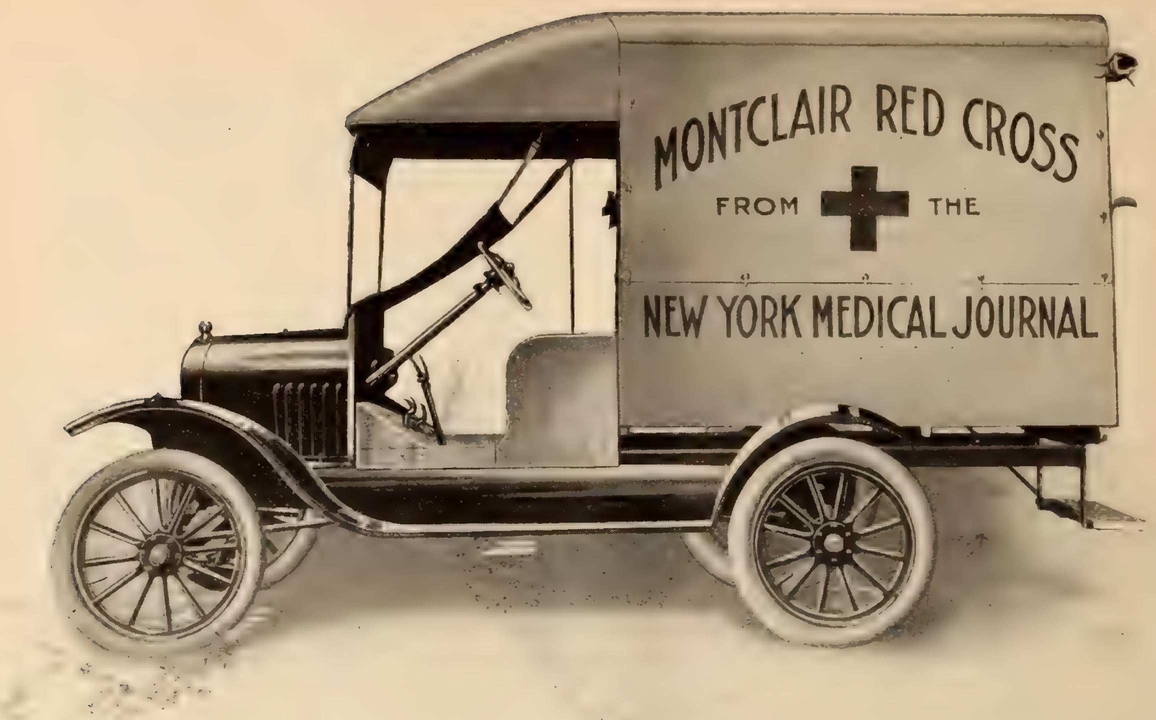
Medical Staff of the Johns Hopkins Base Hospital Unit, Base Hospital No. 18. Front row, reading from left to right: Captain W. A. Fisher, Major T. R. Boggs, Major J. M. T. Finney, Major Heysinger, U. S. A., director, Major Winford Smith, Major George Walker, Captain W. S. Baer. Second row, reading from left to right: Captain B. M. Bernheim, Captain Harvey Stone, Captain W. A. Baetjer, Captain E. W. Bridgman, Captain C. G. Guthrie, First Lieutenant G. J. Heuer, First Lieutenant Lucien Brun (dentist), First Lieutenant C. A. Waters. Third row, reading from left to right: First Lieutenant B. Kline. First Lieutenant V. P. W. Sydenstricker, First Lieutenant J. H. King, First Lieutenant H. B. Eaton, First Lieutenant W. M. Happ, First Lieutenant V. R. Mason, First Lieutenant H. N. Shaw, First Lieutenant L. Lankford (dentist), First Lieutenant H. R. Slack, First Lieutenant L. Whitham.

The twenty-eight Red Cross base hospitals now in process of organization are the following, the name in each case being that of the director: No. 1, Bellevue Hospital, New York, Dr. E. L. Keyes, Jr.; No. 3, Mt. Sinai Hospital, New York, Dr. N. E. Brill; No. 7, Boston City Hospital, Dr. J. J. Dowling; No. 8, New York Post-Graduate Hospital, Dr. Samuel Lloyd; No. 9, New York Hospital, New York, Dr. C. L. Gibson; No. 11, St. Joseph, St. Mary, and Augustine Hospital, Chicago, Dr. A. J. Ochsner; No. 13, Presbyterian and County Hospitals, Chicago, Dr. Dean D. Lewis; No. 14, St. Luke and Mt. Reese Hospitals, Chicago, Dr. L. L. McArthur; No. 16, German Hospital, New York city, Dr. Fred Kammerer; No. 19, Rochester General Hospital, Rochester, N. Y., Dr. John M. Swan; No. 20, University of Pennsylvania Hospital, Philadelphia, Dr. John B. Carnett; No. 22, Milwaukee County Hospital, Milwaukee, Dr. C. A. Evans; No. 23, Buffalo General Hospital, Buffalo, Dr. Marshall Clinton; No. 24, Tulane University, New Orleans, Major John B. Eliott; No. 25, Cincinnati General Hospital, Cincinnati, Dr. William Gillespie; No. 26, State University of Minnesota, Minneapolis, Dr. Arthur A. Law; No. 27, University of Pittsburgh Medical School, Dr. R. T. Miller; No. 28, Christian Church Hospital, Kansas City, Dr. J. F. Binnie; No. 29, City and County Hospital, Denver, Dr. Henry Sewall; No. 30, University of California, San Francisco; No. 31, Youngstown Hospital, Youngstown, Ohio, Dr. C. R. Clark; No. 32, City Hospital, Indianapolis, Dr. E. D. Clark; No. 33, Albany Hospital and Medical College, Dr. A. W. Elting; No. 34, Episcopal Hospital, Philadelphia, Dr. A. P. C. Ashhurst; No. 35, Good Samaritan Hospital, Los Angeles, Dr. J. J. A. Van Kaathoven; No. 36, College of Medicine, Detroit. Dr. B. R. Shurly; No. 37, Kings County Hospital, Brooklyn, Dr. E. H. Fiske; and No. 38, Jefferson Medical College.



New York Medical Journal Ambulance

The A. R. Elliott Publishing Company, Through the Montclair, New Jersey, Chapter of the American Red Cross, Presents a Fully Equipped Ambulance for the French Front

At the meeting of the Montclair, New Jersey, Chapter of the American Red Cross, held at Montclair on Tuesday evening, June 19th, $317,000 was raised for the American Red Cross. This was probably the largest amount of money subscribed for the Red Cross by any city in the United States of less than 25,000 inhabitants, and averaged about $13 per capita for every man, woman, and child in the town.

At this meeting, the A. R. Elliott Publishing Company presented to the Montclair, New Jersey, Chapter of the American Red Cross a completely equipped ambulance of a type which is almost exclusively used on the battle front in France. An illustration of the ambulance appears herewith. In presenting this ambulance, the publishers of the NEW YORK MEDICAL JOURNAL feel that no phase of the world war appeals so strongly to them as does that of the medical department. The publishers of the JOURNAL for the past twenty years have been brought so closely in contact with the medical profession that they feel they are able to appreciate the lofty ideals and the unselfish devotion to duty which animates its members.

The publishers are glad of this opportunity to give tangible evidence of their desire to aid in the emergency which confronts this Nation and its allies. May this ambulance go forward on its mission for humanity to the tune of the Battle Hymn of the Republic and to the chorus of the song the boys sang who have just landed on the shores of France. We read that as they marched off the transports the bands were playing the new marching song of the army. The chorus goes:

Good-bye, dear old Yankee land. Hello, France!
We've sailed across the ocean to make the Germans dance.
They have tried to rule the world with military stuff,
But we come from a country that never takes a bluff.

Correspondence

NEWS FROM WASHINGTON.

Promotion for Medical Officers—Pending Legislation on Military Medicine—Suggestion for Identification of Mentally Deficient Candidates for Enlistment—Hospital and Ambulance Ships—Criticism of Accommodations for Service Officials at Cavite, P. I.—Bureau of Sanitation Established.

WASHINGTON, *July 3, 1917.*

Physicians serving as members of the army medical reserve corps have been evincing considerable interest in the policy of the surgeon general of the army as to promotion of those on active duty at training camps, recruiting stations, and other places. It has been determined generally that after a reasonable period equivalent to not less than ninety days, the claims of these officers to consideration for advancement might be entertained. However, no hard and fast rule has been adopted, and much will depend on circumstances and individual capacity and fitness.

Prior to enactment of the national defense act of June 6, 1916, all members of the medical reserve corps had the rank, pay, and allowances of first lieutenant, and while members of that corps could go no higher. That act established in place of the medical reserve corps the medical officers' reserve corps, in which physicians could be appointed to the grades of major and captain, as well as to that of first lieutenant. No appointees holding rank above that of first lieutenant, however, were called into active service prior to the declaration of war, but since then a number of majors and captains have been placed on duty. Most of the members of the reserve corps hold the rank of first lieutenant, but a number of prominent physicians and surgeons, because of their attainments, have been appointed majors and captains, and first lieutenants who make good will be advanced from time to time in the future. Much will depend upon the recommendations of commanding officers in individual cases.

A bill has been introduced and now is pending affecting the promotion of lieutenants in the medical corps of the regular army and of the national guard. The bill provides that such lieutenants shall be eligible to promotion as captains upon such examination as may be prescribed by the Secretary of War. The bill has passed the House. The object of the bill is to amend the present law so as to make a lieutenant in the regular medical corps eligible to promotion to captain during the existing emergency without the requirement of five years' previous service as now prescribed. Under the construction placed upon existing law, it is impossible for a first lieutenant of the medical corps of the national guard to be promoted to captain during the next four years. Another bill now pending affecting medical officers of the army is one that provides that all premedical and medical students now in attendance, or who may hereafter be in attendance, at the various reserve officers' training camps shall, upon expressing a preference, be placed in a medical school to be designated by the surgeon general of the army in which they shall complete their medical studies and thereafter serve in the rank for which they shall have qualified.

The identification of the mentally deficient among candidates for enlistment in the military and naval establishments has been receiving much attention from medical officers in order that such candidates may be prevented from entering the services and future trouble with them avoided. Lately medical officers have received some valuable suggestions from Dr. Henry H. Goddard, director of psychological research of the laboratory of the Vineland Training School, who has suggested a method of individual examination that promises to be effective in detecting those that would prove temperamentally unfit for service. Dr. Goddard says: "The ideal procedure would seem to be to have a psychological examiner at every recruiting station. This is manifestly impossible. There are not enough psychologists in the country and not every psychologist is a practical examiner for medical defect. There are,

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Cornell Ambulance Corps just before sailing for Europe on the French liner *Chicago*.

it is true, quite a number of teachers who have been trained to administer certain tests and who could probably be trained to do all that would be necessary in the way of testing recruits. But even if we took all available persons there would still be too few to supply all of the recruiting stations. The next question is, Can a set of tests or system of examination be prepared which can be placed in the hands of the recruiting officers and used by them with satisfactory results? I have no doubt that this can be done, though with somewhat variable degrees of satisfaction. There is, however, an intermediate procedure which might possibly prove feasible and, if so, would undoubtedly be far more satisfactory. That would be to have the people who have been trained to make these examinations employed as inspectors or instructors of the recruiting officers. They could then go from one recruiting station to another and in a very short time give the officer such help or suggestions as he might need to give him confidence in his own work, to inform him where he had not comprehended the method, or to correct such errors as he might unwittingly have fallen into. This would be a matter of a few hours, probably a half a day at most, at any one station."

The Navy Department has just arranged for the acquisition of two vessels for conversion into hospital ships to operate in the Atlantic in conjunction with the U. S. S. *Solace*. The work of conversion will be pushed forward as rapidly as possible, producing ships that will be fully equipped in all particulars with the latest facilities for taking care of the sick and wounded of the navy. The dire necessity for ambulance ships continues. The navy possesses now only one of that type, and that donated by a civilian. The American Red Cross probably will provide three, possibly four, ambulance ships, small swift craft that will be utilized in conveying the disabled at sea to the nearest port for admission to hospitals on shore. Under direction of Surgeon General Braisted, the hospital facilities of the navy are being augmented so as to provide a total of 10,000 beds. The larger hospitals, such as that at Norfolk, will each have accommodations for 1,000 patients, and the smaller ones, such as those at New Orleans and Key West, for 250 patients. Of course, the facilities of civil institutions will be used at times when the naval hospitals cannot take care of all the patients under treatment. Surgeon R. C. Holcomb, principal assistant in the naval bureau of medicine and surgery, following inspection of the naval hospitals in the northern section of the country, is inspecting those in the south, including Charleston, Key West, Pensacola, New Orleans, and Gulfport.

There has come to the bureau of medicine and surgery of the Navy Department from Passed Assistant Surgeon W. L. Mann, of the navy, a report criticizing, from a hygienic standpoint, the accommodations available to service people stationed at the navy yard, Cavite, P. I. It appears that most of the present habitations were built by the Spanish officials and are located in the industrial portion of the yard, where the noise from the shops creates nuisance to the occupants. Doctor Mann says:

"To withstand successfully the enervating effects of a tour of duty lasting thirty to thirty-six months in the tropics, comfortable and hygienic quarters are indispensable. It appears, from an economical standpoint, that it would be cheaper for the Government to provide sufficient quarters than to pay commutation for the same. When the question of improvement in health, contentment, and efficiency of the personnel is considered, the Government would unquestionably obtain good returns from any expenditure on quarters. Some of the quarters recently built are not considered adapted to this climate. It is recommended that the Navy Department appoint a board to consider carefully architectural plans and adopt a standard type of construction adapted to the demands of tropical conditions. It appears that concrete double quarters, like those erected by the army at Corregidor Island, would be desirable. It is estimated that wooden structures cost about ten per cent. for maintenance and repairs a year due to climatic conditions and tropical insects —white ants. Notwithstanding a slight initial increase of cost, therefore, it would seem that the concrete buildings of this type would prove more economical in the end, as well as cooler and more sanitary. These remarks are occasioned by my noting the superiority, for tropical conditions, of the structures built by foreigners in China over the usual type seen in the Philippines."

The new bureau of sanitation, with Surgeon J. S. Taylor, of the navy, in charge, and Passed Assistant Surgeon Joseph R. Taylor, of the navy, as assistant, that has been created in the bureau of medicine and surgery of the navy, to look after the increased volume of sanitary statistics and take care of sanitation generally in the naval service, has had attached a number of members of the Public Health Service. Dr. Hugh S. Cummings and Dr. C. Fox have been assigned to the division at Washington. Passed Assistant Surgeon W. M. Bryan, of the marine hospital, Chelsea, Mass., and Surgeon A. M. Stimson, of the bureau of hygiene and labor, Washington, will be stationed at Newport, R. I. Among the other members of the Public Health Service to be detailed to the division are Senior Surgeon Fairfax Irwin, Philadelphia; Surgeon G. B. Young, Norfolk; Senior Surgeon W. J. Pettus, Charleston, S. C.; Senior Surgeon G. M. Guiteras, marine hospital, Key West, Fla.; Surgeon M. J. White, St. Louis, to be stationed at New Orleans; Senior Surgeon L. G. Williams, marine hospital, San Francisco, and Surgeon R. J. Lloyd, Seattle, Wash.

The Red Cross War Relief Fund.—Latest tabulations by the American Red Cross show that Delaware led all States in per capita contributions to the Red Cross War Fund, with a rate of $5. Figures for other States follow: Connecticut, $2.05; Ohio, $1.81; Massachusetts, $1.50; Rhode Island, $1.43; District of Columbia, $1.37; New York (outside of New York City), $1.28; Colorado, $1.27; Michigan, $1.18; Pennsylvania, $1.14; California, $1.12; New Jersey, $1.10; Missouri, 95c.; Montana, 94c.; Illinois, 88c.; New Hampshire, 84c.; Oregon, 82c.; Maine, 75c.; Utah, 73c.; Idaho, 71c.; Indiana, 49c.; Wisconsin, 48c.; Kansas, 48c.; Mississippi, 47c.; Maryland, 41c.; Louisiana, 40c.; Iowa, 40c.; Tennessee, 39c.; Vermont, 39c.; Arizona, 38c.; West Virginia, 36c.; Virginia, 34c.; Oklahoma, 27c.; Florida, 25c.; Texas, 25c.; Nevada, 21c.; Kentucky, 16c.; Arkansas, 15c.; Alabama, 15c.; North Carolina, 12c.; Georgia, 12c.; North Dakota, 11c.; New Mexico, 10c.; South Dakota, 9c., and Hawaii, 3c.

Editorial Notes and Comments

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EDITORS
CHARLES E. DE M. SAJOUS, M.D., LL.D., Sc. D.
Philadelphia,
SMITH ELY JELLIFFE, A. M., M. D., Ph. D.,
New York.

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A DOCTOR NEEDED IN THE CABINET.

Why is there still a depressing lack in the medical forces needed for the war service? Why is the President with his authority and Congress with its ample means waiting to equip a strong medical service which is not forthcoming? These are practical burning questions of serious import in the face of our oncoming national task.

Not the least of the task of preparing for the actual work of war and of carrying it forward falls upon the medical profession. Their share is the tediousness of slow preparation of the camp, the heavy ennui of camp life, the feverish activity in the thick of the fray. They bring up the rear after battle, and even when war is done their work continues. To them alone fall the crucial tasks of the examination for fitness of service, the making and keeping fit through camp hygiene and personal medical attention, and the preservation of health and the care of the wounded at the front, which will be followed by a long constructive period of responsibility for the men disabled in body and mind when the war is over. To all of this the medical profession is awake as never before. The enormous resources of knowledge, technic, and freedom of opportunity which modern science and modern society have put at their disposal give to them such a comprehensive outlook upon their task. They are eager to get to work, eager to hand all this to the service of their Government in its great undertaking. And yet there is something lacking in the means of bringing this willing force into organized activity.

Have we not to look into an attitude which has made such a condition a foregone conclusion? Too long the Government has shared the popular or rather the very egoistic attitude toward medical men. It has held itself aloof from acknowledgment of the immeasurable constructive part which this great profession should have long been taking in national affairs. The men of the profession have made themselves felt at least individually and silently, but they have been restricted as they are now because the Government has been loath to admit them to a distinctive and authoritative voice in the affairs of health. It has excluded them from the important affairs which it has apparently considered of too great moment in its own eyes for the medical man. Therefore now in its stress and need, when the doctor is indispensable in the largest way, it is aghast at the inability to command the forces of the medical profession as it can its military force. It is helpless, and this, too, from its own undoing.

The Government, like each individual of this free land to whom it is responsible and whom it represents, must awake and arouse itself at once to consider the ancient, egoistic point of view from which medicine and its service are approached. So long as the individual is well and the Government thrives in soundness and prosperity, almost anything is good enough for the doctor. Let him go his way quietly and keep his hands off important nationwide affairs. A selfsufficient attitude which arises from an inner, mostly unconscious assertion of selfsecurity and superiority, of which we hardly allow ourselves to be aware, spurns the doctor. No exhibition of weakness will permit such a one and such a governing body to admit that weakness, incapability, unsoundness which the seeking of medical aid would imply. Let, however, the individual fall ill, let the wounds and savage mutilation of war and its violent upheavals attack the nation, and the sense of need, the other side of our yet childlike nature, cries out for help, and cannot understand why the service it has too scornfully overlooked is not at its hand in fully equipped available force.

Even then, Nicodemus like, it creeps to the source of aid at night, to learn wisdom and gain the needed support. Let the Government, however, come to realize this its obligation and its opportunity to enlist itself with the medical service and the medical profession to its aid, and it will find willing accord and eagerness to enter into the greater service which other branches of work already enjoy. It will find this great body of men ready on their part to be enlisted with the Government.

How can men volunteer under such lack of organized recognition? Who is responsible for their services, the offering of them or the getting of them into line for the best effectual work of which such a body of trained men stand ready, waiting for the directed opportunity to serve their country and the greater humanity? When the Government comes forward with an authority which it alone can put into the hands of the medical service, as of a body to be trusted and to be given opportunity fitted to the skill and training and intense humanitarianism which long experience has ingrained within them, then results will follow. Then enlistments will be definite and directed, responsibility will be shouldered by those to whom it belongs. There will be no lack of sober spirit on the part of the medical men to accept from their Government this responsibility as at last rightfully theirs, for no selfaggrandizement and glory, but for that service which they have long awaited suitable opportunity to offer. They are ready in the truest spirit of service, taught by the weakness and need that has always sought them out, even if it was by night, to devote themselves sincerely to the health and comfort of the fighting men and to the broader, more far reaching constructive work in which theirs must be one of the larger part.

PHYSICAL DEFECTS OF RECRUITS FOR THE ARMY AND THE MILITIA.

While physical defects of applicants at recruiting stations during normal times may not attract the attention of any but the examiners, the results of the examinations now conducted, and especially those in the near future, should form the subject for serious consideration. We are practically on the eve of a national health census when we take stock of the potential health capital of that portion of the race that is reaching, or has already reached, its greatest physical development. It will constitute a sanitary index of the very basis of our social fabric.

The time is appropriate for judgment as to whether our public health activities, in the broadest sense of the word, have kept pace with our tremendous economic advance, and whether physicians have exerted the necessary influence in bringing up a healthy young generation that shall be able to meet all the exigencies of this crisis. We all feel certain that the gigantic struggle going on now is destined to lead to a "revaluation of all values" in every domain of human endeavor and to give birth to new ideas or to a radical revision of old conceptions. In this revaluation the vast domain of medicine shall have its proper share. At present, however, we are permitted to draw more or less definite conclusions from figures as presented by various military examiners, and thus formulate our own opinions as to the whys and wherefors of the physical defects in the recruits.

Dr. H. D. Orr and Dr. C. A. Costello (*American Journal of Public Health,* May, 1917) present in an illuminating way some highly interesting figures that may be a painful revelation to many of our readers whose attention may not have been hitherto directed to this subject. According to one of the authors, "Ordinarily two or three out of every four applicants for the regular army are rejected as physically unfit." So great and various are the demands of modern warfare, and so frequently are the soldiers exposed to hardships and privations, that none but those possessing a robust constitution and fully developed resistance to fatigue and disease can make up an efficient army. This high health standard should be coupled with a well balanced psychical outlook and the proper mentality, for the soldier of a free nation, while obeying implicitly the orders of his superior officer, should also be able to think for himself and have a clear conception of his duties.

Of the physical shortcomings among the recruits Doctor Costello puts the first and the commonest as defective vision; fully thirty-five per cent. of recruits are rejected on this account. The navy does not accept men who wear glasses, although it would seem that corrected low myopia may, and frequently does, give almost as good vision as emmetropia, which by the way is quite rare. Dr. Sydney Walker (*Ophthalmic Record,* May, 1917) states as a fact in two cases of his personal knowledge that myopes with uncorrected vision of 5/20 in both eyes and corrected vision of 20/20 plus are the best rifle shots in the Army and Navy. Another interesting point brought out by this author is that hypermetropes who pass the test while well and strong will, after some months of trench life, find vision greatly reduced in the inability to maintain accommodation. It has also been found that miners' nystagmus is exaggerated by military service; hence men with this tendency should be excused, especially in mining districts.

The second chief defect as a cause for rejection is flat feet. The author distinguishes between the physiological flat foot which is characteristic of some races, especially those who do not wear shoes, and which is often seen in members of the white race as well, and the foot in which the arch is broken down. A man with the latter condition is useless for active service either on land or at sea.

The third important cause for nonacceptance is defective teeth, which forms twenty-seven per cent. of all rejections. In this number are considered teeth that had been neglected beyond any possibility of repair. The minimum requirement is twenty sound teeth, of which there must be four opposing molars and four opposing incisors, with crown and bridge work counting as sound—a fair minimum, indeed! We are here reminded that in fifty-eight per cent. of the total number of school children examined were defective teeth found, and who can deny that if these defects had been corrected during the school age many healthy citizens and acceptable recruits would have been saved for the nation? The authors' surmise that defective teeth and defective vision frequently go together is fully in accord with the modern conception of focal infection, and should serve as a still further incentive for an early correction of dental defects.

These are the three most important causes for rejection of recruits. In addition, defective hearing and color blindness play important rôles. Color blindness is a great drawback in service at sea, where a mistake in signalling may have disastrous consequences. Hernia and hydrocele are common among recruits, and both are causes for permanent rejection. As the majority of these cases, as well as hemorrhoids, are operable, the applicants may again offer themselves after operation. Seventy-five per cent, of such men are enlisted in the navy.

COMPULSORY HEALTH INSURANCE.

At the recent meeting of the Section in Preventive Medicine and Public Health of the American Medical Association, compulsory social insurance was the topic of extended and impartial discussion. A resolution was adopted which reads as follows:

> Resolved, That after full discussion and careful consideration of the subject, the Section in Preventive Medicine and Public Health of the American Medical Association hereby instructs its delegate to the House of Delegates of the American Medical Association to oppose the scheme for compulsory health insurance in every way possible.

This action was taken after eighteen months of careful deliberation. This measure was proposed by the American Association for Labor Legislation, a group of individuals who represent not labor, but organized philanthropy and the social uplift. The Section in Preventive Medicine is composed of two groups. One of these consists of general practitioners and specialists who are thoroughly conversant with the topic of social insurance, many of them having a greater professional knowledge on the subject than have the proponents of the bill in question. These men were almost unanimous in favoring the resolution. There is also in the section a group of men employed on salary in public and other service, some of whom were found aligned against the resolution. The strong sentiment displayed in opposition to compulsory social insurance was directed against the principle of compulsion in social insurance as a general proposition and against the so called Mills bill in particular. Although the members of the section are physicians who have special knowledge and experience of social insurance, it has required no specialist to pass upon the demerits of the Mills bill. Careful reading of this bill by any thinking layman is enough to be convincing of its un-American bureaucratic tendencies and economic irresponsibility. It violates every principle of sound insurance. Insurance is essentially a matter of indemnification for loss. This bill, however, is a poorly conceived measure for poor relief, masquerading in the disguise of preventive medicine.

CASUALTIES IN THE MEDICAL CORPS.

Mark Twain's death having been reported, he corrected the rumor by a cable from London, reading, "Report of my death grossly exaggerated." The British medical officers are in much the same situation as Mark Twain, for grossly exaggerated reports have been circulated as to the deaths among them. One report in a Washington newspaper had it that over sixty thousand officers had been lost by the Royal Army Medical Corps. We took occasion to correct this in our issue of June 23d, on the authority of Colonel T. H. Goodwin, of the Royal Army Medical Corps. This correction is also mentioned in an address by Colonel Goodwin published in this issue. Colonel Goodwin cabled to the British War Office for definite information concerning the casualties among the British medical officers at the request of Captain Robert H. Halsey, of the Officers' Reserve Corps, Medical Section, and has received the following official statement by cable:

> The total casualties among medical officers of the British forces on the western front, from the commencement of the war until the present date, June 25th, are as follows: Killed, 195; died of sickness, 62; wounded, 704; total, 964. The total battle casualties (964 — 62) are 902.

As pointed out by Captain Halsey, in a letter to the NEW YORK MEDICAL JOURNAL, it appears that only about twenty per cent. of the injured died, the relation between the killed and injured being about the same as given in *The Medical Service in Campaign* by Straub. Since the total force of medical officers in the British Army is only 12,000, the absurdity of the statements hitherto circulated regarding casualties in the service are readily apparent. If the battle casualties, 902, are equally divided among the three years the war has lasted, we will have a casualty list of about 300 annually, out of a force of 12,000, or only about two and a half per cent. There is no disposition to detract from the valor of the medical department in publishing these figures and in directing attention to them. The fact that the casualties are less than previously reported in no wise diminishes the credit which is due to the physicians who are willing to take that risk in addition to the loss entailed in giving up their practices, but we wish to emphasize that the risk incurred by the medical officer is not at all so great as has been reported.

TYPHOID FORMS IN THE ITALIAN ARMY.

The occurrence of typhoid infection in the Italian army has given impetus to certain significant studies in regard to methods of diagnosis and to prophylaxis through vaccination. *Lo Sperimentale* (lxxi, Nos. 1, 2, May, 1917) has published reports of a number of these researches. The methods of research were those of blood culture, seroagglutination, and bacteriological examination of feces. The prevalence of a mixed type of agglutinative reaction bespeaks the necessity of a mixed antityphoid serum for vaccination. In certain investigations there was found a predominance of the infection caused by the paratyphoid bacillus A. Vaccination here included serum antagonistic to the typhoid bacillus and the paratyphoid B, but not that directed against paratyphoid A. Blood culture tests, serum diagnostic tests, and bacteriological examination revealed varying proportions of the paratyphoid bacilli A and B with other anomalous ones and of the typhoid bacillus. The agglutination test revealed the presence of A, B, and T in certain cases; in others of B and T; in others any one of these alone.

Agglutination did not manifest itself in the initial stages of the disease but later confirmed for the most part the bacteriological findings, which were positive from the first. In the more advanced stages of the disease, therefore, serum diagnosis is a valuable test. Blood culture and serum diagnosis recommend themselves likewise in the rapid work necessary during brief hospital visits and the limitation of facilities required for the more extensive work of bacteriological investigation.

In spite of the doubt cast over agglutination tests in regard to the findings of antibodies, the presence of agglutination has been found in a high percentage of those who have been vaccinated. Success in vaccination depends upon the strength of the solution, the regulation of the time of the injections, and some knowledge of the individual anamnesis. The careful attention to these points as well as the use of the mixed serum has brought better results in vaccination than were observed at the beginning of the war. Agglutination is still positive many months after vaccination.

The clinical effects of vaccination are evident in the mildness of the form of the disease which prevailed and the very low mortality. The course of the disease was usually three or four weeks and there was marked absence of complications and of relapse. Nor was there the extreme emaciation and weakness which usually follow the disease. The most serious cases were usually from the typhoid infection, sometimes from that of paratyphoid B. There was no marked nervous disturbance indicative of severe intoxication. The temperature ran usually a rather irregular course with marked remissions but without very great rise. In some cases the temperature fell gradually.

Infection was doubtless due to the condition of the soil and the water supply and was transmitted from station to station probably by contact, since the principal foci of infection were in adjacent regions. The prevalence of both the paratyphoid forms A and B are of etiological, and therefore prophylactic, importance. The form A has thus far been neglected in vaccination, but both this and the anomalous paratyphoid forms found in a certain number of reactions cannot be ignored.

EFFECT OF SUBMARINE DUTY ON THE CREW.

Little has been published regarding the effect of submarine duty on the crew, partly because of lack of knowledge on the subject and partly because the governments that have had the greatest experience in submarine work have purposely avoided giving publicity to such information that they may have. Therefore, the study of this subject made by Assistant Surgeon Walter W. Cress, U. S. N., which appeared in the June number of *The Military Surgeon,* will be read with much interest. Doctor Cress records here the observations made on board submarines at the naval station at Pearl Harbor in Hawaii. Some of the findings were rather a matter of surprise, as for instance the fact that the number of bacteria and moulds present in the air of submarines, while running awash and submerged, is less than is usually found in the air in dwellings and in battleships. He also found that the carbon dioxide present and the excessive heat while submerged are not so deleterious in their effects as is the high degree of humidity. Long continued service in submarines probably tends to increase the blood pressure and inhalation of the fumes of fuel oil may produce a mild form of albuminuria. One of the interesting and regrettable effects of submarine service is the production of partial deafness. At first the symptoms which manifest themselves on submergence disappear on coming to the surface, but after a few months a bilateral partial deafness results which does not yield to treatment.

TOBACCO IN THE TRENCHES.

Some of the clergymen of Los Angeles object to the distribution of tobacco among the soldiers at the front by the Red Cross Society. While the grounds for this objection are not stated in the newspaper reports they can easily be inferred. It is hardly likely that they will carry any weight with the Red Cross authorities. The intense nervous strain imposed by the conditions at the front in the present war requires that everything possible should be done to allay nervous irritation. Amusements for the men when relieved of duty at the immediate front are recognized as an important factor in preventing neuroses. Many of the men in the army are confirmed smokers, and to deny these men tobacco is to induce a degree of nervous irritation which will materially militate against their efficiency. It would be the height of folly, both from a medical and a military standpoint, to deny tobacco to the men at the front. Much to their credit, the women of Los Angeles who are prominent in relief work practically unanimously favor providing tobacco along with other comforts for men at the front.

ENGLISH HOSPITALITY TO AMERICAN MEDICAL OFFICERS.

The New York Medical Journal takes great pleasure in transmitting the cordial invitation of the Royal Society of Medicine to "the commissioned officers of all the naval and military services, when in London, to make free use of the Society's rooms, which include writing, conference, smoking, tea, and dressing rooms, and to use the library for reading and reference. They are also welcome to attend the meetings which are held for the reading of papers, clinical demonstrations, and for discussions." The secretary of the Society, Mr. J. W. Y. MacAlister, says: "Nothing would please us better than to see it [the house] crowded with our American friends." The acceptance of this hearty hospitality should be a great pleasure and privilege to American medical officers going abroad.

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News Items

Medical Officers Transferred from the Philippines.—The following named officers of the Medical Corps are relieved from further duty in the Philippine Department and will proceed to the United States on the first available transport: Major John L. Shepard, First Lieutenant Charles L. Gandy, First Lieutenant William W. Vaughan.

The Health of the Army.—Surgeon General Gorgas reports that the health of the army is normal. Few complaints of any kind have been received, and no outbreaks of infectious diseases have been reported.

Fourth of July Injuries.—A total of ninety-three cases, all of minor injuries, due to the Fourth of July celebrations, were treated in hospitals in Manhattan and the Bronx. A large majority of the patients were children hurt playing with firecrackers and toy pistols.

Quarantine Transfer Postponed.—The transfer of the Quarantine Station on Staten Island to Federal jurisdiction, which was scheduled to take place on July 1st, on payment by the United States of $1,395,275, has been postponed until more important matters have been got out of the way.

Knights of Columbus to Send an Ambulance Unit to France.—It is announced that the Knights of Columbus are preparing to send an ambulance unit to France. Ten ambulances, two motor trucks, and a touring car have been obtained, and members of the organization have volunteered their services to man the ambulances.

A Directory of Health Authorities.—A directory of the State and insular health authorities of the United States for the year 1917 appears in the June 29th issue of *Public Health Reports*, issued by the United States Public Health Service, Washington, D. C. The directory is compiled from data furnished by the respective State and insular health officers.

New Narcotic Law for New York.—Notice has been sent to physicians, dentists, druggists, and others handling or dealing in narcotic drugs, directing attention to the provisions of the new law which went into effect on July 1st. It is important that this notice should receive prompt attention, as failure to comply with the requirements of the law is punishable by fine and imprisonment.

The Rockefeller Institute War Hospital.—Dr. Alexis Carrel, who is now a major in the French Army Medical Corps, returned to New York on July 4th to take charge of the military hospital which is being constructed by the Rockefeller Institute for Medical Research, on the grounds of the institute at Sixty-sixth Street and Avenue A, New York. The hospital will be equipped with 100 beds, and demonstrations will be given of the surgical methods successfully applied in the military hospital at Compiègne, France.

Subcommittee on Tuberculosis Named by Council of National Defence.—Dr. Hermann M. Biggs, state commissioner of health of New York, is chairman of a subcommittee on tuberculosis appointed by the general medical board of the Council of National Defence. Other members of this special committee are: Dr. John W. Trask, of the United States Public Health Service; Dr. George T. Palmer, of Springfield, Ill.; Dr. Charles B. Grandy, of Newport News, Va.; Dr. E. R. Baldwin and Dr. Lawrason Brown, of Saranac, N. Y., and Mr. Homer Folks, of New York.

Niagara County Tuberculosis Hospital.—Final plans for the new Niagara county tuberculosis hospital have been sent to Albany for the approval of the State Department of Health. They provide for an administration building and two pavilions with a capacity of ninety-two beds. The estimated cost is $100,000. The old county hospital, which is to be made an annex of the tuberculosis hospital and be opened for patients pending the building of the tuberculosis hospital, has not yet been moved from the old county almshouse farm to the new hospital site.

Health of the Navy Reported Excellent.—Surgeon General Braisted has authorized this statement: "Reports and returns from all naval stations, including the fleets and various ships, both at home and abroad, indicate no unusual health conditions, and, in general, show that the health of the navy for the week is excellent. The epidemic diseases of various types that existed during the past few months have almost disappeared, most of the patients in the hospitals being convalescents awaiting final disposition, with here and there a few cases of this type marking the disappearing incidence of local infectious areas."

Assigned to Duty in Washington, D. C.—The following named officers of the Medical Reserve Corps are relieved from duty at the medical officers' training camp, Fort Benjamin Harrison, Ind., and will proceed to Washington, D. C., and report in person to the commandant, Army Medical School, Washington, D. C., for a course of instruction:

Captain Max A. Almy, First Lieutenants Herbert A. Brown, George S. Silliman, Linwood M. Gable, Harry H. Hammell, Thomas K. Davis, Francis T. Duffy, Fred S. Wright, Jesse L. McElroy, Frederick C. Smith, George H. Robinson, Charles H. Watt, Maurice S. Redmond, Pierre Bergeron, Gilbert S. Osincup, James H. Austin, William D. Anderson, Samuel H. Richman, Nathaniel P. Brooks, Paul S. Hill, Henry E. Keely, Samuel Miller, Charles W. Maxson, James L. Cobb, Charles C. Crouse, William T. Fenker, Rosewell T. Pettit.

Public Health Officers Detailed to Duty in Navy Department.—Surgeon General Braisted, of the United States Navy, has made the following assignments of the surgeons of the Public Health Service detailed for duty with the new Division of Sanitation, Bureau of Medicine and Surgery, Navy Department:

To headquarters, Washington, D. C., Surgeons Hugh Cumming and Carroll Fox; to naval districts—first, Passed Assistant Surgeon W. M. Bryan; second, Surgeon A. M. Stimson; fourth, Senior Surgeon Fairfax Irwin; fifth, Surgeon G. B. Young; sixth, Surgeon W. J. Pettus; seventh, Surgeon G. M. Guiteras; eighth, Surgeon M. J. White; ninth, tenth, and eleventh, Assistant Surgeon R. R. Spencer; twelfth, Senior Surgeon L. L. Williams; and thirteenth, Surgeon B. J. Lloyd.

Surgeon Cumming and Surgeon Fox have made a thorough inspection of the new Marine Corps camp being constructed at Quantico, Va.

A Sanitary Corps for the Army.—Secretary of War Baker has approved an order creating a sanitary corps under the Medical Department of the Army which will include various classes of experts in sanitation, bacteriology, sanitary engineering, and men skilled in the supply, transportation, storage, etc., in connection with medical department work. Creation of this corps will make possible taking over intact hospital and ambulance units already organized in France which, under the law, can not be incorporated in the Medical Corps, to which the law authorizes the appointment of only graduates in medicine. It will also make it possible for the Medical Corps to make use of other trained men not graduates in medicine. The total number of officers in the corps may be approximately equal to, but not exceed, one for every 1,000 of the total strength of the military forces authorized from time to time pursuant to law. There will be no grade in the sanitary corps above that of major and no officer of the Medical Corps will be appointed in the sanitary corps. The number in the several authorized grades of the sanitary corps will be proportional to the number authorized by law for the corresponding grades of the Medical Corps.

A Special Red Cross Commission to Russia.—Mr. Henry P. Davison, chairman of the Red Cross War Council, announces that a special commission, headed by Mr. William B. Thompson, of New York, and Dr. Frank S. Billings, will be sent to Russia to make an extensive study of the needs of the nation in order to determine how American relief on a large scale can be best administered in that country. The commission will carry with it a quantity of medical supplies and surgical instruments for distribution to hospitals, institutions, and Red Cross organizations in Russia. There will be twelve men in the commission, all experts in problems of medicine, public health, and social service. Mr. Raymond Robins, of Chicago; Dr. D. J. McCarthy, professor of public health at the University of Pennsylvania, and Dr. George C. Whipple, professor of sanitary engineering at Harvard University, will accompany the commission as its advisers on problems of sanitation and public health. To deal with general medical problems the commission will have the services of Prof. William S. Thayer, of Johns Hopkins University; Prof. C. E. A. Winslow, of Yale University, and Dr. Wilbur E. Post, of Chicago. The commission will also make a study of Russia's food supplies.

Red Cross War Council Appoints an Advisory Committee to Deal with Problems of Sanitation and Public Health.—Broad plans for dealing with the problems of sanitation and public health arising out of war conditions abroad and in the United States have been announced by the War Council of the American Red Cross.

To provide expert advice for the council in dealing with these problems, the war council also announced the appointment of a medical advisory committee, composed of leading sanitarians and public health authorities of the country.

The membership of this committee is as follows: Dr. Simon Flexner, director of the Rockefeller Institute, chairman; Dr. John W. Kerr, Assistant Surgeon General, United States Public Health Service; Dr. Herman M. Biggs, director of the New York State Department of Health; Dr. William H. Welch, dean of the School of Hygiene, Johns Hopkins University; Dr. Frank S. Billings, professor of medicine, University of Chicago; Dr. M. J. Rosenau, professor of preventive medicine, Harvard University; Mr. Wickliffe Rose, director of the International Health Board; Dr. Victor C. Vaughan, professor of hygiene, University of Michigan; Dr. Charles V. Chapin, department of health, Providence, R. I.; Dr. Richard P. Strong, professor of tropical medicine, Harvard University; Dr. Richard M. Pearce, professor of research medicine, University of Pennsylvania. Ex-officio members of the committee will be: Colonel Jefferson R. Kean, director general, department of military relief, and Dr. T. W. Richards, assistant director general, department of military relief. Permanent offices for the medical advisory committee will be opened in the Red Cross headquarters in Washington, in charge of Dr. Richard M. Pearce, who will act as secretary.

Under the plan of the war council its medical advisory committee will be prepared to cooperate, should the assistance of the Red Cross be desired, with the medical authorities of the Army and Navy in matters relating to the health of the armed forces of the United States both abroad and at home. Its services and advice will also be available in matters of health and sanitation which are outside state or federal aid.

The chief sphere of work of the medical advisory committee will be in connection with the plans of the Red Cross War Council for European War Relief. A Red Cross commission, headed by Major Grayson M. P. Murphy, is now abroad studying conditions in France and other allied countries. Headquarters for the commission are open in Paris, and on its reports the war council will direct American relief activities.

Two of the main problems confronting the commission, and which will at once engage the attention of the medical advisory committee, are the spread of tuberculosis and children's diseases in France. There are more than 800,000 cases of tuberculosis in France. Every resource of America must be enlisted in combating this plague, not merely for humanitarian motives but to protect the health of American troops abroad.

Additional medical problems have been brought about because of the thousands of war orphans in France. Because children have been deprived of mothers and fathers and undernourished physically, there has been a great spread of children's diseases in France.

Where necessity exists, or on invitation, the medical advisory committee will also undertake investigations into health conditions in foreign countries and the United States. Every effort will be made to prevent the spread of epidemics and to help maintain local standards of health following the withdrawal of doctors and nurses from communities for war service. This service will be undertaken not only in the Army encampment but elsewhere in cooperation with the United States Public Health Service.

Dr. Richard P. Strong, who is a member of the committee, was head of the Red Cross forces which stamped out the typhus epidemic in Serbia two years ago. Doctor Rose was the head of the Red Cross commission which two years ago investigated relief conditions in Poland, while Doctor Biggs has already conducted an investigation into tuberculosis in France for the French Government.

THE USE OF INEXPENSIVE DRUGS IN PRACTICE.

By Louis T. de M. Sajous, B. S., M. D.,
Philadelphia.

(*Continued from page 1213.*)

Of the drugs in common use as diffusible stimulants, camphor and the ammonium compounds have already been considered in this series of articles. The relative inexpensiveness of the preparations yielding ammonia, especially when used in nonalcoholic solutions, has been shown, the cost of circulatory stimulation by such solutions being no greater than that which attends the hypodermic use of strychnine, the least expensive of the alkaloid stimulants. There remain to be mentioned, in the group referred to, ether and alcohol.

Each of these agents is believed, when employed for purposes of stimulation, to act in large degree in a reflex manner, the irritation caused in the area of contact with the tissues, whether subcutaneous or oral and gastric, being so transmitted from the peripheral sensory terminals to the centres and nervous system as a whole as to excite increased activity in various structures, including the circulatory organs, to which an efferent nerve supply is distributed. A psychical action is also credited with being a factor in whatever stimulant effect results, but this must necessarily vary to a marked extent according to the individual concerned, his condition at the time, and attendant circumstances. As for the direct actions of the drugs on the circulatory organs after absorption, variation is again to be expected, and the resultant effects are, in part, not such as would correspond precisely to the term stimulation.

According to most experimenters who have studied the action of alcohol when perfused through the isolated mammalian heart, including Dr. C. C. Lieb, who presented a paper on this subject at the recent meeting of the American Medical Association, alcohol in concentrations sufficient to induce any effect at all, nearly always causes depression, rather than stimulation, of the heart muscle, the work of which in Lieb's experiments was often reduced by nearly one third. The statement frequently made that an exhausted heart may be directly stimulated by alcohol owing to the nutritive, fuel supplying property of the latter seems, at first sight, weakened by the further observation of Lieb that exhausted hearts are, like normal hearts, regularly depressed when fluid containing a sufficient concentration of alcohol is perfused through them. That such experiments on the isolated heart do not reproduce clinical conditions under which alcohol is used, however, is manifest—a fact further borne out by the decrease in heart rate generally noted in Lieb's experiments, which contrasts with the increased rate typically observed when alcohol is administered in the living human subject. The important reflex effects of the drug are excluded in experiments on the isolated heart, as is also the even more important clinical action of the drug on the bloodvessels. Many will agree with Dr. S. Solis-Cohen that from the clinical standpoint alcohol in moderate amounts does increase the force and rate of the heart. Whatever the final conclusion as regards the direct effect of the drug on the heart muscle, the fact remains that in therapeutic doses of five to twenty-five c. c., alcohol generally causes a slight rise in the heart rate, together with a constriction of the splanchnic vessels, a rise of the systolic blood pressure, and an obvious dilatation of the skin vessels. According to Sollmann, the amplitude and force of the pulse are, as a rule, somewhat increased by such doses, together with the mass movement of the blood, the cardiac output, and the efficiency of the circulation in general. These effects reach their height in about half an hour and pass off in an hour or two. In earlier experiments (1915) on the human subject, Lieb found that five to ten c. c. doses of whiskey, given concentrated, usually caused a slight reflex rise in the systolic and diastolic blood pressures, with return to normal in less than half an hour; where the same amounts of whiskey were given in diluted form, however, these effects were practically absent, thus apparently showing that, with the small doses employed, dilution prevents sufficient impression being made on any given area of the gastric mucosa to awaken a reflex response. Again, Brooks (1910) observed that in unanesthetized animals a slight rise in blood pressure could be produced by the mere introduction in the mouth of an amount of alcohol which had no effect when placed in the stomach through a gastric fistula.

In addition to its effects on the circulation there is definite evidence that alcohol in suitable doses exerts both a reflex and a direct stimulating action on the respiratory centre. The quantity of air respired may be doubled (Sollmann), and the fact that some respiratory stimulation is produced even during sleep excludes psychical and environmental influences as essential factors in its causation.

As for the effects of ether when used as stimulant, these may be said to correspond, in a general way, to those of alcohol, though precise details concerning the action of small doses have not been observed as completely as in the case of the latter agent. The same reflex effects are produced, although more rapidly and evanescently than by alcohol, and a moderate direct stimulation of the vasomotor centre and more pronounced exciting action on the respiratory centre may also occur.

Turning to the expense aspect of the question, in so far as this affects the relative availability of the various diffusible stimulants, one notes that alcohol, in a dose of 2.5 fluiddrams, is about eight times as expensive as a thirty minim dose of ether, about twice as expensive as a sixty minim dose of spirit of ether—32.5 per cent. of ether—about four times as expensive as a thirty minim dose of aromatic spirit of ammonia, and about fifty times as expensive as a five grain dose of ammonium carbonate, or a fifteen minim dose of ammonia water. The latter agents, which thus constitute the cheapest diffusible stimulants for oral use, are peculiar in that their action is almost, if not quite, exclusively reflex, but this does not diminish their efficiency and availability under most circumstances. As Sollmann remarks, ammonia is one of the most active agents for exciting the medullary centres reflexly and there would seem to be no reason why for this purpose it should not be given preference over the more costly alcohol and ether, unless the additional direct actions of the latter agents on nerve centres or their special effects on the peripheral vessels should appear desirable in individual cases. For hypodermic use, ether is available as a reflex stimulant, while ammonia is held excessively irritating; but externally effectual yet inexpensive physical measures, such as alternate hot and cold affusions or electric stimulation of the sensory terminals, can often be advantageously substituted for drugs. On the whole, alcohol and ether can, it would seem, be generally dispensed with as diffusible stimulants, exceptions occurring where a change in the distribution of the blood—a partial shifting from replete internal vessels to those of the skin, e. g., after exposure to cold —is considered advantageous, or the emergency is such as to indicate the use of all available measures. Under these conditions, the expense of giving alcohol alone could, where many subjects come under observation, be considerably reduced by combining with it a small proportion of ether, as in the official spirit of ether. The compound spirit of ether, Hoffmann's anodyne, practically identified in action, is no longer recognized in the U. S. Pharmacopœia, though described in the National Formulary.

(*To be continued.*)

Tetanus.—H. R. Dean (*Lancet*, May 5, 1917) draws his deductions from the careful observation of twenty-five cases of tetanus, occurring mainly in men who had received at least one prophylactic dose of antitoxin at the time of the first dressing of their wounds. The effect of the administration of such a prophylactic dose is generally to prolong greatly the incubation period and to delay the progress of the spread of symptoms when they do develop. Five of the cases were mild and were treated by the intramuscular injection of the antitetanus serum, the initial dose having been 10,000 U. S. A. units followed at three day intervals by two doses of 5,000 units. All of these patients recovered. Six were treated with antitoxin given intrathecally, one dying of tetanus, two probably of other infections, and the other three recovering. Fourteen received the serum intravenously and apparently much the best results were secured by this mode of administration, both as to the relief of symptoms and in the reduction of mortality. The serum was given in single doses ranging up to 30,000 units, representing from 120 to 190 mils of fluid. In five of the cases the injection was followed by an urticarial rash within a few moments; in two there was edema of the eyelids. No other anaphylactic symptoms were encountered. The argument in favor of this method, aside from its seeming better effects, was that there was no evidence proving that serum given intrathecally actually penetrated to the affected cells in marked concentration; that the nerve cells are known to be surrounded by a rich network of bloodvessels which might just as reasonably be believed to carry the serum to the cells as that the cerebrospinal fluid does so; and that the vascular circulation was the one most likely to accomplish this, since the current of the cerebrospinal fluid was commonly accepted to be in the opposite direction. Finally several observations were made on the blood and cerebrospinal fluid after intravenous injections of the toxin and showed that both were fairly rich in antitoxin for several days. The intravenous route was held to have the further advantages of permitting the giving of a maximal dose and of avoiding the ill effects sometimes following the intrathecal injection.

Treatment of Hyperthyroidism.—G. W. Gries (*American Journal of Röntgenology,* June, 1917) does not believe it advisable to hasten the Röntgen ray treatment of exophthalmic goitre. The massive dose method of treatment is especially dangerous in the acute type. The first improvement noted is in the nervousness and the pulse rate. This is followed by an increase in the weight and an improvement in the other symptoms. Formerly gas tubes were used; now the Coolidge tube is used. The mild cases of hyperthyroidism may be treated medically by the Röntgen rays. In acute exophthalmic goitre Röntgen treatment is the most satisfactory. In chronic exophthalmic goitre the choice lies equally between röntgenization and operation. The Röntgen treatment is slower, but there is not so much danger in producing a subsequent hyperthyroidism as by operation. The death rate from x ray treatment is nil. Where hyperthyroidism develops in an old goitre Röntgen treatment is only palliative. Here the danger of producing myxedema is also greater and the treatment should be surgical.

Prophylaxis of Anesthesia Acidosis.—William H. Morriss (*Journal A. M. A.,* May 12, 1917) reviews the mechanism by which the body is protected against changes in the hydrogen ion concentration of its blood and tissue fluids and cites the results of a series of clinical observations and animal experiments which showed that the administration of ether or chloroform to the stage of anesthesia was accompanied and followed by a reduction in the alkalinity of the blood through a reduction in the alkali reserve. While in no instance observed did this amount to a true acidosis, it nevertheless indicated the desirability of taking prophylactic measures for the prevention of possible acidosis. It was found that the preliminary administration of sodium bicarbonate to the extent of fifteen grams during the thirty-six hours preceding the anesthesia and following this by an equal amount in a like period of time would prevent the reduction of the alkali reserve. This plan was followed by entire elimination of the alkali reserve depletion, or its great relative diminution in patients, so that they recovered from their anesthesia with much less danger of the subsequent development of acidosis.

Treatment of Parotid Fistula. — Dieulafé (*Presse médicale,* April 26, 1917) asserts that in parenchymatous fistulas of the parotid gland the only effective means available to arrest the salivary secretion is to resect the auriculotemporal nerve, as advised by Leriche. Under local anesthesia an incision four centimetres long is made in front of the tragus, beginning a little above the ear and descending to the posterior border of the inferior maxilla, a little below the neck of the condyle. Beneath the skin in front of the tragus, the temporal artery is gently sought, behind it the vein, and finally, behind the vein, the nerve, which is then seized with forceps and cut. Its peripheral end is freed as far as possible and twisted until it ruptures. In eleven cases in which this procedure was carried out, three in normal tissue and eight in a cicatricial mass, the secretion was uniformly arrested. In two additional cases, cure of the fistula had to be completed by cauterization, which had previously failed.

Intravenous Injections of Colloidal Gold in Typhoid.—R. Massalongo and S. Vivaldi (*La Riforma medica,* April 21, 1917), after using this treatment in thirty-two cases, state that colloidal gold differs from the ordinary antipyretics in that its injection intravenously produces an initial sharp rise in temperature followed by an appreciable and prolonged lowering accompanied by a profuse sweating and polyuria. The patient's general condition improves promptly, especially in the nervous and cardiovascular systems. This agent given intravenously is demonstrated to be the most effective one yet used, attenuating the gravity of the disease and shortening its course; further, its administration even when often repeated is neither dangerous nor inconvenient. The action is physical and not chemical in reinforcing the system's powers of defense, attenuating the virulence of the pathogenic microorganisms, and facilitating the elimination of their toxins by abundant urination and perspiration. One c. c. was the dose used as a routine procedure and was repeated every two or three days until the fever was well under control.

Untoward Results of Typhoid Immunization.—William Lintz (*Journal A. M. A.,* May 5, 1917) reports a case of seeming severe anaphylactic shock occurring in a normal young adult after a single dose of antityphoid vaccine from the same bottle from which thirty-two othere were inoculated without symptoms. Twenty minutes after the injection the patient began to feel weak and had a sensation of chilliness and a dull headache. These symptoms became worse until a violent chill came on one hour after the injection. Unbearable headache and continuous vomiting developed and the vomitus soon began to contain bright blood. There was extreme soreness all over the body, the joints became extremely painful, and these symptoms, together with the vomiting, lasted for forty-eight hours. The temperature rose to 103° F. and the patient became very apathetic. By the second day the spleen had become enlarged, the liver edge palpable, and the glands of the groin, axillæ, and neck enlarged and tender. Convalescence lasted a week and was much like that of an ordinary attack of typhoid fever. There had been but slight local reaction.

Cerebrospinal Meningitis.—W. E. Carnegie Dickson (*British Medical Journal,* April 7, 1917, reports the frequent post mortem finding of blocking of the foramen of Magendie by fibrinopurulent exudate or the blocking of the foramina in the region of the fourth ventricle and of the whole foramen magnum through swelling of the brain substances and its congestion. Both of these conditions are often associated with purulent inflammation in the cerebral ventricles while the spinal fluid may have become almost sterile. They are of great importance in the matter of treatment since it is obvious that lumbar puncture and the intraspinal injection of serum or other agents would not relieve the intracranial pressure or allow the therapeutical agent to reach the infected brain. Puncture and direct injection of the lateral ventricles may be tried with some hope of benefit. Post mortem experiments made by the author in cases of meningitis and in nonmeningeal cases showed that spinal intradural injections of from fifteen to thirty mils of methylene blue were followed by marked staining of the brain and the interior of the lateral ventricles, while this was largely or entirely absent in cases in which there was either of the types of blocking described. Clinical experiments with the lavage of the spinal canal with saline or the injection or eusol or of sodium citrate did not give encouraging results.

Infected Hemothorax—Gas Bacillus.—T. R. Elliott and Herbert Henry (*British Medical Journal,* April 7, 1917) conclude their report on this serious complication of traumatic hemothorax with remarks upon its treatment in which they emphasize the importance of early diagnosis and recognition of the probable type of disease. If the fluid is found to be sterile microscopically it is usually safe to watch developments, but if offensive or infected fluid is withdrawn surgical treatment should be instituted at once. The general plan of treatment should be to open the chest cavity at such a point as to secure complete drainage of its entire area; gently to break up and wash out all clots; to remove the foreign body, if one is present; and to provide for continuous drainage. Where the empyema is large and the toxic symptoms are not very marked it is advantageous to use air tight drainage. Where open drainage is employed the tube should be dispensed with as soon as possible, but a persisting offensive discharge requires daily lavage of the pleural cavity with some weak antiseptic such as eusol, or a mixture of phenol and peroxide of hydrogen. The acute pneumothorax type of patient is unable to stand much surgical interference and it is enough at first to insert a tube in an intercostal space under local anesthesia, reserving more extensive procedures until later. Acute septic types offer very little hope of being saved, but rib resection may occasionally succeed. In the gradual pneumothorax type preliminary aspirations to expand the lung may be performed with later operation and air tight drainage. The development of jaundice in any case demands immediate resection and drainage, and the same is true of the progressive toxic type. The prognosis under efficient treatment is very good in the absence of complicating abdominal wounds or severe mixed infection.

Treatment with Iodine.—Douglas H. Stewart *nerican Medicine,* May, 1917) advises the following iodine preparations:

Calomel,	gr. i;
Sodium chloride.	gr. ii;
Iodine crystals,	gr. iii;
A few drops of ether,	
Liquid paraffin,	gr. 1500.

This mixture is applied to wounds. For internal administration, especially when Streptococcus viridans is demonstrable in the blood:

Tincture iodi,	ʒss;
Fowler's solution,	ʒi;
Aquæ, q. s. ad,	℥iv.

Filter. One dram after meals, well diluted.

For burns:

Calomel,	gr. i;
Sodium chloride,	gr. ii;
Iodine crystals,	gr. iii;
Carron oil, q. s. ad,	℥viii.

Treatment of Bronchial Asthma by Vaccination.—Montgomery H. Sicard (*American Journal of the Medical Sciences,* June, 1917) reports sixteen cases treated with an autogenous vaccine obtained from bacteria cultivated from the sputum. The bacteria were primarily Streptococcus viridans or Streptococcus hæmolyticus and secondarily Micrococcus catarrhalis. The vaccine is best given twice a week in constantly increasing strength for twelve to twenty injections, and it is better to give such doses that local reaction occurs. His initial dose is 100 millions in adults; then he proceeds cautiously until a local reaction sets in. Of the sixteen patients twelve were cured, three improved, and one tuberculous patient was unimproved. In some cases the asthma cleared up after the first or second injection, others progressively improved from the time the vaccines were started, two did well but had occasional short relapses, and two were obstinate, requiring treatment for fifteen to seventeen weeks, but finally one was cured and the other improved.

The Treatment of Tetanus.—L. Sexton (*American Medicine,* May, 1917) states that the two main points in the treatment of this condition are elimination and nerve sedatives. The bowels should be moved twice daily. If the patient can swallow, from 2.5 to five grains of calomel and soda should be given, followed by high enemas. If the patient cannot swallow, suppositories should be used, followed by high enemas. The kidneys should be looked after by having the patient drink large quantities of water if he is able to swallow. If not, hypodermoclyses and enteroclyses should be given. To feed the patient it may be necessary to give nutrient enemas. In the treatment of the wounds proper, the prevention of tetanus by proper disinfection and immunizing doses of serum are far better and safer than the treatment of the disease after it has developed. Lacerated and punctured wounds should be enlarged and washed out with a fifty per cent. solution of peroxide. Equal parts of tincture of iodine and alcohol may be used. It is not sufficient to give a single dose of antitoxin. The dose should be repeated in from seven to ten days. The irritability of the spinal cord should be controlled by large doses of sedatives, including ether and chloroform to control the spasm. Two thousand units should be injected between the wound and the spinal cord. Meltzer's method of injecting twenty minims of a twenty per cent. solution of magnesium sulphate has not reduced the mortality. Irons has used 5,000 units intraspinously and 10,000 to 20,000 intravenously. On the fourth day he again gives 10,000 units subcutaneously. Six grams of chloral every six hours until the spasms have relaxed have been given by a French surgeon. Thirty to sixty grains of chloretone in either oil or whiskey depresses the function of the spinal cord. The best way to quiet the overexcited cord is to inject 1,500 units intraspinously.

Treatment of Chronic Intestinal Indigestion in Children. — Robert K. Rewalt (*Pennsylvania Medical Journal,* May, 1917) in outlining the treatment of this condition maintains that it is of extreme importance to keep the child in bed if there is any elevation of temperature. The patient should remain in bed for three or four days after the temperature has reached normal, and should be allowed up gradually. A nap of two hours daily, proper food, and proper exercises are of great value. The diet should consist mainly of scraped beef, beef juice, and milk. If the child improves, orange juice may be added after two weeks. Then oatmeal or barley gruel may be added to the milk and later toast and stale bread may be allowed. These articles of food, to which a soft boiled egg, animal broths, and the white meat of chicken may be added later, should constitute the diet for six months. The stools should be closely watched. If there is much mucus intestinal irrigation is called for. Warm saline is the best irrigating fluid. For the constipation give calomel and phenolphthalein, 0.1 grain each, every half hour for ten doses. The best tonic is the tincture of nux vomica.

Nondiabetic Acidosis—with Special Reference to Postoperative Acidosis in Children.—Ira Frank (*Annals of Otology, Rhinology, and Laryngology,* December, 1916) states that occurrence of acetone in the urine of nondiabetics, without symptoms referable to such a condition, is very common, especially in children. An "acid diathesis" is an important predisposing factor and may lead to acetonuria in consequence of minor indiscretions in diet and systemic disturbances; during the course of mild infections, i. e., coryza, and in chronic inflammations as chronic tonsillitis. He has especially noted a possible correlation between the chronically inflamed tonsil and acetonuria. Anesthesia, however, is the most common etiological factor, and children under the age of twelve years never fail to show acetone in the urine during the first twenty-four hours after a general anesthesia. The symptoms vary, depending upon the severity of the condition. Disturbance of respiration and the circulation, drowsiness, sweetish odor to the breath, with nausea and vomiting and prostration in the extreme cases, should arouse suspicion and lead to an examination of the urine. The administration of glucose, supplemented by sodium bicarbonate, has resulted successfully. Acidosis may at least be lessened by a carbohydrate diet and shortening of the starvation period preceding the operation, the use of nitrous oxide or short ether anesthesia, and a postoperative carbohydrate diet.

Treatment of Enuresis.—P. Bonnier (*Presse médicale,* April 2, 1917) notes that the anxieties and nervous tension of military service at the front sometimes cause enuresis to reappear in men who had been afflicted with it in childhood. That the disturbance can easily be overcome by producing a direct impression on the nerve centre concerned through light cauterization of the nasal mucosa above the head of inferior turbinate is maintained on the basis of experience in thus treating sixty-two patients ranging in age from five to twenty-six years. Twenty-one patients were cured at once, being free of incontinence on the first night after treatment, without subsequent recurrence; seventeen were cured after a few treatments; nine were improved, and in the remaining fifteen the treatment was ineffectual.

Surgical Versus Tuberculin Treatment of Renal Tuberculosis.—Leo Buerger (*Medical Record,* May 5, 1917) considers that the untoward effects of tuberculin on the renal parenchyma have not been sufficiently emphasized. Several theories have been put forward to explain these ill effects as the diffusible toxin theory, the diverse toxin theory, and the bacillary theory, in the last of which the bacilli themselves and adherent toxins are supposed to be at fault. Tuberculin results with apparent cure are usually based upon clinical facts alone and are not usually supported by pathological findings. At the present time tuberculin therapy has been condemned by all the anatomical facts at our disposal; the rationale of its use is insufficiently supported by clinical observations; and true curative effects have not been demonstrated by experiments on animals. Its use therefore as a therapeutical agent in renal tuberculosis needs critical substantiation before it should replace the reliable and tried surgical methods.

Acidosis, with Special Reference to Children.—Fergus Hewat (*Practitioner,* May, 1917) says that when acetoacetic acid is detected in the urine two obvious indications for treatment arise: to stop the formation of the abnormal acids and to neutralize the acids already present. In children the condition may be met with in connection with some trivial illness, or with urgent symptoms. In an ordinary so called bilious attack a saline purge or vegetable laxative and an enema are given. An ordinary soap and water enema followed by a saline washout is perhaps the best method of relieving the large intestine. This is followed by a simple alkaline mixture and dextrose added to the diet, which may require to be albumin water or whey for twenty-four to thirty-six hours. Later oatmeal gruel is useful. In severe cases in which there is intractable vomiting the lower bowel must be unloaded and a glucose solution, five to ten per cent., slowly introduced by means of a long tube. Sodium bicarbonate may be dissolved in this. Warm water well sweetened with sodium bicarbonate in ten grain doses, is given by mouth. If this is vomited, repeat it frequently and apply hot fomentations to the abdomen. As soon as the vomiting abates give albumin water with dextrose. In the diet of infants Nestlé's milk has often been found successful, but its use must not be continued too long as it is deficient in antiscorbutic properties.

Oil of Chenopodium for Carriers of Entameba Histolytica.—Ernest Linwood Walker and William Emrich (*Journal A. M. A.,* May 19, 1917) report favorable results from the use of oil of chenopodium in a small series of carriers of Entameba histolytica. Of fourteen carriers thus treated, ten were apparently cured, six from a single course of treatment, one after two courses and three after three courses. The method of treatment was to give fifteen to thirty grams of magnesium sulphate at 6 a. m.; one mil of oil of chenopodium in capsule at 8 and 10 a. m and at noon; and at 2 p. m. to give thirty mils of castor oil containing about one mil of chloroform. Perhaps the most essential feature of the treatment was found to be the thorough cleaning out of the intestinal tract by the saline, for where this was not accomplished the administration of the chenopodium was followed by relapse. A second very important point was the administration of the chenopodium during the period when the intestinal contents were very fluid from the saline, that is, two hours after the purgative. No ill effects were noted from the treatment,

Sterilizing Therapy in Malaria by Intravenous Injection of Quinine in Saline Solution.—Fernand Barbary (*Bulletin de l'Académie de médecine,* May 1, 1917) states that he found, in an auxiliary hospital in Nice, France, in which 889 soldiers were treated for malaria, that the necessity of limiting the stay of the patients in the hospital to a period of two to four weeks seriously interfered with the results of oral quinine treatment. Subcutaneous injections of quinine were considered undesirable owing to the frequent necroses thus caused. The administration of quinine intravenously in the dose 0.5 gram of the basic hydrochloride dissolved, together with one gram of urethane, in 125 grams of normal saline solution, was thereupon undertaken, with excellent results. The injections were given every three days, beginning from the time of the first paroxysm. After four or five injections, the interval was lengthened to five days. The solution was kept in ampoules, each containing the entire 125 grams of sterilized solution. Distilled and filtered water and pure chemicals were alone used, for experience showed that without these precautions a rise in temperature might follow which would suggest therapeutical failure of the procedure. The injections were made in the customary manner into the forearm or elbow veins, under low pressure and for a duration of ten to fifteen minutes. The patient was kept recumbent for twenty or thirty minutes, to obviate the slight malaise otherwise occasionally experienced. Under these injections, even in the extremely serious cases with pernicious manifestations, a complete change in the condition of the patients took place. The temperature seemed to be fixed close to the normal by the procedure, where oral administration had previously failed to arrest the paroxysms. The anemia and even cachexia were rapidly improved. It is advised that the procedure be prophylactically carried out in all plasmodium carriers as they reach France, to obviate infection of Anopheles mosquitoes and consequent extension of the disease. Repeated injections should be given for two or three months.

THE AMERICAN MEDICAL ASSOCIATION

Sixty-Eighth Annual Meeting

Held at New York City, June 4 to 9, 1917

(Continued from page 1271.)

SECTION IN OBSTETRICS, GYNECOLOGY, AND ABDOMINAL SURGERY.

June 8, 1917.

Cholecystostomy Versus Cholecystectomy.—Dr. MILES F. PORTER, of Fort Wayne, Ind., said that anatomical, physiological, chemical, and clinical facts support the contention that the gallbladder in man was an important organ. Disease of the gallbladder itself was rarely the cause of the symptoms for which the so called gallbladder case consulted the surgeon. The reports from the various clinics on the curative value of cholecystectomy as compared with cholecystostomy were confusing and contradictory and in some instances led to conclusions that were not warranted. Failure to obtain a permanent cure in the majority of cases of gallstones was due to overlooked stones. The return of symptoms might be due to a reformation of stones. There was no evidence to support the contention that the removal of the gallbladder materially reduced the likelihood of the reformation of stones. The recurrence of symptoms after cholecystectomy was by no means uncommon. A stone in the common duct of an individual who retained his gallbladder was not so great a menace as a stone in the common duct of one who has been cholecystectomized. The important question to decide was not as between cholecystectomy and cholecystostomy but rather whether in a given case surgical treatment was called for at all and if so what surgical treatment best fitted the case in hand.

Dr. HOWARD LILIENTHAL, of New York, maintained that the operation performed should be such as would fit the disease condition present. There should be no preconceived notion as to the operation to be performed in any given case. For twelve years, however, he had been removing every gallbladder sufficiently diseased to require any operation, and he was satisfied with the operation of cholecystectomy. It was hopeless to be sure that all stones had been taken out upon simply opening the gallbladder for their removal. When, in the course of a gynecological operation, a shrunken, diseased gallbladder, full of stones, was found, it should be taken out and, if necessary, the operation for fibroids or other pelvic condition performed later on.

Dr. H. J. BOLDT, of New York, asked Doctor Lilienthal why he did not take out both the gallbladder and the fibroids at once.

Doctor LILIENTHAL replied that the gallbladder operation was dangerous and hysterectomy was not to be done at the same time. One should take away first of all the thing causing symptoms and threatening life.

Dr. J. H. CARSTENS, of Detroit, maintained that in any gallbladder case one was apt to find some gastric trouble, and urged examination of the gallbladder where gastric symptoms were complained of. He had had no recurrences in cases in which he had allowed the gallbladder to remain. If only a single mulberry stone was found, he closed the gallbladder and wound without drainage; such cases were usually free of infection. Where mucosa of the gallbladder was diseased or the organ gangrenous, he removed it, but these were exceptional cases. No gallbladder operation should be advocated at the expense of another.

Dr. D. C. STRONG, of San Bernardino, Cal., asserted that one should in these cases take into account cholecystitis as well as cholelithiasis. Pneumonia often preceded gallbladder disease. In long standing cases cholecystectomy was alone indicated, though in cases seen early enough one might talk about draining the gallbladder. He removed every gallbladder except when the symptoms were only of three months' standing, when he drained.

Dr. J. W. VAUGHAN, of Detroit, stated that after reading Doctor Judd's recent paper he had done fewer cholecystectomies than before. The succeeding dilatation of the common bile duct and increased flow of pancreatic juice and bile might do harm. Likewise, the increased action of the sphincter might favor retrograde infection. In brief, the operation should be adapted to the individual case.

Doctor PORTER, closing the discussion, stated that in a recent second operation after cholecystectomy he had found a handful of stones in the common duct. The gallbladder was an important organ in man and should not be removed without a good reason. A gallbladder already placed out of commission by disease should, of course, be removed.

Preparation of Anemic Patients for Operation.—Dr. STUART MCGUIRE, of Richmond, Va., divided anemic patients from the standpoint of surgery into three groups: 1, those who should be operated on promptly; 2, those who should receive treatment before operation, and, 3, those to whom operation should be denied. Only secondary anemias were to be considered here. The immediate operative dangers in these cases were anesthesia and shock and the subsequent dangers, low resistance to infection and decubitus. Operation should, if possible, be postponed in profound anemia, though even here, the condition present might be such as to demand immediate operation. The measures appropriate in improving the anemic condition before operation comprised: 1. Arrest of blood loss or destruction by physical rest; direct hemostasis, as by packing the uterus, ligation, cauterization, and blood serum; indirect hemostasis, through drugs, radiotherapy, coagulants, and transfusion. The drugs that might thus be useful included opium, ergot, thymol in hookworm infection, quinine in malaria, and mercury, arsenic, and iodine in syphilis. The x rays, the Coolidge tube being employed, were often of service in uterine fibromas. The use of radium was more risky. Transfusion and blood serum were also factors in indirect hemostasis. 2. Reconstructive treatment, as by plenty of appetizing and nourishing food and fresh air; drugs such as iron, strychnine, and arsenic, and transfusion which was often a lifesaving measure. Any anemia could be benefited by transfusion, which was practically without danger. Direct, artery to vein transfusion was still the procedure of choice, though the newer indirect methods were also practical and had the advantage of showing the actual volume of blood transfused. The indirect methods should be employed only where they presented a distinct advantage over the direct, especially as regards the time consumed. In acute hemorrhage transfusion was, despite statements to the contrary, indicated, though it might increase the bleeding, which should be simultaneously attended to. In anemias due to malaria, syphilis, or parasites, transfusion was indicated only where the anemia was very severe or the measure necessary before operation.

Dr. Sidney A. Chalfant, of Pittsburgh, pointed out that there seemed to be a considerable individual variation in the extent of blood loss necessary to exclude the possibility of recovery. This might be due to differences in the normal ratio of the total blood weight to the body weight. In internal hemorrhage due to ruptured ectopic gestation, in which repeated blood counts had frequently been advised, attention should be paid to the fact that all cases of marked hemorrhage showed a drop in the erythrocyte count and hemoglobin in the first twenty-four hours. This was because the natural restoration of the blood volume took place at the expense of the fluids of the body, and one might be led into error if this factor were not taken into account. Of the blood transfusion procedures, the indirect was the more easily performed. Morphine was of great help not only in cerebral and intestinal hemorrhage but also in hemorrhage from the uterus and internal hemorrhage. In uterine hemorrhage it was even of greater assistance than ergot. Rest was of great benefit in the reconstructive process, especially if the patient's bed was placed out of doors.

Doctor Lilienthal stated that in some cases of anemia requiring operation much could be done by means of local anesthesia. Hemorrhage in the peritoneal cavity not being immediately followed by a clotting, it had been suggested to collect the fluid blood in the peritoneal cavity at once in a sterile manner and reinject it into a vein. Sixteen cases thus treated, with uniformly good results, had been reported from abroad, and the speaker favored trial of this procedure. Striking results were obtainable by bandaging the extremities, as advised by Loomis for hemoptysis already in the early eighties, or better, by the Dawbarn method of placing a band round the thigh before operations. The blood pressure was lowered thirty to sixty millimetres Hg by this procedure, thus reducing hemorrhage. It had brought about immediate cessation of the flow of blood in gastric and typhoid hemorrhages, and would probably be useful in gunshot wounds. The blood pressure immediately rose when the blood was let into the general circulation again. The band should be applied before anesthesia; when it was removed, the patient came quickly out of the anesthesia.

Surgical Treatment of Intestinal Stasis.—Dr. J. Shelton Horsley, of Richmond, Va., asserted that all cases of intestinal stasis, so called "abdominal neurasthenics," should first be carefully treated medically for a number of months, operation being resorted to only when this failed. In operating he either freed any bands found or did an ileosigmoidostomy or cecosigmoidostomy. Among the seventy-five patients on whom he had operated in the last five years forty-six per cent. had been greatly improved, 32.5 per cent. improved, twelve per cent. unimproved, 5.5 per cent. had died, and four per cent. had not been heard from. These figures justified continuance of the operative procedures for intestinal stasis. The Coffey operation was particularly valuable where stasis was due to ptosis. Ileosigmoidostomy was unwise, and he had discarded it.

When Is Cancer Operable?—Dr. J. Walter Vaughan, of Detroit, pointed out that the literature of cancer abounded with isolated observations which, while not so far of much value as regards ultimate cure of this disease, helped appreciably in affording exact indications for operative treatment. Thirty thousand differential blood counts made under his supervision had shown that a marked increase in the number of mononuclear cells in the blood occurred upon the injection of vaccines containing cancer proteins. Upon subcutaneous injection of the proteins the increase was slight—17.5 to twenty-six per cent.; upon intravenous injection it was greater, and upon intraperitoneal injection, still greater—sixteen to forty-six per cent. The irregular mononuclear cell with frayed margins was very characteristic of malignancy and, when present, led him to suspect the disease. The sensitizing dose of cancer proteins should not be too large. The increase in mononuclears lasted only four to twenty-four hours, and during this period only, the animal was sensitized to the proteins. The effects of various normal and abnormal tissues on the mononuclears was investigated. The more embryonic in type was the tumor from which the protein injected had been obtained, the greater the resulting increase in the mononuclears. The residue from normal placental tissue was, however, the most effective injection material of all, and was at present generally used in test injections. Research showed that the immune ferment is found in the large mononuclear cell. Examinations of the blood in 200 cases had shown that early malignancy generally resulted in a decrease in the number of polymorphonuclear cells and an increase in the mononuclears. This condition of the blood resembled that of exophthalmic goitre and syphilis. After metastasis, the polymorphonuclears rose to seventy per cent., or even higher. Where a high mononuclear count existed for several days, the tumor regressed during that period; where a high polynuclear counted persisted, on the other hand, the tumor progressed. Marked metastasis did not occur until the polynuclear count was high, i. e., until the immune mechanism had broken down. Before this time, the case was operable, but after the polynuclear count had become high and remained so, operative treatment could not be safely attempted. Whether, in a case where the first count showed a high percentage of polynuclears, the system was still capable of reacting against the tumor was ascertained by injecting about one c. c. of placental residue intraperitoneally into the patient and a differential count then made daily. If the polynuclears decreased after twenty-four to forty-eight hours, the previous high count must have been due to increased tumor growth, and metastasis not occurred, such a case being, therefore, operable. On the other hand the test might show that an operation would actually do harm. In two cases of gastric cancer clinically alike, the test had shown that operation was indicated in one instance and in the other it was not. The treatment had been regulated accordingly and subsequent developments had shown the value of the procedure. An operation was best performed when the mononuclear count was high. Where the test revealed complete loss of the immunizing mechanism, prompt progress of the tumor, even though it was small at the time, was to be expected. Some cases in which the immunizing mechanism showed alternate ups and downs afforded a basis for claims of cure of cancer on the part of charlatans.

Dr. Henry Schmitz, of Chicago, had noticed that a persistent leucopenia in cancer implied an unfavorable prognosis.

Dr. Clarence G. Bandler, of New York, said that he was gratified to hear the word immunity introduced in connection with carcinoma. Immunity would probably be eventually found the main factor regulating the growth of such tumors. It would be interesting to investigate the behavior of the spleen in this direction, and likewise, the question whether lack of resistance in an entire family might not take the form of a subjection of the members of it to carcinoma. The speaker requested Doctor Vaughan to state what his findings had been in regard to benign tumors. Chorioepithelioma, he thought, denoted a lack of protection against tumors, whether due to a disturbance of the thyroid, hypophysis, spleen, or some other organ.

Doctor Vaughan, in closing the discussion, replied that in testing out vaccines made from benign tumors the rise in the mononuclears—six to ten per cent.—had not been found anything like as pronounced as from malignant tissue. The reversion of the cells of the latter to the embryonic type was the important factor which influenced the blood cells. Repeated differential blood counts were much more important than determinations of the blood pressure, temperature, and pulse in tracing out the progress of disease processes in general.

The End Results of the Treatment of Inoperable Uterine Cancer by Heat.—Dr. James F. Percy, of Galesburg, Ill., described his method of treatment as applied in cases of uterine cancer diagnosed as inoperable and in which the mortality would otherwise have been 100 per cent. The heat was so applied from within that the uterus began to feel warm externally to the rubber gloved hand in about twenty minutes. The malignancy was destroyed by the slow heat, which, however, did not injure the surrounding tissues. Fifty-two cases had been added to their thirteen original cases thus treated. Of the thirteen, two women were at present living and well; one of these had been an advanced vegetative case. Of the new series of fifty-two cases, ten women had at present been free of cancer for eight months or longer. In applying the treatment the heating apparatus must be passed completely to the fundus of the uterus. The primary operative mortality of the procedure was not over one per cent. Of advanced, inoperable cases ninety-five per cent. could be treated by heat, with very little danger. Reports of 200 or more additional cases that had been treated by the method by various surgeons were at hand, but had not yet been worked up. Even if only palliative, the procedure was well worth while in that it arrested unpleasant symptoms, such as the offensive discharge, gave greater physical comfort, and improved the mental attitude of the patient. Surgical treatment, furthermore, still exposed to autotransmission of the tumor and excited the latter to renewed growth; heat should therefore precede the use of the knife.

Dr. J. Herman J. Boldt, of New York, asserted that, while only a palliative surgical intervention, a proper application of heat was one of the reliable remedies in uterine cancer, especially if combined with celiotomy and tying off of iliac vessels. He had, however, never seen fistulas resulting from the procedure close, nor had he known of a mortality as low as one per cent. The important features of the Percy method were the low heat used and the opening of the abdomen. Neither low nor high heat destroyed the cancer cells more than a few millimetres from the site of application. High heat was preferable because it saved time. Further study was required to settle the question as to which is the better, high heat or radium.

Dr. F. Walcott Bancroft, of New York, stated that he had had occasion to perform an autopsy thirty-six hours after application of the Percy method. This patient had become toxic in eighteen hours after the treatment. The heart had shown an acute myocarditis, and the uterus a thin eschar, beneath which various cocci and bacilli had been found. Beyond the zone of leucocytic infiltration, there had been found areas of intact cancer cells, with the surrounding muscle cells destroyed, while in other portions there were destroyed cancer cells, with intact muscle cells. Apparently the muscle cells had been, as a rule, more injured than the cancer cells. Edema of the tissues had also been noted.

Doctor Leonard, of New York, referred to a patient who had died of violent acute toxemia on the fifth day after a Percy treatment. The pathology in this case had been precisely similar to that of a severe superficial burn. Cancer tissue had been found one centimetre from the treated surface. Another patient had died on the seventeenth day after a Percy treatment from streptococcic septicemia. Experiments had been performed to ascertain directly the effects of the Percy procedure on freshly excised living uteri. In a first series a cherry heat had been applied; in a second, the Percy low heat. A fluid colored with eosin had then been injected, and the specimens fixed in formalin and examined in sections. The experiments had been planned so that the fluid injected would not enter areas that had been coagulated by the heat applied. The pale zone of coagulation had been found to extend at most fourteen millimetres from the surface to which the instrument had been applied. To determine whether carcinomatous uteri might not be better coagulated than the normal organ, malignant uteri obtained by performance of the Wertheim operation had been similarly tested. Where the uteri had been subjected to the Percy low heat for two hours the zone of coagulation had been at its thickest fifteen millimetres. With high heat, exactly the same result had been produced in two or three minutes.

Dr. George B. Ward, of New York, stated that his clinical results had been very similar to those of Doctor Percy. One patient was at present still alive two years after the treatment. The others were dead, though they had been benefited by a period of six months to a year. Objections to the low heat method were: 1, toxic effects occurring a few hours after the treatment; 2, great frequency of resulting inaccessible vesicovaginal fistulas. The results were just as good with high heat, with perhaps less danger of toxic action and a great saving of time. Twelve years ago he had applied high heat to a recurring growth, and there had been no further return.

Dr. J. Shelton Horsley, of Richmond, Va., pointed out that a slow, simmering heat in cooking a beefsteak penetrated more than high heat. The difference was due to circulation of fluid in the tissues. The tying of the vessels was an unsatisfactory procedure. In using the method, the speaker used rubber covered clamps to convert the uterus practically into dead tissue. The time required for the procedure was also cut down thereby. A few cases cured by injections of a vaccine of attenuated cancer cells were referred to.

Dr. H. C. Bayley, of New York, stated that in twenty-six cases he had applied the Percy method and followed it with radium. Of these cases four women had remained free of cancer. In a larger series of inoperable cases radium had been used alone. Again, about fifteen per cent. of the patients had remained free of cancer. Apparently, radium alone did as much as the Percy procedure, except where there existed a cauliflower mass in the vagina, which should be burned away before the use of radium. Many fistulas resulted, which never healed spontaneously.

Doctor Percy, in closing the discussion, asserted that, despite what had been said, experience had shown that high heat was not as useful as low. One could not cook a steak through by throwing it on the fire. How did Doctor Leonard know that the cancer cells he had seen in his sections were viable? The fistulas sometimes resulting from application of heat would heal up if the opening had been made through the uterus. In repairing the conditions, the procedure should be such as would convert the upper part of the vagina into the lower part of the bladder, thus avoiding disturbance of the ureters and ascending infection.

The Present Status of Radium Therapy in Diseases of Women.—Dr. Henry Schmitz, of Chicago, asserted that the use of radium must be preceded by a diagnostic curettage. Where uterine cancer was known to be confined to the uterus, an operation should by all means be performed. In inoperable cancer of the uterus and cervix, however, radium was the best agent, and it was also very valuable as a prophylactic against recurrence after operations for cancer. In benign conditions of the uterus accompanied by hemorrhages, including myomata and inflammatory and other metropathies, ninety-three per cent. of cures were obtainable with radium. Radium therapy was still, however, in its infancy. The radium rays were dangerous to use, and their employment must be preceded by thorough study.

Prolapsus Uteri and Its Treatment.—Dr. Abraham J. Rongy, of New York, maintained that the size of the child and the character of the labor did not correspond to the results as regards uterine prolapse. The factors underlying the latter were, indeed, not as yet definitely known. Among them undoubtedly were a faulty anatomy of the bony pelvic outlet, and a general insufficiency of the musculature, especially that of the pelvic floor. Many unmarried women, as well as young girls, had uterine prolapse. Much could be done by carefully watching the development of the young girl and preparing her for motherhood. Where, having borne three or four children, a woman with prolapse cared little for additional offspring, the interposition operation was indicated, and no other surgical procedure would do the work satisfactorily. The intraabdominal pressure had but little influence on prolapse except where the latter had already started.

Dr. Harvey P. Jack, of Cornell, N. Y., protested strongly against performance of the interposition operation for prolapse. Personally, he amputated the cervix, shortened the round ligaments, and gave the subject a chance to become a mother.

Doctor Rongy, in closing the discussion, stated that to subjects who had not yet been mothers he gave instructions to come back for the operation to relieve their prolapse after they were through bearing children. The majority of these patients were satisfied with one or two children and were then prepared for the operation.

SECTION IN PREVENTIVE MEDICINE AND PUBLIC HEALTH.

June 7, 1917.

In the absence of Major General Leonard Wood, detained in the South on service, the chairman introduced Colonel T. H. Goodwin, who was for eighteen months senior medical officer on the Allies' western front. Colonel Goodwin stated that Great Britain began the war unprepared and was obliged to form armies of millions to take the place of the first expeditionary force, which was wiped out. Public health was of most importance in war. The army was not a good fighting machine unless in good health. It became the duty of medical men in England who had little training in public health work to undertake this new and vast work of training millions of troops. At the present time, they were looking after a million hospital beds. They needed medical men very, very badly, and asked our help. It was true that the losses of medical men on the firing line had been very considerable. It had been argued that medical men should be conserved, but they could not save their doctors. If we pictured the front of a small battle with twenty to thirty thousand wounded to care for within a danger zone five miles deep, the only way to care for the wounded was to get the medical personnel up. The wounded must be attended for the sake of the effect of their presence on the morale of the fighting men even though medical men were killed. Already six base units had gone from here to England, besides twenty orthopedic surgeons working to restore cripples at Liverpool; in all 250 American doctors, 400 nurses, and 800 enlisted men had already gone over. The British War Office had extended its thanks to America. They hoped to see sent from here every month 200 doctors and 200 nurses. In France they had a hospital of 800 beds, which somehow always had 1,100 cases. Fifty thousand cases passed through their hands in eighteen months. They were supposed to have twenty-seven medical officers, but they never had more than twenty-two; frequently they had but thirteen or fourteen. The doctors were operating day and night continuously for days and weeks. They had been working their very souls and bodies out; they could not go on forever. The first duty was to realize the situation; then would come the determination to carry the business through no matter what the cost.

Medical Student as a Medicomilitary Cadet.—Dr. H. C. COE, of New York, opposed interruption of the medical education of fourth year medical students. It was much better for medical students to be given the elements of medical military training while still in school, rather than for them to leave the medical school for service in the medical reserve corps. He proposed a plan for military training in medical schools involving camp experience for a month during the summer of the third and fourth years respectively.

Dr. FRANCIS E. FRONCZAK, of Buffalo, emphasized the fact that no medical undergraduates should be accepted as members of a medical corps, but should proceed to graduation as physicians. Medical undergraduates did not make good members for a medical reserve corps, as they often broke discipline, and owing to partial medical training used excessive zeal in taking on responsibility.

Preparations for Public Health during War.—Dr. FRANKLIN H. MARTIN, of Chicago, medical member of the Council for National Defense, laid stress upon the importance of having an ample Medical Officers' Reserve Corps for the division of public health. The paramount issue at the present time was the obtaining of members for this reserve corps.

Dr. W. C. RUCKER, of Washington, said that the plan was to enlist in the Medical Officers' Reserve Corps all those who could assist in the protection of public health. In war, the infections of peace could not be tolerated. He stated that the object of Senate Joint Resolution 63, introduced by Senator Ransdell, of Louisiana, and approved, was to render camp zones sanitary and care for the health of munition workers.

The following resolution, offered by Dr. W. S. Rankin, was adopted:

> Whereas, The protection of the national health is a matter of paramount importance, particularly at the present time, and
>
> Whereas, To accomplish this it is necessary that there be a close integration of all the health agencies of the nation, the States, and the municipalities, therefore,
>
> Be it resolved, That the Section in Preventive Medicine and Public Health urge the House of Delegates to memorialize Congress to the end that the Senate Joint Resolution 63 be speedily enacted into a law.

Preservation of the Health of the War Worker.—Dr. W. IRVING CLARK, Jr., of Worcester, Mass., said that the importance of health in relation to production had only been recognized during the last five years. Employers throughout the country were now giving it considerable attention and the British Ministry of Munitions had called attention to the importance of the health of the worker in a series of bulletins. The control of the health of the worker while he was in the factory was definitely in the hands of the employer and by simple logical measures much might be done to reduce the prevalence of accidents, disability from accidents when they occurred, and particularly the amount of lost time from accidents and sickness. The employee should not only be guarded against the external dangers of poor ventilation, fatigue, poor light, and accidents, but should be under constant medical supervision. This supervision provided a physical examination and subsequent advice as to the best method of remedying any defects found at the examination, besides seeing that the employee was placed in a department where any physical defect he might suffer from would not militate against his health and efficiency. Besides this medical supervision he must be provided adequate care for all accidents occurring in the factory, subsequent treatment, and diagnosis and advice in all cases of sickness. Most factories carrying on this work had devised systems of organization which were similar. A good form of organization was that of close touch between the employment department, the health department, and the safety engineering department, the health department being in the charge of a physician who had an assistant physician and nurses working for him. The department in a small factory might be run with a single dispensary; but in larger plants it would be necessary to have numerous subdispensaries or first aid stations. It was possible to work out a uniform system which could be used by any factory taking up war work. In this way the health of the worker would be efficiently guarded.

Dr. G. W. SCHERESCHEWSKY, of Pittsburgh, said that in a time when greatly increased production was needed, when women were entering industry in large numbers, and when men should be preparing to perform the maximum of work, it was necessary to see that minimum standards of industrial hygiene were established in all work places and that systems of medical supervision should be provided to detect early evidence of breaking down. Even defective persons should be utilized according to capacity.

Dr. David L. Edsall, of Boston, advised consulting the reports of the British Commission to inquire into the health of munition workers. It was evident that the industrial physician was here to stay and would increase rapidly in numbers unless the general practitioner became much more familiar than he now is with industrial needs. The profession needed greater knowledge of the technical aspect of industrial requirements.

Dr. R. W. Corwin, of Pueblo, Col., felt that it was essential to prepare the man for his work and conserve the family. Health implied better work, and that meant much for the public.

Dr. John R. Williams, of Rochester, N. Y., advocated the use of the Colin dynamometer as a means of measuring the physical vigor of the worker. Dissipation of energy, fatigue, and malnutrition were registered accurately in this way.

Some Aspects of the Public Health in China.—D. W. W. Peter, of Shanghai, China, stated that the problem of disease prevention in China was complicated by the extreme degree of illiteracy of the population. The main burdens in China were smallpox, cholera, the plague, and an unusual amount of blindness; malaria was prevalent, especially in South and East China. Pollution of water and soil was general. Public comfort stations were found next to food shops. There was no segregation of lepers. Home sanitation was entirely unknown. Although the opium trade had been abolished, the morphine habit had taken its place and eleven tons of morphine sulphate had been imported into China in 1915. Tuberculosis was another prevalent disease. The Chinese medical association now numbered 100 members and the China Medical Missionary Association numbered 600 members. The China Y. M. C. A. was growing rapidly. A China public health education committee had been formed, the Commissioner of Education and Commissioner of Police having become active members. This association was extending its work rapidly.

Dr. Haven Emerson, of New York, called attention to the fact that the army was ready to absorb the entire product of the medical schools for the next eight years. Nevertheless, fewer physicians were being graduated than five years ago. There was great need for training people to do extension in public health education, and that this need existed in the United States as well as in China. Such persons need not, however, be graduates of medical schools.

Dr. N. W. Brown, of Nankin, China, said that there were 400 foreign physicians in China, or one to every million in the population. No real health education was possible, except through coordination of activities as conceived by Doctor Peter, whose first public health exhibit had been a revelation of possibilities. China would respond most heartily to efforts in the direction of public health education and conservation. There was danger to America from contagious diseases by transshipment.

Community Health and Tuberculosis Demonstration.—Dr. D. P. Armstrong, of Framingham, Mass., described the experiment now being made at Framingham under the auspices of the National Tuberculosis Association, under an appropriation of $100,000 by the Metropolitan Life Insurance Company. This experiment was an endeavor to find all persons with incipient and advanced tuberculosis in a normal community and place them under medical control, to throw light on the industrial and social causative factors, and to devise a mechanism to eliminate the disease.

Dr. S. Adolphus Knopf, of New York, regarded this as a unique experiment in public health, of the utmost importance to advances in the knowledge of the etiology and prevention of tuberculosis.

Prophylactic Therapy of Rickets in a Negro Community.—Dr. A. F. Hess, of New York, said that for the past six months an experiment was carried out in a colored district of New York, where the infant mortality was two or three times greater than that prevailing in the city at large. As is well known, rickets was exceedingly prevalent. It might be said to be present in a greater or less degree in almost all negro babies, involving many who were breast fed. In contrast to this, little rickets was found in the West Indies, Cuba, the Bahamas, Panama, and the Barbados, due to the fact that the diet was mainly of fruit and vegetables. He had found that in the north meat or fish or eggs were used daily and that foods were often cooked in the form of stews. He had given Norwegian codliver oil in many cases with great advantage. In thirty-two cases in which fifty-four ounces of oil was given in six months ninety-four per cent. were free; in five cases in which twenty-three ounces of oil was given in six months eighty per cent. were free, and in nineteen cases in which no oil was given only sixteen per cent. were free. Codliver oil could be dispensed at milk or infant welfare stations. The object of this study was to see whether rickets could be presented among these babies by giving codliver oil during the first few months of life. This object was achieved. In connection with this work, a rickets clinic was established in this district and it was recommended that a clinic of this kind be conducted not only in this quarter, but in other sections where rickets was particularly prevalent. Codliver oil might well be distributed at the milk stations. With tuberculosis clinics and cardiac clinics in operation it was only logical to institute rickets clinics to suit the special needs of certain neighborhoods.

Dr. J. Sobel, of New York, called attention to the fact that infant mortality among negroes was 110 per cent. higher than among whites. Inasmuch as the statistics show a low fat intake, this could be offset by providing more milk.

The Place of Infant Welfare in Public Health Instruction.—Dr. J. H. Mason Knox, Jr., of Baltimore, Md., said that the State boards of health have been greatly impeded in the exercise of their important functions by the domination of politics and by the lack of trained and experienced hygienists in this country. Medical schools were beginning to appreciate the necessity of introducing courses in public health into their curricula. Instruction in infant welfare work in any properly considered and thorough course in public hygiene is of great importance. It was pointed out that eighteen per cent. of the mortality of all ages occurred under one year, and that the unnecessary loss of infant life entailed a tremendous expenditure of both money and vitality. Infant welfare could be divided into two main divisions: one having to do with having better babies born; the second division including a study of the causes of illness and death during the first year of life. An outline of a course on infant welfare which would form a part of a systematic presentation of the subject of hygiene, was suggested. It is felt that no student should be given his degree and take up public health work, without knowing the value of infant life and something also of measures best adapted to foster it. At this time of stress and danger, when the youth of the land were about to offer themselves for the service of their country, and many of them might be called upon for that last measure of devotion, it was especially timely that all efforts tending to improve the health of the people should be fostered; and particularly was it vital that the infant population, upon which in due time the future of our nation must depend, be carefully enumerated and conserved.

SECTION IN OPHTHALMOLOGY.

June 6, 1917.

The Anaphylactic Basis of Sympathetic Ophthalmia.—Dr. Alan C. Woods, of Philadelphia, said that the mycotic and cytotoxic theories of sympathetic ophthalmia did not adequately explain the etiology of the disease. The anaphylactic theory of sympathetic ophthalmia overcame the chief objections to the other theories. This theory assumed sympathetic ophthalmia to be an anaphylactic uveitis brought about in the following manner: The diseased uvea in the exciting eye broke down and was absorbed by the organism, thus producing a hypersensitiveness, especially of the sympathizing eye. An interaction between the antibodies in the exciting eye and the absorbed uveal tissue now took place. This interaction was manifested clinically as a sympathetic ophthalmia. This theory assumed several fundamental points not established. An extended study of the scientific facts assumed by this theory has been made and the following points demonstrated:

By means of the complement fixation reaction on the serums of dogs immunized to foreign and homologous uveal tissue and uveal pigment, it was determined that: 1. Uveal tissue could act as antigen in animals of the same species and that the pigment was the constituent responsible for this property. 2. In its immunological reactions pigment was organ specific and not species specific. These findings confirm the earlier work of Elschnig. 3. It was shown that when the eyes of a dog sensitized to a given protein were perfused with normal defibrinated blood containing this protein, the eyes reacted with a marked contraction of the pupil and with hemorrhages in the fundi. Using this reaction as a method, the immunological reactions of uveal tissue were again determined and points 1 and 2 again confirmed. 4. It was further shown that uveal tissue injected in one eye could cause a hypersensitiveness of the second eye, and when this second eye was later perfused with normal defibrinated blood to which uveal tissue was added, anaphylactic phenomena resulted. 5. Through sensitization by intracellular injection of uveal tissue in one eye and intoxication by intraperitoneal injection, sympathetic ophthalmia was produced experimentally in one instance. The clinical history and pathological studies of this experimental case were given. The speaker believed these findings constituted a scientific basis for the theory.

In discussing this paper Dr. G. E. de Schweinitz spoke of the other theories advanced to account for the occurrence of sympathetic ophthalmia and described Elschnig's theory. The clinical objections to this theory were that anaphylactic manifestations were usually active, and so differed from the usual course of sympathetic ophthalmia. It was hard to reconcile the theory with the benefit derived from preventive enucleation. Sympathetic ophthalmia happened almost wholly after penetrating wounds, especially of the danger zone. It was more frequent in children and robust persons than in those who have somatic anomalies. It was difficult by this theory to explain isolated areas of attack. At the same time this theory furnished a better explanation of the clinical interval between the injury and the onset of sympathetic trouble. The final proof of the correctness of the theory was not at hand.

Doctor Verhoeff did not think convincing proof of the theory had been furnished. He found it hard to see why the choroid did not react.

Doctor Schoenberg called attention to the reported scarcity of sympathetic ophthalmia in the present war. He has experimented along similar lines to those followed by Doctor Woods and did not get the same results in dogs that he did in rabbits, so he did not think the effects in man could be deduced from those obtained in dogs.

In closing Doctor Woods replied to some of the objections. A few cases of anaphylaxis ran chronic courses, and he thought the lack of active character the chief clinical objection. As regards preventive enucleation, about as good a case could be made out from it on one side as on the other. From eighty-six to a hundrd per cent. of the cases were of traumatic origin, but this part of the subject, as regards anaphylaxis, had not yet been worked out. Young people were more susceptible than older ones to anaphylaxis.

Oxycephaly.—In this paper, by Dr. Arthur J. Bedell, of Albany, attention was drawn to the literature of the subject, the few cases reported in America, and the fact that only eight operations have been cited. Emphasis was laid upon the three important symptoms: exophthalmos, impairment of vision, and cranial deformity, which tend to make the diagnosis comparatively easy. Histories of three cases were presented with photographs, x ray findings, and colored fundus drawings. The patients were members of the same family, a girl eleven years of age with practically normal vision and very slight fundus change; her brother, eight years old, with marked alteration of the shape of the head and bilateral optic neuritis; a younger sister showing even greater change in the head and bilateral optic atrophy. The boy was operated upon and finally came to autopsy, when it was found that the optic foramina were not narrowed by either bony growths or connective tissue bands. The speaker believed that oxycephaly should be diagnosed more often and surgical measures more frequently instituted.

The Endonasal Operation on the Lacrymal Sac.—Dr. W. B. Chamberlin, of Cleveland, said that the tear sac was common to the field of ophthalmologist and rhinologist and that more successful results for the patient may come from mutual help and cooperation. Up to 1890, according to West, treatment of dacryostenosis had made no real progress for twenty-five years. West reported seven operations on the duct in 1910. In 1913 he had reported the investigation of 300 cases, through the generosity of Professor Silex, of Berlin, with operations on 130 and successful outcome in over ninety per cent. He had operated on every possible sort of disease affecting the lacrymal apparatus. This operation, as developed by West, had the following advantages: 1. A natural pathway for tears was restored. 2. Cure by probing was unnecessary. 3. The lacrymal gland was spared. 4. The possibility of a scar was avoided. The tendency of the passage in the middle meatus to close led to Yankauer's operation. In 1912 he had reported nine cases, with seven abscesses cured and epiphora in only one. Tears passed into inferior meatus. Mosher devised his operation while developing his operation on the ethmoid labyrinth and the frontal sinus. He had reported having tried it abundantly on the cadaver and three times on the living, and that it was too soon to say much about results on the living. Doctor Chamberlain then presented his cases and his modification of West's instruments.

Dr. H. P. Mosher, of Boston, described his own operation, which differed from West's. The danger of a reclosure of the canal must be appreciated, but the operation seemed more efficient than extirpation of the sac. He advocated the use of a silver style to be worn several weeks to do away with the necessity otherwise present of subsequent probing.

June 7, 1917.

Conical Cornea or Anterior Myopia.—Dr. Edward Jackson, of Denver, concluded from a study of forty-five cases, which had been under observation for varying periods up to fourteen years, that this condition was the result of some impairment of the general nutrition which weakened the cornea to such an extent that it yielded before the intraocular pressure. The patients were apt to press upon the lids to improve the vision, but such pressure was dangerous to the eye. The myopia should be corrected with the glasses which gave the best vision which could not be improved by pressure. The eyes should not be bandaged, as this tended to soften the cornea, but the constant use of pilocarpine was advisable.

Dr. S. D. Risley, of Philadelphia, called attention particularly to the changes in Descemet's membrane to be expected in addition to those in the uvea, the thinning of the anterior sclera, and the engorgement of the anterior ciliary vessels. He believed that the impaired nutrition of the cornea explained both the changed curvature and the changes of the meridians.

A New Operative Method for the Relief of Advanced Cases of Keratoconus.—Dr. Meyer Wiener, of St. Louis, illustrated by diagrams the details of his operation. He excised an elliptical section of the cornea near the periphery as deeply as possible without perforating Descemet's membrane, and brought the edges together with sutures passed through two gold plates to prevent them from cutting out. He claimed excellent results and said that only a linear scar was left by the procedure.

Dr. Edward C. Ellett, of Memphis, Tenn., had no experience with this operation except experimentally on enucleated eyes. During these experiments he found that excellent illumination was a necessity, that his vision needed to be aided by a binocular loupe, and that a small perfect scalpel was the best knife. The cuts must approximate the same depth in the cornea. The removal of the included portion was easy. He preferred a single suture, each plate having two holes, to the two or three sutures advocated by Doctor Wiener, because it was sufficient to approximate the edges of the wound, and more sutures in the very limited space were apt to get tangled. It was as easy to introduce a suture in the cornea as in the sclera.

Doctor Wilder said that a lack of general nutrition did not seem to him to explain all of the phenomena in these cases; there must be some anatomical peculiarity in the cornea because of the changes that took place in the nerve endings and elsewhere. Sometimes the reflection of the wires of the ophthalmometer can be seen to wave. He had used with good results three or four cauterization cuts on opposite sides of the cornea nearly to the limbus through Bowman's membrane.

Doctor Turner believed that the paramount condition in the production of keratoconus was accessory sinus disease. This lowered the nutrition of surrounding parts, and turgescence of the nasal mucous membrane was associated with turgescence of the conjunctiva and apt to be associated with changes in the dioptric apparatus.

Doctor Fox preferred the cautery, though the suture was not as detrimental as it appeared to be.

Doctor Thomson thought the results of Wiener's operation better than those obtained by the cautery.

Doctor Jackson said that the clouding of the cornea in these cases might be temporary. The condition was not very apt to run in families. Sometimes the vision pulsated. He had found infection of the sinuses present in some cases.

Hereditary Syphilis in Patients with Interstitial Keratitis.—In the absence of Dr. Abner Post, of Boston, this paper was read by title.

Interstitial Keratitis, with Special Reference to the End Result.—As Dr. George S. Derby, of Boston, was absent on military duty, this paper was read in abstract. It contained the results of an examination of ninety-six cases of this disease two or more years after the last attack.

Dr. Arnold Knapp considered that a very important point in these examinations was that they had been conducted under a mydriatic. The results in this disease were proportionate to the severity of the attacks. Salvarsan and mercury were of great value in treatment in improving the general condition of the patient. Radium was of doubtful value. An onset of increased tension indicated a change of treatment locally, and an iridectomy was likely to give good results.

Dr. John A. Fordyce said that this disease illustrated the persistence of the infective agent in one location. Some patients presented interstitial keratitis as the only symptom of hereditary syphilis, while others presented other symptoms as well. Positive eye symptoms might be present with a negative Wassermann, and the reaction was apt to be absent in the cerebrospinal fluid. The reaction might be made negative by long continued treatment, and the blood could be reinfected from the eye.

Dr. F. Park Lewis obtained good results in clearing up the cornea by means of the galvanic current. An eye cup filled with salt solution and with the positive pole attached was applied to the eye, the negative pole placed in contact elsewhere, and the current allowed to pass for two or three minutes, two or three times a week.

Doctor Randolph was struck by the difference in the results obtained when the interstitial keratitis was due to acquired and when to congenital syphilis.

Dr. Hiram Woods reported a number of cases that illustrated difficulties of diagnosis of the cause and of treatment. He urged the importance of the follow up system in these cases.

Doctor Holt used anaphoresis. A ten or twenty per cent. solution of iodide of sodium was painted over the lid, the negative pole was applied to the eye, and the galvanic current passed. Afterward cataphoresis might be employed with the positive pole, using strychnine.

Doctor Verhoeff called attention to the differences in the clinical picture when the keratitis was due to tuberculosis and when due to syphilis.

Doctor Stoll urged that an intensive study of the family was an important aid in diagnosis. Both he and Doctor Wilder, who followed, urged emphatically that the treatment must be directed to the disease, and not to the symptoms alone.

Present Status of Corneal Transplantation.—Dr. Sydney Walker, Jr., of Chicago, said that three types of transplantation had been tried: autoplasty, homoplasty, and heteroplasty, with many varied forms of operative procedure. The first two contained at least the essential elements for success. Failures, which were in an overwhelming majority, were due in the main to heteroplasty, foreign body transplants, sepsis, and unfavorable cases. Doctor Walker's experiments began on dead tissue to develop technic and his work has been of the autoplastic and homoplastic type. The technic consisted of a modified Tiersch graft, sewn directly to the cornea and covered by a total conjunctival flap. Failures have been due to sepsis, undeveloped technic, and opening of the anterior chambers, while successful cases show a cornea with a scar very faintly discernible under strong illumination. Living subjects were presented.

Doctor Weeks called attention to the exceedingly small number of successful cases that have been reported, and that at the best successes would be very few and only in well selected cases. He considered that the method suggested by the writer was promising. He had had but one case, and in that he succeeded in improving the vision only slightly.

Doctor Fox also had had one case in which the vision had been improved to counting fingers.

Tendon Shortening.—Dr. Henry H. Briggs, of Asheville, N. C., drew the tendon through a silver link which was then clamped so as to shorten the tendon the desired amount without the use of sutures.

Doctor Walter preferred his own method, but thought that perhaps the two methods could be combined with advantage.

Doctor Jervey approved of the operation. It caused no adhesions of the conjunctiva to the sclera.

Doctor Wells was not satisfied with the way in which the cases were reported.

Doctor Todd thought the operation might be useful in a certain class of cases, but his attempts to perform it had proved failures.

Doctor McLeish also had found difficulty in performing the operation and had devised a modified forceps to help.

Doctor Moore described his method of measuring the amount of shortening of the tendon, which he secured by means of sutures. Even when the sutures came out they remained in place until after adhesions had formed.

Tendon Transplantation of the Eye Muscles.—Dr. Harry W. Woodruff, of Joliet, Ill., transplanted the outer halves of the superior and inferior recti to the insertion of the externus in a case of incurable paralysis of that muscle. The result was improvement cosmetically, but not functionally.

Doctor Todd reported a case in which he had obtained a vast improvement, which was demonstrated by means of moving pictures.

Doctor Turner likewise reported a case in which he did not tenotomize the internal rectus and inserted the transplanted tendons in advance of the insertion of the external rectus. The reaction was severe, but he obtained some mobility which increased in time. He suggested the use of only one muscle inserted close to the cornea.

Lymphatic Nodular Keratoconjunctivitis.—Dr. Leo J. Goldbach, of Baltimore, said that the nodular cellular lymphoid deposits, or phlyctenules, of the corneoscleral border were eye manifestations of a systemic dyscrasia, suggesting in majority of cases some form of tuberculosis. While the microscopical sections of these nodules showed giant cells, it did not follow that the nodules were tubercular, but rather indicated that the cellular infiltrate was a manifestation of the disease and not the cause. The treatment was hygienic and sanitary. Tuberculin injections—bouillon filtrate—should be made in amounts from 0.000001 to 15 milligrams. Prolonged tuberculin injections with small doses was important and pulse, respiration, and temperature should be watched carefully. Patients should sustain toxin given with no reaction.

In thirty-nine cases seven were found with pulmonary tuberculosis; sixteen had some form of tuberculosis; thirty-two had a positive von Pirquet; eighteen had adenoids and diseased tonsils; six showed the tubercle bacillus in sections; four showed tubercle bacilli in the sputum; eight physical examinations suggested some form of lung involvement; fifteen had a positive Wassermann reaction, eleven negative; seven had some member of the family with tuberculosis.

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Book Reviews

[*We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.*]

Acute Poliomyelitis. By GEORGE DRAPER, M. D., Associate in Medicine, College of Physicians and Surgeons, Columbia University; Associate Attending Physician, Presbyterian Hospital, New York. With a foreword by SIMON FLEXNER. With Nineteen Illustrations. Philadelphia: P. Blakiston's Son & Co., 1917. Pp. x-149.

The present small volume can hardly be said to be a complete monograph, although its appearance is opportune and the facts contained within its 150 pages authoritative. It cannot be said to approach, much less replace, the classical contribution of Wickman, for instance, which is available to English readers.

The author lays some emphasis upon the "dromedary" type of onset, since it was accented in the original Rockefeller Institute monograph of which this is largely an adaptation and abridgment. The clinical forms are inadequately described as far as the neurologist is concerned, as it appears to be the author's idea rather to reinforce the idea that poliomyelitis is really a widespread systemic infection in which the nervous pathology, while prominent and even predominant, is not a necessary part of the disorder. The chief accent of the work is laid, therefore, upon general features and considerable space is devoted to short reports of individual cases. With its limitations here outlined the work is an excellent one and worthy of the serious attention of all clinicians.

Psychological Medicine. A Manual on Mental Diseases for Practitioners and Students. By MAURICE CRAIG, M. A., M. D. (Cantab.), F. R. C. P. (Lond.), Physician for and Lecturer in Psychological Medicine, Guy's Hospital, Examiner in Psychological Medicæ for Diploma in Psychological Medicine, Cambridge University; Examiner in Psychology and Psychological Medicine, London University, etc. Third Edition. With Twenty-seven Plates, some in Color. Philadelphia: P. Blakiston's Son & Co., 1917. Pp. xii-484. (Price $6.).

In many ways the old facultative psychology still reigns rampant in this work. Definitions largely take the place of processes, and in true English psychiatric style, fashioned after such dogmatic intellectuals as Mercier and his group, we have presented to us a series of mechanical descriptive phenomena which have lost their humanism and become detached labels. Why continue in a medical work such footless discussions of what is insanity? This is a relic of the Roman period post-Hellenic decadence, when the stupid, stodgy Romans, unable to decipher what they called the subtleties of the Greek spirit of classifications of mental disorders, threw them all into one bin—insania—from which in certain lands they have never emerged. This book in part tends to perpetuate such stupidity and in this respect is misleading and mischief making. One might have supposed that a work going through three editions might really have had some ideas in it of the social functions of the human being, which largely through ideas and conduct are the signs external of the activities of his structures internal, but this book is devoid of ideas, or any such Greek subtleties. We trust it will be entirely rewritten if it should again be revised and then get away from its banal formalism and scholasticism.

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After Office Hours

The *Survey* seems always in touch with the work of the Red Cross. Thus the leading article in the June 9th number discusses the visit of the Red Cross War Council to France, and the issue for June 16th gives much information about the work of the organization and how volunteers can help.

* * *

You might search through the hospitals of New York and you wouldn't find three such attractive nurses as are pictured on one page in the July *Vanity Fair*—Frances Starr, Chrystal Herne and Gladys Hanson. It is just possible—we hesitate to mention it—that you could find three you would prefer to nurse you through an attack of typhoid.

* * *

Speaking of the versatility of doctors, how about nurses? There is Mary Roberts Rhinehart, for example. She has written thrilling detective stories, humorous spinster and "sub deb" stories, realistic hospital stories, entertaining travel stories, every kind of story you can imagine. Now she comes out in the *Saturday Evening Post* for June 23d with an article on the navy and its personnel. And Mary used to be a nurse!

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Collier's is doing a valuable service by helping the nation keep well. Under the title of Do Your Bit by Keeping Well in the June 9th issue we find a valuable article calling attention to the prevention of disease and offering to send various pamphlets on public health topics to anyone who writes. We might suggest that *Collier's* get in touch with the National Committee for Mental Hygiene and add mental prophylaxis to its work.

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How many of the readers of the NEW YORK MEDICAL JOURNAL, we wonder, have sat as children before a lithographic reproduction of "The Spirit of '76" and felt the blood leap through their veins as their hands grasped imaginary muskets and shadowy swords. Washington at Valley Forge, Don't-give-up-the-Ship Lawrence, Dewey at Manila Bay, and now it's Pershing somewhere in France. All honor to Archibald M. Willard, who caught the soul of a nation and put it on canvas. He is eighty years old this year. *Everybody's* for July gives a picture and some biographical details of this little known artist.

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Fiction can point a moral which would seem dull if given didactically. In the *Saturday Evening Post* for June 16th there is a story, Old Red Rambler, Red Rambler being the name of a whiskey which has been the property and financial backbone of an aristocratic old family for generations. Wallace Irwin, as always, has drawn his characters well—the fine, old school father and the degenerate, alcoholic son. On the eve of a State election with prohibition the real issue the profligate heir to the Red Rambler fortune escapes from a sanatorium and shoots a dancing girl. As his son goes to jail, the aristocratic old father is wondering where he got his bad blood.

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A delightfully nebulous, mystic article on spiritualism, telepathy, and the other mysterious, uncanny things that have such an attraction for middleaged women whose chief curses are embonpoint and ennui, is The Psychic Gift in the July *Metropolitan.* The very name of the writer, "Ollah Toph," fairly reeks of sandalwood, and incense, and mysticism, and bosh. She says, "I am psychic, having the gift demonstrable through mental phases," which is clear to the point of Jabberwockianism. She speaks of "rarefied self," "an extraneous personality," "clairvoyance," "prevision," "clairaudience," "clairsentience," and things of that sort just as unconcernedly as you or I would talk about livers, or buttons, or Liberty bonds. In short, she is a master of jargon of the cult and assures us, "My gift is not commercialized."

Official News

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending June 27, 1917:

Bryan, W. M., Passed Assistant Surgeon. Ordered to report to the Surgeon General of the Navy for special duty, under executive order dated April 3, 1917, and at the request of the Secretary of the Navy.

Crohurst, H. R., Sanitary Engineer. Directed to proceed to Petersburg, Va., on special temporary duty.

DeSaussure, R. L., Assistant Surgeon. Granted five days' additional leave of absence on account of sickness from June 15, 1917.

Fricks, L. D., Surgeon. Relieved at Victor, Mont., and directed to report for duty in malaria investigations, with headquarters at New Orleans, La.

Guiteras, G. M., Surgeon. Ordered to report to the Surgeon General of the Navy for special duty, under executive order dated April 3, 1917, and at the request of the Secretary of the Navy.

Hasseltine, H. E., Passed Assistant Surgeon. Directed to proceed to Baltimore, Md., for observation of water supplied by common carriers to passengers in interstate traffic.

Irwin, Fairfax, Senior Surgeon. Ordered to report to the Surgeon General of the Navy for special duty, under executive order dated April 3, 1917, and at the request of the Secretary of the Navy.

King, W. W., Surgeon. Relieved as chief quarantine officer of Porto Rico and directed to proceed to St. Thomas for duty as quarantine officer of the Virgin Islands.

Lloyd, B. J., Surgeon. Ordered to report to the Surgeon General of the Navy for special duty, under executive order dated April 3, 1917, and at the request of the Secretary of the Navy.

Lumsden, L. L., Surgeon. Relieved at Hygienic Laboratory, Washington, D. C., and ordered to proceed to St. Louis, Mo., and assume charge of the studies of rural sanitation.

McKeon, F. H., Surgeon. Granted twelve days' leave of absence from June 29, 1917.

Magruder, G. M., Surgeon. Ordered to proceed to San Francisco, Cal., July 5, 1917, for examination to determine his fitness for promotion to the grade of senior surgeon.

Perry, N. V., Constructing Engineer. Directed to proceed to the Baltimore, Md., Marine Hospital for conference relative to improvements in buildings.

Pettus, W. J., Senior Surgeon. Ordered to report to the Surgeon General of the Navy for special duty, under the executive order dated April 3, 1917, and at the request of the Secretary of the Navy.

Phelps, E. B., Professor. Directed to proceed to Charleston, W. Va., on special temporary duty.

Rhynus, C. P., Assistant Sanitary Engineer. Relieved at Hygienic Laboratory, and directed to proceed to New Orleans, La., for duty in malaria investigations.

Smith, E. E., Sanitary Bacteriologist. Directed to proceed to Charleston, W. Va., on special temporary duty.

Spencer, R. R., Assistant Surgeon. Ordered to report to the Surgeon General of the Navy for special duty, under the executive order dated April 3, 1917, and at the request of the Secretary of the Navy.

Stimson, A. M., Surgeon. Ordered to report to the Surgeon General of the Navy for special duty, under the executive order dated April 3, 1917, and at the request of the Secretary of the Navy.

Stout, J. D., Assistant Surgeon. Ordered to proceed to Ellis Island, N. Y., for instruction in methods of detecting feeblemindedness and other abnormal conditions in aliens.

Veldee, M. V., Sanitary Bacteriologist. Directed to proceed to Arkansas and other localities for duty in field surveys of sanitary conditions on watersheds in States south of the Potomac and east of the Mississippi rivers, and in Arkansas.

Waller, C. E., Assistant Surgeon. Ordered to proceed to Cincinnati, Ohio, for duty in field surveys of sanitary conditions on watersheds south of the Ohio and east of the Mississippi rivers.

White, M. J., Surgeon. Ordered to report to the Surgeon General of the Navy for special duty, under the executive order dated April 3, 1917, and at the request of the Secretary of the Navy.

Williams, L. L., Senior Surgeon. Ordered to report to the Surgeon General of the Navy for special duty, under the executive order dated April 3, 1917, and at the request of the Secretary of the Navy.

Wrightson, W. D., Sanitary Engineer. Ordered to proceed to Baltimore, Md., for observation of water supplied by common carriers to passengers in interstate traffic.

Young, G. B., Surgeon. Ordered to report to the Surgeon General of the Navy for special duty, under the executive order dated April 3, 1917, and at the request of the Secretary of the Navy.

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Births, Marriages, and Deaths

Married.

Cleveland-Colgate.—In Bennington, Vt., on Wednesday, June 20th, Dr. Mather Cleveland, of New York, and Miss Susan Everett Colgate.

McVey-Hurley.—In Dorchester, Mass., on Thursday, June 28th, Dr. Frederick J. McVey, of Boston, and Miss Anna Frances Hurley.

Porter-Spyker.—In New Orleans, La., on Monday, June 18th, Dr. Sydney D. Porter, of Baton Rouge, and Miss Nella Spyker.

Smith-Allen.—In New York, N. Y., on Tuesday, June 12th, Dr. Dudley Smith, of Oakland, Cal., and Miss Florence Carol Allen, of Spokane, Wash.

Storer-Risden.—In Berkeley, Cal., on Saturday, June 16th, Mr. Tracey I. Storer and Dr. Ruth C. Risden.

Treiber-Graff.—In Trenton, N. J., on Sunday, June 17th, Dr. Benjamin A. Treiber and Miss Bella Graff.

Watts-Hory.—In New York, N. Y., on Saturday, June 9th, Dr. Joseph Watts, of Bridgeport, Conn., and Miss Katherine Alberta Hory.

Died.

Brown.—In Orange, Texas, on Tuesday, June 19th, Dr. Edgar W. Brown, aged fifty-six years.

Chapin.—In Boston, Mass., on Monday, June 25th, Dr. Amory Chapin.

Cotter.—In Los Angeles, Cal., on Saturday, June 16th, Dr. Peter G. Cotter, aged sixty years.

Hayes.—In Bellefonte, Pa., on Wednesday, June 20th, Dr. Robert G. H. Hayes, aged fifty-seven years.

Hobbs.—In Chicago, Ill., on Thursday, June 21st, Dr. John Oliver Hobbs.

Howland.—In New Haven, Conn., on Monday, June 25th, Dr. Charles Hubbard Howland, aged sixty-seven years.

Hoy.—In Columbus, Ohio, on Wednesday, June 13th, Dr. William S. Hoy, of Wellston, aged sixty-four years.

Jenkins.—In Stockholm, N. Y., on Thursday, June 21st, Dr. Theron D. Jenkins, of Winthrop, N. Y., agen twenty-six years.

Lankford.—In Norfolk, Va., on Monday, June 18th, Dr. Livius Lankford, aged sixty-four years.

Pursselley.—In Springfield, Mo., on Thursday, June 21st, Dr. Walter L. Pursselley, aged fifty-one years.

Rex.—Wichita, Kansas, on Wednesday, June 20th, Dr. Loren E. Rex, aged forty-one years.

Sidney.—In Fitchburg, Mass., on Monday, June 25th, Dr. Austin W. Sidney, aged ninety-three years.

Smith.—In Danville, Pa., on Tuesday, June 19th, Dr. Nelson M. Smith, aged sixty years.

Stillings.—In Concord, N. H., on Friday, June 22nd, Dr. Ferdinand A. Stillings, aged sixty-eight years.

Tearney.—In Baltimore, Md., on Monday, June 25th, Dr. Joseph F. Tearney, aged sixty-two years.

Tubb.—In Bessemer, Ala., Wednesday, June 20th, Dr. James M. Tubb, aged sixty-six years.

Ward.—In Bloomington, Ind., on Sunday, June 17th, Dr. James G. Ward, aged seventy-one years.

Whitman.—In Los Angeles, Cal., on Thursday, June 14th, Dr. Charles H. Whitman, aged sixty-three years.

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Original Communications

X RAY DIAGNOSIS IN DISEASES OF THE CHEST.*

By George E. Pfahler, M. D.,
Philadelphia.
Professor of Röntgenology, Medico-Chirurgical College of Philadelphia.

The value of the x rays in diagnosis of diseases of the chest has been definitely established and is being almost universally recognized. The x ray will give evidence of disease within the chest, 1, whenever there is any change in contour of the chest as a whole or any part of the chest; 2, when there is any change in density of any portion of the chest, or any change in density of any organs within the chest; 3, when there is any change in the movements of the organs within the chest.

In studying the heart, the aorta, the diaphragm, or the lung tissue, the value of evidence will depend upon the skill of the operator in producing good plates or in obtaining good fluoroscopic images upon the screen, and of by far greater importance will be the skill with which the abnormalities are interpreted. With regard to interpretation, one should have a knowledge of all the possible macroscopical pathological changes which may affect the chest as a whole or any organ within the chest. Therefore, the more the röntgenologist knows of pathology the more skillful is he likely to be in the interpretation of the evidence at hand. One should also have a thorough knowledge of the history and progress of the various diseases affecting the organs within or about the chest so that the proper value can be placed upon the evidence at hand according to the probable stage of development in any particular disease. Therefore, the more the röntgenologist knows of the diseases of the chest in general, their history, and their favorite location, the more valuable will be the evidence obtained by the Röntgen rays. While I believe that the most valuable and most definite evidence of disease can be obtained by the Röntgen rays, it should not be considered as an isolated diagnostic point, but should be measured in conjunction with the history, physical signs, and the progress of the disease in every individual case. Inconsistency or contradiction in evidence must be considered most carefully and as far as possible be eliminated before arriving at a final diagnosis. Inconsistencies and contradictions usually mean ignorance in some respect, and a frank acknowledgment of this fact to oneself will often lead to increased effort, further study, and a proper diagnosis. I have observed that very generally mistakes in diagnosis are not so much the result of ignorance as of insufficient work or carelessness. In this very brief paper it will be impossible to present any phase of this subject exhaustively. I present merely a résumé of facts as observed by röntgenologists.

Pulmonary tuberculosis.—Probably the most frequent use of, and the most valuable evidence of disease within the chest is obtained in the study of tuberculosis. Tuberculosis can be recognized as early as there are tissue changes which will produce some variation in the degree of density of the lung. The early x ray evidence is obtained only upon plates, and these plates should be made stereoscopically, preferably a pair of stereoscopic plates made anteriorly and a pair posteriorly. Added to this there should be a special plate made of the apices of the lungs eight by ten inches in size, the rays being sent obliquely downward in line with the chin so as to project the clavicles downward and clear the apices of the lungs. The evidence of disease about the apices of the lungs can be further demonstrated more clearly if one instructs the patient to exhale forcibly against resistance, i. e., an ordinary deep breath forced against the lips and palate without allowing any air to escape distends the apices of the lungs. This can be seen fluoroscopically in a healthy individual. In the respiratory act during inspiration and full retention of this inspiration the lower portion of the lung becomes greatly distended, but the apices are less distended. During exhalation, however, under normal conditions, the apices of the lungs become distended with air and become beautifully illuminated. When one studies good stereoscopic plates showing a great amount of detail under favorable conditions, the evidence of early tuberculosis will consist in the minute deposit of tubercles at the points which pathologists have long determined to be the most frequent. While conditions vary and while there are exceptions to all rules, one finds this evidence most frequently at the apices and particularly the inner portion of the apices of the lungs extending down along the vertebral border. This evidence may occupy also the apices of the lower lobe or the outer portion of the

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*Read before the American Climatological and Clinical Association, at Lakewood, May 31, 1917.

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middle lobe in adults, while in children the disease seems to extend most frequently outward from the roots of the lungs.

Tuberculosis in children is best studied by means of good intensifying screens upon plates because of the difficulty in getting the patient to remain quiet even for an instant. Intensifying screens and a soft tube will give much detail with very short exposures. A tenth to a twentieth of a second exposure in very young children will usually be sufficient. In looking for early tuberculosis in adults it is well to keep in mind the fan shaped arrangement upon which Dunham lays so much stress. In this fan shaped arrangement the disease is seen in the distribution of the terminal bronchi. One must not lay too much stress upon this arrangement, for when it is present it is of value and should be looked for, but it may not always be presented with the flat side toward the eye, and one may see the grouping on edge. If one keeps in mind simply the terminal branches of the bronchi and looks for the lesion in such an arrangement, one can often make the diagnosis early. This evidence, of course, should not be taken as an isolated factor, but in conjunction with the physical signs. In many instances it will make a doubtful diagnosis positive, or may be the means of eliminating tuberculosis. Advanced tuberculosis can always be recognized and it can be recognized by all methods of diagnosis. In fact very commonly the patient brings the diagnosis to the physician. Extensive consolidation and cavity formation can be demonstrated clearly on plates or can be seen fluoroscopically. The extension of the disease from the apices downward toward the base of the lungs should always suggest tuberculosis and the diagnosis should be definitely proved negative before given up. The infiltration which is so frequently found extending into the lower lobe from the lower bronchial tree is, I believe, very rarely tuberculosis, but is found commonly in chronic bronchitis. It is usually secondary to dust infection. Bronchiectasis must be considered in these conditions especially.

The three diseases which are the most difficult for me to differentiate from early tuberculosis are metastatic carcinoma, leucemia, and syphilis. For the differentiation of these conditions one must often study very carefully the history and progression of the disease, for it is entirely possible for any of these three diseases to be associated with tuberculosis. There are, however, differentiations which are of some value.

Metastatic carcinoma.—The history of previous carcinoma, particularly when it has involved the breast, will be of considerable value. The disease itself may often be distributed through the lungs in almost an identical manner. A general diffused infiltration by carcinomatous nodules may be present and may give almost identical evidence with the general or disseminated tuberculosis, or it may occupy only the apices of the lungs as in tuberculosis. Generally, however, the disease spreads outward from the roots of the lungs or the mediastinum. It may, however, occupy any portion of the lungs and extend from this central source. There is this slight difference: in metastatic carcinoma the disease develops from some point and gradually invades the surrounding tissue by direct extension, presenting, I believe, a more uniform appearance than in the tuberculosis—in other words, a less mottled appearance. For instance, if disease begins in the apices there is at the time an increased density very gradually shading into the surrounding tisues, and if the disease is followed over a few months the progression can be observed very positively and the increase in density both in the original portion as well as in the extension outward. There is very rarely, if ever, cavity formation and the disease in more generally associated with pain.

Leucemia.—Leucemia presents a general mottling very similar to that of tuberculosis, but it is more apt to be a general affection of the lungs. This differential diagnosis may seem unimportant to the average physician, however. During the past year I had a patient who had been confined for six months in a tuberculosis sanitarium because she had a persistent cough, a moderate degree of anemia, and physical signs suggesting tuberculosis of the lungs. A blood count had been made, but the differential count had been omitted. The chest had been examined but a very large spleen and the abdomen had not been palpated. This showed great carelessness, as in most mistakes in diagnosis.

Syphilis of the lungs.—This is, I believe, rare. It does occur, however, and there are physical signs and symptoms similar to tuberculosis. Röntgenographically the appearance of the lungs may resemble tuberculosis very closely. Here again, however, the involvement of the lungs is more apt to be of a general character, or to extend outward from the roots of the lungs rather than to involve the apices of the lungs or the apices of the lobe and extend downward.

Bronchiectasis must also be differentiated from tuberculosis. In its classical form the diagnosis is easy, but many cases occur in which the symptoms are in no sense those of the classical type. When the cavity or cavities are large and when large quantities of sputum are expectorated, which the student is taught to expect, the diagnosis is simple, but there are a large number of patients who have a persistent cough, a moderate degree of emaciation, and considerable expectoration and in whom none of these classical symptoms are present. They represent the type in which there are many very minute bronchial dilations, as can be shown by stereoscopic observation. They give physical signs very similar to tuberculosis, but röntgenographically the disease is distributed more especially in the base of the lungs and above the lower bronchial trees, though it may involve even the upper bronchi.

Bronchopneumonia cannot always be differentiated from tuberculosis. This is especially true in children in whom there may be the same onset, the same general symptoms and practically the same character of Röntgen findings. In most cases the disease extends outward from the roots of the lungs. It has seemed to me, however, that upon careful study of the plates there seems to be a tendency in the tuberculous variety to extension upward about the upper bronchial tree, while in the other form of bronchopneumonia the disease tends to extend outward and downward from the roots of the lungs. In adults the bronchopneumonic type of tuberculosis is less common and the possibilities, therefore, are in favor of an infectious bronchopneumonia rather than tuberculosis when the disease can be clearly demonstrated as extending from the roots of the lungs outward.

Lobar pneumonia.—The physical evidence of lobar pneumonia is clear, and generally Röntgen evidence is not called for. Occasionally, however, the symptoms and physical signs are obscure. Studied röntgenologically lobar pneumonia occupies usually one of the lobes of the lungs, sometimes two or more. Rarely is it confined entirely to the lobe, and very commonly there is not total consolidation. It is probably this that leads to obscure physical signs. When there is much consolidation about the root of the lung with a peripheral compensatory emphysema the physical signs would naturally be obscure, and in such instances a Röntgen study will be of the greatest value. The Röntgen rays will also be of value in studying the patient during convalescence. It usually requires a considerable time, sometimes weeks or a month, for the lungs to clear up completely after a lobar pneumonia, and, as is well known, such an affection may be associated with tuberculosis or may pass imperceptibly into tuberculosis which is probably because there has been a previous infection by tuberculosis and the superadded pneumonia breaks down the resistance sufficient for the disease to develop.

Tumors of the lungs.—Practically all tumors of the lungs are secondary, and therefore a history of previous involvement of some other portion of the body by tumor tissue can generally be obtained. However, primary carcinoma of the lungs may occur. I have had the oportunity of studying and treating one such case. The Röntgen evidence showed a small area of consolidation extending outward from the roots of the lungs. The diagnosis was definitely made by the patient, a physician, coughing up a portion of the tissue which was examined microscopically. This area disappeared under x ray treatment. In the study of tumors of the lungs there is generally a previous history of the removal of malignant disease, but very often there is a vague history of the removal from some other portion of the body of a tumor which was perhaps considered benign, or the diagnosis of which was uncertain. Therefore, one must not hastily jump at conclusions as to the diagnosis of metastatic disease of the lung.

Metastatic sarcoma.—In my experience sarcoma is a frequent occurrence in the lung tissue secondarily, when sarcoma has been present in some other part of the body. It gives characteristically sharply defined nodules scattered through the lungs. The patient may even have no pulmonary symptoms or only a very slight cough. I have found extensive involvement of the lungs when there were absolutely no pulmonary symptoms, and it is my practice when there is a history of sarcoma and perhaps a recurrence, always to examine the lungs for metastasis. Very frequently the disease will be found. I have never seen metastatic carcinoma present lesions that were so sharply defined. Very generally the carcinomatous involvement of the lungs extends by the gradual infiltration, and when it occurs as isolated deposits, surrounded by healthy lung tissue, there is still this general fuzzy extension.

Acute pleurisy can probably not be diagnosed by the Röntgen rays excepting in so far as it can be seen to limit the motion of the portion of the chest involved, particularly as it affects the movements of the diaphragm of the affected side. Chronic pleurisy is very generally associated with adhesions. It will, therefore, when it involves the diaphragm, give characteristic interference with movement of the diaphragm and at each point of adhesion of the diaphragm a limitation of the movement. Sometimes this gives the diaphragm a puckered appearance at a number of points. If the pleura is greatly thickened, no matter what area is involved, it will also give some decrease in the transparency as compared with the surrounding areas of the lungs. If it is of the tuberculous variety, which is very common and occupies the apices of the lungs, there is very frequently associated tuberculosis of the lungs. Here there is a general opacity or indefiniteness in outline which very frequently involves the apices of the lungs. Pleuritic effusions should always be examined with the patient in the upright position. In the recumbent posture there is little or no evidence unless the effusion is very great. When the patient is examined in the upright position with pleural effusions, an upper level of increased opacity can be recognized. This is not great and is usually not sufficient to obliterate lung detail, but a distinct line of demarcation can be recognized between the clear lung tissue and the effusion below. This line is never level in the sense that one obtains a level of water in a basin, but is curved, usually outward and upward. This evidence is obscure when there is associated disease of the lung, and is not recognized therefore in an early stage. In advanced pleural effusion there may be considerable compression of the lungs and then the disease is more clearly recognized. The character of the fluid can rarely be differentiated by the Röntgen rays. In a general way empyema gives a slightly greater increase in density, but this is not sufficiently valuable to be seriously considered.

Encysted pleural effusions or *encysted empyema.*—For the diagnosis of this condition the Röntgen studies are of great value, and in this one should make both a fluoroscopic and a röntgenological study. Appearances in this condition are usually very characteristic. There is a dense area surrounded by clear lung tissue and the lines are sharply defined. In this respect the disease differs from abscess of the lungs.

Abscess of the lungs.—In the early stage abscess of the lung will present simply a localized area of consolidation shading gradually into the surrounding tissues. After necrosis of the centre and evacuation of a portion of the abscess have occurred, a cavity surrounded by consolidation progressively shading into the surrounding tissue will be observed. This abscess may be pyogenic in origin or it may be tuberculous. If tuberculous, the other evidences of tuberculosis previously referred to will be associated. If pyogenic, the disease is likely to occupy the central portion of the lung or the base of the lung. For this purpose the Röntgen rays will also be of considerable value in locating the abscess definitely before surgical intervention, if considered desirable. It has been my observation that when an abscess heals spontaneously the diaphragm on the affected side rises progressively, permitting the cavity to close, and then, after healing is complete, there is a gradual increase in the movements of the lung and diaphragm until it becomes quite transparent again.

Gangrene of the lung, I believe, differs in no respect röntgenologically from abscess of the lung, and the real differentiation consists in the use of the olfactory sense by the röntgenologist or attending physician.

In the study of the heart one observes the size, position, shape, and peristaltic contractions, and the variation of these will often give valuable evidence for diagnosis. The size of the heart will, of course, vary with the individual and no definite standard of the size of the heart can be set. It will vary just as the size of any other organ of the body will vary, whether it be the stomach, the nose, or the little finger. The size will vary not only with the individual, according to birth, but also according to the occupation and the use to which he has put his heart and body, so that the mere record of the size of the heart without due consideration of all other factors is of little significance. Therefore, extensive use of the orthodiagraph has never appealed to me. When there is considerable variation in size one can recognize and interpret the plates with their proper value. The size of the heart can be accurately determined by means of teleoröntgenography, which consists in photographing the heart at a distance of about six feet or two metres. This gives almost the exact size of the heart, there being practically no distortion. Such a record is infinitely more accurate than any that can be obtained by percussion or "physical diagnosis." In fact, I believe that by percussion one cannot determine the size of the heart, as a rule, more accurately than within a half an inch. This statement will startle those who have not had actual experience with expert diagnosticians measured up against photographic records.

The position of the heart is also variable and will vary with every movement of the diaphragm. When the diaphragm is high, either from forced exhalation or from distention of the abdomen by tumor, fluid, or gas, the heart will occupy the highest position and the apex of the heart will be projected upward toward the left side of the chest. In other words, the heart will assume a more nearly transverse position. During forced inspiration, on the other hand, the heart will assume a more nearly vertical position. In addition to this, in most movements there is more or less rotation. Therefore, in interpreting the size and position of the heart one must take into consideration the position of the diaphragm and the associated abdominal conditions.

The shape or outline of the heart is of the greatest diagnostic value. Hypertrophy or dilatation in the region of any of the cavities of the heart can be recognized. In hypertrophy of the left ventricle there is distinct projection to the left and distinct enlargement in the region of the left ventricle. With general dilatation, on the other hand, the heart changes from its pear shape to a more or less globular form, and variation between these two extremes can be recognized definitely. Proper interpretations will be of considerable value in the ultimate diagnosis.

The peristaltic movements are perhaps of even greater value, and these must be observed fluroscopically or upon the screen. There is a striking difference between the strong, steady contraction of the healthy individual as compared with the rapid, flabby, and more or less general wavy pulsation associated with general dilatation. The study of these various points with reference to the heart is ultimately of considerable value not only in arriving at a diagnosis, but in estimating the progress of the disease either toward recovery or toward ultimate death.

Pericardial effusion.—This can be recognized and often diagnosed by means of the Röntgen rays. In this one finds, as would be expected, a more or less triangular sac with a base at the bottom. The general shape of the heart and pericardium is a large triangle, and if the effusion is great there may be a total absence of the peristalsis, or if not great the peristaltic wave is definitely diffused or made less distinct.

The study of the great vessels is of much value. By making use of the oblique position a general atheroma or localized plates within the aorta can be recognized very early. This condition is commonly associated with angina pectoris, so that when a patient has anginoid pains it is worth while to make such a study and establish the diagnosis more definitely.

Aneurysm is recognized by the tumor formation along the course of the aorta presenting expansile pulsation. These are the essential characteristics.

Mediastinal tumors may occupy a similar position. They present no expansile pulsation, though they may present some transmitted pulsation. If the mediastinal tumors are multiple, such as commonly occurs with Hodgkins's disease or other glandular conditions, one can very easily differentiate it from aneurysm. If there is a primary growth, such as sarcoma of the lung, the persistent extension outward from the mediastinum into the lung tissue clearly makes a differential diagnosis.

CONCLUSIONS.

1. The Röntgen rays are valuable in diagnosing any condition which will cause an increase or a decrease in density of the lung tissue.

2. The Röntgen rays will be useful in recognizing the position, fixation, or deformities of the curve of the diaphragm.

3. The size, position, outline, and character of peristaltic movements can be recognized with regard to the heart and the Röntgen rays will, therefore, give valuable evidence in the diagnosis of any condition which modifies any one of these factors.

4. Aneurysms and all tumor formations within the mediastinum can be recognized and usually definitely diagnosed.

1321 Spruce Street.

BLOOD TRANSFUSION.*

With Special Reference to the Citrate Method (Lewisohn).

By Charles Gordon Heyd, B. A., M. D.,
New York,
Adjunct Professor of Surgery, New York Post-Graduate Medical School and Hospital.

(*From the surgical department of Dr. J. F. Erdmann, director of surgery, New York Post-Graduate Medical School and Hospital.*)

The history of transfusion is of particular interest in demonstrating how a very useful idea was conceived in the minds of many men, how its application was carried on energetically for a period of time, and finally how it was discarded on account of the insurmountable difficulties encountered in its application. It is recorded that at the time Columbus discovered America an attempt was made to prolong the life of Pope Innocent VIII by transfusion, which was unsuccessful and resulted in the death of two donors.

At the present time there are two well established forms of technic known as the direct and indirect methods of transfusion. The direct method depends upon the approximation of the endothelium of the donor and the recipient. The first application of this method was by direct suture of the intima of an artery to the intima of a vein which was known as the direct arteriovenous anastomosis. This method has well defined limitations. It requires a high degree of special surgical dexterity, considerable time, and a strained and awkward position for both the donor and the recipient and has the further disadvantage of not permitting knowledge of the dose or quantity of blood transfused. An improvement in the direct anastomosis method was initiated by Crile when he devised a cannula for the approximation of intima to intima. The objection to this method of anastomosis was that it still required a high degree of special dexterity and had all of the disadvantages except suturing that were inherent in the direct anastomosis. The transfusions were usually from artery to vein and a number of complications and accidents occurred, the most important of which was acute dilatation of the right side of the heart of the recipient.

As a further elaboration of the technic of transfusion there were devised certain tubes for the purpose of bringing artery and vein together. These were simply tubes of glass or metal usually coated with paraffin to prevent coagulation and were associated with the names of Brewer, Lespinasse, Bernheim, and others. Fauntleroy, Dorrance, and Bernheim suggested a further improvement in making the transfusion from vein to vein, thereby eliminating one of the chief sources of danger from arteriovenous anastomosis, namely, the dilatation of the right heart.

All of these procedures were excellent and were founded upon a just appreciation of the elements that made transfusion safe, namely, the elimination of injury to the vessel and the prevention or inhibition of clotting. In general this was the condition of transfusion up to about 1912 when Lindeman resurrected an old idea and gave an efficient, practical method of indirect blood transfusion. The indirect transfusion embraces two well known methods. The first depends upon transferring blood from the donor to the recipient by means of syringes before coagulation of blood can occur. The second procedure disregards the time factor of clotting by the use of anticoagulants. The syringe method of Lindeman with specially devised cannulas was the successful application of a procedure carried out by Ziemssen about twenty years ago. Lindeman demonstrated that it was possible to withdraw blood in a perfectly plain sterile syringe and transfer it to the recipient before clotting could occur. The minimal clotting time provides an adequate interval for such a technical procedure. The conclusive proof that this could be readily and easily accomplished brought with it a number of methods all based upon the essential fact that rapidity of transfer prevented coagulation. A further elaboration recognized that the coagulation time was retarded by the use of paraffinized tubes such as the Klimpton-Brown and Percy tubes and the more complicated tubes of Satterlee and Hooker.

The syringe method required a fair degree of technical skill, an assistant your technical equal, and the precise coordination of movements between the two. It also required frequent washing of syringes to prevent coagulation. That it is not the ideal procedure is evidenced from the fact that there have been about twelve modifications of the Lindeman technic, the most noteworthy being the apparatus of Unger, Kush, Bernheim, and Miller.

It has long been a recognized procedure in laboratory technic to prevent coagulation of blood by a variety of chemical materials—oxalate, citrates, fluorides, etc. The utilization of anticoagulants had not been applied to blood transfusion for the simple reason that most of the anticoagulants in doses sufficient to enable a transfusion were highly toxic to the individual. This is the objection to the use of hirudin of Satterlee and Hooker which, although it effectively prevents coagulation, is very toxic for the individual if used for a 500 c. c. transfusion. It appears that Huston and Lewisohn, at about the same time, although priority must be accorded to Huston, conceived the idea of using definite concentration of sodium citrate for the purpose of preventing clotting and applied it for human transfusion. R. Weil had suggested blood transfusion by sodium citrate, but in a concentration much in excess of that used by Lewisohn. The present technical status of blood transfusion would seem to rest between one or the other of the various forms of syringe transfusions and the so called citrate method.

With a moderately extensive experience embracing all methods of transfusion it is my opinion that the citrate method for nearly all practical purposes, places transfusion upon simple, efficient grounds and its practical application within the means and technical skill of most practitioners.

Let us consider some of the conditions which transfusion may be reasonably expected to cure, and in which it may be expected to improve or to prolong life. The first and foremost indication is acute hemorrhage such as hemorrhage from trauma, from gastroduodenal ulcer, in typhoid, in ectopic pregnancy, etc., and the hemorrhage associated with surgical operations, such as tonsillar hemorrhage, etc. Curtis and David have demonstrated that in conditions of profound hemorrhage a saline infusion will bring about an immediate reaction with a return to comparative wellbeing. It would seem that the system needs an immediate quantity of fluid and that the gross quantity of fluid, *per se,* is of manifest aid in the maintenance of circulation. The effect from saline is temporary and is followed in four to six hours by collapse and death. It follows then that the indication in hemorrhage is for a replacement of blood sufficient to maintain the circulation and carry on the physiological conditions of oxygenation; in other words, a large, massive transfusion of 700 to 1,000 c. c., or more.

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*Read before the Jenkins Medical Association, October 14, 1915.

When is the most favorable time for transfusion in a case of bleeding? If transfusion is done during the course of the bleeding it may cause the hemorrhage to continue. If transfusion is delayed the patient dies before it can be carried out. However, in the great majority of cases of severe hemorrhage bleeding continues up to a certain point at or near the mortality line, and then stops. In practice the transfusion should be done some time after this point is reached. Two experiences along this line are particularly impressing.

Case I.—A man thirty-six years of age had a pronounced gastric hemorrhage. The patient reacted after his hemorrhage and for three days no transfusion was performed, although everything was ready for a syringe transfusion at a moment's notice. The patient did not bleed again and on the morning of the fourth day transfusion by the syringe method was done and 700 c.c. of blood given. The patient had no further hemorrhages and at the end of ten days submitted to surgical intervention for the cure of his ulcer.

Case II.—A man, sixty-eight years of age, for four years had had severe hemorrhages from the bowel. During the first part of this year he had three separate attacks of hemorrhage from the bowel and almost died at the third bleeding. He reacted in a measure: hemoglobin had fallen to thirty per cent., red cells had fallen to 1,200,000. For forty-eight hours he was observed very carefully and finally the bleeding stopped. Three days later 600 c.c. of blood were transfused by the syringe method. He made an uneventful recovery and had no further hemorrhages.

The second indication for transfusion is to introduce blood for chemical purposes. Within this group come the transfusions for improvement or the cure of distinct hemorrhage diseases: hemophilia, purpura hemorrhagica, pernicious anemia, leucemia, etc. We have done a number of transfusions for pernicious anemia and except for a temporary improvement there has been neither a cure nor any permanency in the resulting improvement. In hemophilia blood transfusion has been successful in a large percentage of cases and is one of the best means that we have of bringing about a cessation of the bleeding. In those anemias that are secondary to nephritis, blood disease, and endocarditis transfusion has been of distinct service. If repeated doses of 200 to 350 c. c. of fresh blood are introduced into the circulation in a well defined case of secondary anemia with general impoverishment of the body, an intense activator of the hematopoietic organs is provided. Unquestionably the blood that is transfused is very rapidly destroyed and does not live probably longer than a week or ten days, yet we find that these patients exhibit two well defined clinical reactions. Within the first forty-eight hours a very marked rejuvenation and sense of wellbeing are noted and then, at the end of a week or ten days, a secondary pronounced reactive hematogenesis in which quantitatively and qualitatively the blood is markedly improved. In these cases small transfusions repeated every three to four weeks give the most benefit.

The third indication for transfusion comprises conditions of chronic sepsis such as chronic suppurative osteomyelitis, endocarditis of Streptococcus viridans origin or the chronic sepsis of a pylonephrosis, etc. We have yet to see transfusion accomplish any sustained benefit in a case of acute sepsis, such as an acute septicemia or acute pyemia. The most significant results have been observed in cases of chronic sepsis, particularly of the endocarditic group and especially when due to Streptococcus viridans. These particular forms of septicemia are essentially chronic, covering long periods of time and slowly resulting in exhaustion and death. In this type of cases we have had some very distinct cures, if one may so use the word, from transfusion. Here again a form of therapy is offered capable of extensive application.

Case III.—In a case of endocarditis due to Streptococcus viridans with positive blood culture we decided upon a series of blood transfusions. We anticipated giving doses of 200 c.c. of blood every three weeks over a long period of time or until such time as their futility was demonstrated. A strong, healthy donor was successively inoculated with a prepared vaccine of Streptococcus viridans obtained from the patient. This resulted in immunization of the donor, whose blood in addition to the chemical qualities would supposedly contain antibodies for a Streptococcus viridans infection. The patient had about six transfusions of from 200 to 350 c.c. from the immunized donor and at the end of three months the blood culture was negative and clinically the patient was cured.

Whether the patient would have recovered without the transfusions is of course impossible to determine. In acute sepsis we have never seen anything except temporary benefit from transfusion. Our transfused patients with acute sepsis have all died. It is interesting to speculate as to why a transfusion does accomplish something in conditions of chronic sepsis. We assume that a condition of chronic or continued sepsis gradually exhausts the immunizing potentialities of the patient. In other words, after a period of time there comes a break in the immunity and the patient is unable to neutralize the toxic effect of the infection and there is loss of weight and strength and progressive anemia with exhaustion. By blood transfusion we make a homologous transplant with its unknown biotic properties, antibodies, oxygen, serolysin, bacteriolysin, and other undetermined chemical properties.

A fourth "specific" indication for transfusion is carbon monoxide poisoning or methemoglobinemia. In these cases with a preliminary phlebotomy and the transfusion of an equal quantity of blood we have a specific method of therapy. This is apparent from the known pathology of hemoglobinemia.

We have seldom transfused for shock, as by the time we had completed our tests and were prepared to transfuse, the patient was dead or improved. We have not been impressed with the value of transfusion in diabetic coma or in cancer. For the capillary bleeding of chronic cholemia we have obtained better results from transfusion than from the injection of serum intramuscularly. Transfusion is particularly indicated in cholemia as a prophylactic agent against bleeding when operation is considered. In a case of pronounced icterus from occlusion of the common duct by pancreatic tumor we were able by two citrate transfusions to reduce the coagulation time from thirty-three minutes to eighteen and eight minutes respectively.

The donor must be a perfectly well, healthy young person between the ages of twenty and thirty years, without physical defect or apparent disease. Since transfusion has become so popular there has been created in the city of New York a class of professional donors who have established for themselves a scale of fees. Other things being considered it is better to employ a professional donor, for the simple reason that with him it is purely a business proposition and he is little if at all impressed psychically by the circumstances surrounding the operation. A rather interesting condition sometimes occurs in the nonprofessional donor. After having selected a healthy young man you find that upon inserting the needle he has been too profoundly impressed either from the slight pricking sensation or the circumstances surrounding the transfusion and goes into a condition not unlike a faint, with a rapid fall in blood pressure, so low in fact as to stop the free flow of blood. For this reason it is as a rule well to select somebody who has had some slight previous experience or one who is not of an excitable nature. It is always well in selecting the donor to take a rather careful history as to the man's physical condition. It has been our experience to select a man, find that he was Wassermann negative and his blood was perfectly compatible with the recipient's and upon careful inquiry elicit the fact that he had a history of recent chills. A smear of his blood demonstrated the malaria plasmodium. The Wassermann is the absolute serological test that should be made. We have seldom found our offered donors to be infected, but we always make a Wassermann test.

Considerable literature has been published on hemolysis and agglutination. Some authors, e. g., Bernheim and Horsley, say that they do not consider it of much importance. Our experience has been rather varied. Where time permits we always make a hemolysis and agglutination test, and we have refused a number of donors whose blood was incompatible with the recipient's or the serum of the recipient incompatible with the cells of the donor. Unfortunately the laboratory tests for hemolysis are not absolutely trustworthy.

Case IV.—In the case of a patient with pernicious anemia we obtained a donor whose blood by test was absolutely compatible with the patient's. We attempted a transfusion by the syringe method and upon introducing eight c.c. of the donor's blood into the circulation of the recipient, the patient complained of headache, vertigo, and nausea, and pronounced projectile vomiting occurred with the development of pain in the back and along the spine. We desisted in the transfusion and postponed the operation for a future day. Three weeks later we obtained another donor, went through the hemolysis and agglutination tests and found the bloods perfectly compatible. In this case after giving ninety c.c. of blood by the citrate method we had a pronounced picture of hemolysis and we desisted again. About a month later the operation was repeated and this time about 450 c.c. of citrated blood was transfused. The patient was returned to the ward in excellent condition. That afternoon she had a rather pronounced chill, temperature 104° F., respirations 30, pulse almost imperceptible, skin cold and clammy, and passed bloody urine. The patient remained in desperate condition for about two days and then slowly improved. The patient had a previous subicteroidal tint which was heightened during the two days succeeding the transfusion. Apparently there was some peculiar chemical property in her blood, due probably to the toxic process that may have been the underlying factor in her pernicious anemia, which was responsible for the hemolysis.

We have had other donors whose bloods upon laboratory examination were incompatible, but in practice proved compatible. On one occasion, by reason of the similarity of the names of the donors, we utilized a donor whose blood by laboratory test was incompatible, yet upon transfusion no ill effects were observed.

In the replacement of blood following an acute hemorrhage the dangers of hemolysis or agglutination appear to be almost negligible. In these cases as in all others we prefer to be protected by a laboratory report. If, however, it were necessary to do a transfusion without the aid of tests we should have no hesitation in doing it. Having assured ourselves that the patient was free from syphilis and under the circumstances preferably one of the family, we should give the transfusion, for it has been observed almost without exception that upon the attempted transfusion if the bloods are grossly incompatible there will be well defined symptoms of hemolysis which occur sufficiently early to stop the transfusion before irreparable damage is done.

In the anemias secondary to chronic infection or low grade septicemia the selection of the donor is of great importance. In these conditions a series of transfusions is required and not one isolated massive transfusion. Where we have obtained a positive blood culture and have isolated the particular infective agent and having obtained a donor who for a regular stipend places himself unreservedly in our hands, we immunize the donor for this particular form of bacteria. It is too early to determine whether this has had a very marked effect. My own impression is that it has not been a material factor. The element of value in these serial transfusions seems to be the biotic properties of fresh pure blood acting upon a patient whose resistance has been undermined by long continued sepsis. After a consideration of these factors the question to be determined is what method of transfusion will give the best result. If one analyzes the various conditions that enter into a successful transfusion he will find that there are roughly four. 1. It shall be accomplished with absolute asepsis. 2. It shall deliver blood unchanged. 3. It shall deliver a known quantity of blood. 4. It shall be simple and easy of application. A short survey of the subject of transfusion proves conclusively that the technical transfer of blood has long been far in advance of our knowledge of the inherent chemistry of the blood.

By any of the accepted methods it is comparatively easy to transfer blood from a donor to a recipient, but just what that blood will accomplish and just what condition will be induced by the transfer of blood remain unanswered. The syringe method or its modification requires a high degree of coordinated team work and therefore it is inapplicable to cases where transfusion must be done rapidly and with the assistance possibly of a nurse or one other person. With that end in view we have come to the conclusion that the citrate method elaborated by Weil, Huston, and Lewisohn is best adapted to the use of the ordinary practitioner of medicine. The citrate transfusion method is based upon the use of sodium citrate as an anticoagulant and in practice we have a standard solution made up of distilled water 500, sodium citrate 10. Lewisohn has proved that the proportion of ten c. c. of this standard solution for every c. c. of blood transfused will prevent clotting for two or three days or even longer. For convenience we have the sodium citrate put in ampules of fifty c. c. of a two per cent. solution and a fifty c. c. ampule is sufficient for 500 c. c. of blood. Although sodium citrate retards coagulation if used in the strength of 0.2 per cent., Weil has demonstrated that during the first twenty-four hours after a citrate transfusion the coagulation time is lessened to nearly one half and at the end of twenty-four hours the coagulation becomes that of the blood previous to transfusion. Apparently in hemophilia a citrate transfusion with its diminution of the recipient's coagulation time would seem better indicated than the transfusion of blood with an ordinary coagulation time. The citrate method can be carried out with absolute asepsis, the quantity of blood given is accurately measured, and the technic is easy and simple. It does not, however, answer our condition of giving an unaltered blood. The effect of sodium citrate upon the organism in doses given with an ordinary transfusion of 500 to 1,000 c. c. exerts practically no effect upon the organism except the development of a polyuria. This is a rather frequent concomitant of the citrate method. So far as changing the blood is concerned it apparently makes no difference. It hastens the coagulation time for the first twenty-four hours and then does not retard the coagulation time beyond the previous normal time limit. Therefore we have become more and more convinced of the essential merits of the citrate method. Lately we have completed twenty-five consecutive transfusions by the citrate method with no bad results.

A distinct advantage of the citrate method is the fact that intercourse between the donor and the recipient is unnecessary; this is of particular value in the case of a patient who is very nearly dying from anemia or exhaustion. The accomplishment of the syringe transfusion causes a high degree of psychical disturbance and is associated with considerable reaction upon the part of the patient.

On one occasion we withdrew 700 c. c. of blood for a citrate transfusion and immediately gave 350 c. c. Two days later the remaining 350 c. c. were given without ill effects. At another time we withdrew 500 c. c. of blood for a citrate transfusion and gave 350 c. c. to one patient and 150 c. c. to another patient. The interval between the two transfusions was forty-eight hours. The citrated blood was kept in a refrigerator during the interval and showed, microscopically and macroscopically, no changes. Previous to the introduction in the second patient it is heated to body temperature by immersion in the container in a basin of hot water. Kaliski has withdrawn blood for citrate transfusion and then carried it to a recipient in another part of the city.

The citrate method is technically easy to perform. Repeatedly we have bled the donor in the operating room and given the infusion in the ward or private rooms. The subjective disturbances have certainly been less than with the manipulation incident to any of the syringe methods.

8 West Fifty-first Street.

A STUDY OF SIXTY-SEVEN CASES OF EPIDEMIC CEREBROSPINAL MENINGITIS.

By Randle C. Rosenberger, M. D.,
Philadelphia,
Professor of Hygiene and Bacteriology, Jefferson Medical College,
and David F. Bentley, Jr., M. D.,
Philadelphia,
Assistant Pathologist, Philadelphia General Hospital.

In this series of sixty-seven cases of epidemic cerebrospinal meningitis, observed during the latter part of February and during March and April of 1917, all the characteristic symptoms of the disease were present when the patients entered the Philadelphia General Hospital: headache, fever, rigidity of muscles and neck, opisthotonos, and various reflexes, as the knee jerk, were exaggerated. There were forty adults, of whom seventeen were colored; and twenty-seven children, ranging from two months to eleven years, of whom eleven were colored. Kernig's sign was present in all cases, while the Babinski was present in the adults and only in a comparatively few of the children. Brudzinski's signs were also present in some cases. Strabismus and pupillary changes were frequent and in one case ptosis was observed. Herpes developed in four cases among the adults and only one was noticed in the children. In only four cases were rashes demonstrable, varying from a slight erythema to purpuric and ecchymotic spots. Cheyne-Stokes respiration developed in one case after a too rapid administration of serum, and "sportive delirium" was seen in two adults after a deep stupor. The fluid withdrawn varied in amount from ten to 400 c. c., depending upon the time the case was under observation and the number of punctures made.

Some patients were moribund when brought into the hospital and hence only one puncture was performed, while in those cases under observation for a longer time, as many as fourteen punctures were made. In one case, 330 c. c. were withdrawn in forty-eight hours and no untoward symptoms followed, nor in any case where thirty or forty c. c. were removed as a routine at one sitting. The fluid in the majority of cases was turbid with an abundant, tenacious sediment. Some fluids were deep yellow, clear, and contained coagula, which made the fluid appear almost solid. In one case a clear fluid was obtained and no organisms were found, but three days later a cloudy fluid was obtained in which the leucocytes were abundant and meningococci were present. In no case was a spinal puncture made after a dose of antimeningococcic serum earlier than eight hours, and this consistency is apparently not due to withdrawal of the serum. When the fluid was perfectly clear, without sediment even after standing or centrifugalization, which was seen in only eleven of our adult cases, recovery almost always occurred. The turbid fluids all showed polynuclear leucocytes in excess and few showed a large number of endothelial cells. The pressure of the fluid was variable, some exhibiting none and others a marked degree.

In the adults, of whom we had forty cases, the disease previous to admission to the hospital was not always recognized, as a number were diagnosed as alcoholism, delirium tremens, influenza, and some as confusional insanity. Some of the children had been ill for a week or ten days up to three weeks before coming under observation and receiving a correct diagnosis.

On account of the length of time intervening between the onset and entrance into the hospital and institution of serum treatment, great headway had been made in the disease. As mentioned previously, some of the patients were almost moribund when brought in and others lived only three or four days. In one instance a man was brought in with a diagnosis of delirium tremens. Cloudy fluid was withdrawn and meningococci and pneumococci were found. Death occurring in less than twenty-four hours after entrance to the hospital, an autopsy was performed. A fracture of the skull, partial solidification of both lungs, and a basilar meningitis were found. Spreads made from the base of the brain showed pneumococci, but no meningococci. One case was exceptionally interesting. It was one of the most severe studied. An extreme degree of opisthotonos developed and the patient had priapism lasting five hours. On one occasion an attempt was made to pass a nasal tube to feed him, but it was unsuccessful on account of the rigidity and general spasm. Semiconsciousness set in, the spasm partially relaxed, and the patient succeeded in rolling over on his abdomen and grasping a cup, successfully fed himself, and from that hour made an uneventful recovery. The spine was so rigid during the opisthotonos that several attempts to puncture the canal were entirely without result.

Diagnosis.—The diagnosis was made in every case from spreads when the fluid was first delivered to the laboratory. In most cases the organisms were few, and the extracellular as well as intracellular characteristic Gram negative diplococci were found. After a dose of serum was administered and although the fluid was still turbid and polynuclear leucocytes were abundant, it was most difficult to demonstrate meningococci. On account of the scarcity of organisms and constant increase in number of new cases, cultures were made upon blood agar after a diagnosis was made in spreads from the initial fluid. About two or three c. c. of fluid were used and in some cases a large amount of sediment was poured upon the medium to insure a growth. In the majority of cases, thirty-six, a positive culture was obtained, consisting of the irregular sized Gram negative diplococci. In a few cases, contaminating organisms, as pseudodiphtheria bacilli, were encountered. Cultures were made in most cases immediately after the withdrawal of fluid, though several hours elapsed in many before inoculations.

In four fatal cases a nonhemolytic streptococcus was found in addition to the meningococcus, and in the one case of fracture of the skull pneumococci were present. In one other fatal case pneumococci were found in spinal fluid one week after diagnosis of meningitis was made. This patient acquired a frank pneumonia and died. In one of the cases of herpes labialis, a Gram negative diplococcus corresponding to the meningococcus both culturally and microscopically was isolated.

Studies of cultures upon blood agar were made from the nasopharynx in thirty-five instances, including patients, resident physicians, nurses, and attendants. In only three was a Gram negative diplococcus corresponding biologically and morphologically to the meningococcus found. One of the cultures from the nose was made from one of the two children in whom an endocarditis developed as a sequela. The spinal fluid had been perfectly clear for a long while, no organisms were demonstrable, and only a few leucocytes and endothelial cells were observed. The children, however, had a slight rise in temperature for a number of days before the endocarditis developed.

Treatment.—The treatment, as soon as a bacteriological diagnosis was made, consisted in the injection of antimeningococcus serum. In some cases fifteen c. c. were given, but in most all cases the initial dose was twenty to thirty c. c. After this dose, no matter how much fluid was withdrawn, thirty c. c. was the regular dose. In one case only 2.5 c. c. of fluid were obtained by puncture, yet thirty c. c. of serum were given. This amount of serum was given sometimes daily, sometimes in severe cases twice daily, and in others every second or third day according to the severity of the case. In some whose illness lasted over a week or ten days a total of 300 c. c. was given, and where these large amounts were given, from 300 to 435 c. c. of cerebrospinal fluid had been withdrawn. In most of the fatal cases the serum did not in any way alter the character of the fluid, the only marked point being a diminution of the number of or absence of microorganisms in the fluid. In one or two instances, flushing the spinal canal with normal salt solution was tried, but with no good results. Following the administration of the serum, headaches were common, cramps in the legs were almost constantly noticed, and in only one case was syncope present, and this followed the too rapid introduction of the serum. In three cases urticaria developed after the third or fourth injection of serum. In one of these the wheals were of the giant type.

RESULTS AND CONCLUSIONS.

The summary of the cases is as follows: Number of adults: forty, of whom twenty-three were white and seventeen colored. In this group, the mortality was approximately fifty-five per cent., fourteen white and eight colored. Eleven patients are now convalescent. Number of children from two months up to eleven years: twenty-seven, of whom fifteen were white and twelve colored. The mortality in these children was 40.7 per cent., seven white and four colored. In one, an extremely mild case, recovery took place without any serum being given, and in another, recovery followed the injection of fifteen c. c. Serum treatment should be instituted at once after a bacteriological diagnosis is made, and the longer time elapses before its administration the more unfavorable the prognosis. It is a well known fact that the mortality has been reduced from eighty per cent. to between twenty and thirty per cent. in some epidemics. In this epidemic the mortality was exceptionally high, although the serum treatment was instituted as soon as the case was diagnosed and some even before a diagnosis was confirmed bacteriologically.

It is our firm belief that if these cases had been diagnosed earlier, and the serum given immediately, the mortality rate would have been decidedly reduced. It is also possible that in this series of cases the meningococcus was of an extremely virulent type, as it was proved in animal inoculations by Doctor Robinson. In view of the high mortality in this epidemic and the possible high mortality of other epidemics, it does not seem unwise to recommend that a dose of antimeningococcus serum be given in suspicious cases of meningitis where a cloudy cerebrospinal fluid is withdrawn upon puncture. It appears reasonable to insist upon lumbar puncture in all cases where a suspicion of meningitis exists, as there were a number of instances in this group where no puncture was made and others where puncture was made a number of days after the case came under observation.

The disease is of such a nature that specific treatment to be of any value should include administration of serum at the earliest possible moment. The adult patients were kept in the medical wards most of the time and no new cases developed. The children were all segregated in the isolation buildings, and attended by nurses and helpers. No new cases developed in nurses or attendants. In two instances three cases developed in one family, but in no other instance were multiple cases observed. In those who lingered a week or ten days the number of sequelæ was extremely small; one patient became deaf and one was stricken with blindness in the left eye. In two cases an endocarditis developed after convalescence had been progressing for more than two weeks.

We wish to extend our thanks to Doctor Lineberry and Doctor Hostetter for the valuable assistance rendered in the compilation of these data.

2330 North Thirteenth Street.

Cartilage Grafts in Cranial Defects.—Thomas Young Simpson (*British Medical Journal*, April 21, 1917) has found a simple and efficient method of closing cranial defects by means of one or more thin plates of cartilage, cut from the patient's false ribs and placed on the dura mater with the edges extending beneath the bony margins of the opening. The scalp flap is then returned to place and stitched down.

ACUTE APPENDICITIS.

By Alexander Nicoll, M. D., F. A. C. S.,
New York.
Professor of Clinical Surgery, Fordham University, School of Medicine; Surgical Director, Fordham Hospital, First Division; Attending Surgeon, Sea View Hospital.

As the discussion of the surgery of any organ, to be well based, must be founded on the sure rock of the knowledge of the underlying pathology, we may properly consider this side of the question first. According to Aschoff, whose investigations along the line of the pathology of the acute infections of the appendix are most satisfactory to the clinician, there is no such thing as a primary catarrhal inflammation of the appendix. He states that in all cases there is a primary lesion or focus of infection, primarinfect, which is located in the subepithelial layer of the appendix itself, the point of actual origin of the inflammation being the depths of the appendicular mucous crypts. Here there is first a collection of neutrophile leucocytes, gathered as the result of the introduction of infection to the depths of the crypts, in almost all cases from a Gram positive diplococcus or bacillus. Over the area involved the mucous membrane is usually destroyed and its place taken by a plug of fibrin and leucocytes. As a rule a number of these little primary foci are formed. They are microscopic in size. These little primary lesions have a decided tendency to progress toward the serosa of the appendix and it is not unusual to find the peritoneal coat involved and perforated before the mucosa has been destroyed. If these primary foci progress rapidly toward the peritoneal cavity multiple minute perforations will occur; if, for any reason, their peritoneal march is deflected, coalescence of the foci is likely to occur and a widespread subepithelial infiltration takes place; this area of coalescence may involve a part or the whole of the wall of the appendix and may proceed in one of the following ways: 1. The mucosa may be destroyed and the infected coat of the appendix may drain itself into the lumen of the appendix and then on into the lumen of the large bowel, with control of the infection by this "autodrainage," with the result that a secondary condition of catarrhal inflammation may exist, which in turn may terminate in complete resolution with the formation of scar tissue in the mucosa of the appendix; or this secondary inflammation may persist as a true chronic inflammation of ulcerative type. 2. The original tendency of the primary lesion may be preserved and the march to the peritoneal covering of the appendix may continue, with the result that macroscopic perforation occurs. 3. While exhibiting the original tendency of the primary lesion to progress to the serosa, the primary focus or coalesced lesion may invade the mesoappendix, there spread to the bloodvessels, the veins, produce widespread inflammation of the bloodvascular elements, resulting in hemorrhagic infarct with large perforation of the wall of the appendix as the result of tissue necrosis.

To reduce these views and statements to simple terms the entire matter may be stated thus: We start with the formation of the primary lesion and with the knowledge that this primary lesion possesses the tendency to progress toward the peritoneal coat of the appendix. We can outline this as follows:

I. *A primary lesion, single,* 1, may undergo resolution with resulting microscopic subepithelial scar; or, 2, may ulcerate by destruction of overlying mucous membrane, with the following result: resolution and formation of microscopic mucous membrane scar, or continuation of the inflammation with production of a chronic catarrhal or ulcerative process of microscopic size. 3. The single lesion may progress to the serosa with the result that microscopic perforation occurs with attending infection of the peritoneal cavity.

II. *A primary lesion, multiple,* 1, may remain as multiple discrete lesions that may undergo any of the changes indicated above in subdivisions 1, 2, or 3, except that the resulting pathology is multiple instead of single. 2. The primary lesions may coalesce, forming lesions which may undergo any of the changes of the single primary lesion indicated in the former subdivisions, except that the resulting lesion will be macroscopic in size. 3. In either 1 or 2 the process may spread to the mesoappendix, there involve the blood vascular elements, the veins, producing thrombosis with resulting hemorrhagic infarct and large perforation the result of widespread tissue necrosis.

In further explanation it may be well to say that while the primary lesions are likely to be multiple it is quite conceivable that in any given inflamed appendix we may find evidences of both the discrete lesion, and of the coalesced lesion, and that this combination of the two varieties would be the condition most likely to be met with in inflammation of any marked extent. Also it is well to note that the lesion which involves the mesoappendix is productive of much greater tissue destruction because of the added element of widespread thrombosis, and the clinical aspect of the case is increased in gravity because of the greater danger of pylephlebitis, of which serious condition the mesoappendicular thrombophlebitis may be the primary stage. And it may be well, too, to consider that the formation of the primary lesion, quickly controlled, may occur without sufficient clinical manifestations to make diagnosis possible.

As Ashhurst points out in his admirable book on surgery, it is easy to make apparently discordant views agree in the main if we accept the above teaching, for those who hold the view that an attack of acute appendicitis occurs only in a chronically inflamed appendix need only to look upon the chronic inflammation of the appendix as the result of the formation of primary foci which have not undergone resolution, it being admitted that such formation of primary foci, while in fact an acute attack, may occur without sufficient clinical manifestations to make diagnosis possible. It is easy to see that the distinction is merely academic and it is equally easy to see that to pursue the discussion will result in the degeneration of a dignified review of arguments, pro and contra, into the profitless search for the answer to the classic question, "Which is entitled to priority, the hen or the egg?"

To sum up, the conclusions to be drawn from Aschoff's teaching about the primarinfect, in the majority of cases, are these: 1. The primary lesion located is in the appendix itself. 2. The appendix does not become involved in a catarrhal process, primarily. 3. The appendix does not become involved in inflammation as the result of the extension to it of inflammation of the mucosa of neighboring parts of the gastrointestinal tract. 4. The appendix, once involved in intrinsic inflammation, never returns to normal, but remains either in a state of chronic inflammation or is permanently injured and distorted by the healing process which follows upon the heels of the acute attack of inflammation.

The behavior of the peritoneum is most important and it is safe to look upon peritoneal reaction as an accompaniment rather than a complication, for I believe that any attack of acute inflammation of the appendix, which is of sufficient severity to give definite symptoms which are diagnostic, is always accompanied by some involvement of the neighboring peritoneal surfaces of intestine, omentum, or abdominal wall. Whether that peritonitis is to be localized or diffuse, with or without exudate, which may be clear or purulent, depends upon one of the following three factors, or rather upon their interrelation: 1, the efficiency of the protective forces of the body, both general and local, as applied to the specific infecting organism; 2, the nature and condition of virulence of the particular organism itself; 3, the dose of the infection, i. e., whether large in amount and small in length of time, or vice versa; which is practically equivalent to saying whether perforation occurs slowly or rapidly.

Clinically and from the standpoint of the gross pathology of the structures certain peculiarities in the progress of the pathological lesion are observed: The tendency to perforation is markedly increased by the presence within the appendix of a foreign body, this term to include fecal concretions, enteroliths, etc. The entire condition is made more rapid and destructive if the lumen is destroyed near the base, thus converting the entire length of the appendix into a blind pouch with the resultant marked increase in the virulence of the contained organisms. The tendency to perforation, either microscopic or macroscopic, with gangrene either partial or complete, is very marked in children, and this marked tendency to invasion of the peritoneal cavity in children, together with the rather inefficient protective forces of the child against peritonitis—probably due in large measure to the undeveloped condition of the omentum—makes early diagnosis especially important in this class of case. The appendix once involved in intrinsic inflammatory reaction never returns to normal, either remaining as a permanently damaged structure without a contained inflammatory focus, or lapsing into a condition of chronic inflammation with ulcerations of the mucosa, and infiltration of the subepithelial layers with round cells.

Position.—The position of the appendix has received a great deal of attention from various authors and great stress has been laid upon its peculiarities of position. It is true that we occasionally find the appendix in peculiar places, but it is equally true that in the vast majority of all cases the appendix and its symptoms are found in the right iliac fossa, a description of its position which is as restricted in area as it is wise to make and which is infinitely to be preferred to the definite points of McBurney, Munro, *et al.* The surgery of the acutely inflamed appendix is truly the surgery of a region, and cannot properly be cramped within the space of a square inch. Occasionally the appendix is wholly or in part an extraperitoneal organ without complete peritoneal investment, and thus is difficult to find, especially in cases in which the appendix is sought for in the course of a laparotomy done for some dissociated condition and in which the operator feels called upon to remove the appendix as routine prophylaxis. As a rule, the appendix is found in the right iliac fossa pointing upward and inward, upward and outward, or downward and inward. Disease may distort it and alter its position and adhesions may bury or obscure its normal relations or outlines. Two positions are of importance because of their influence upon diagnosis and operative removal, the so called retrocecal or retrocolic position, and the pelvic position. In the retrocecal or retrocolic position, which is found in from ten to fifteen per cent. of all cases which come to operation, in my experience, the appendix lies close to the cecum or colon, usually firmly attached to the posterior abdominal wall or the large intestine, and usually both, and is overridden by the inflamed cecum or colon. This position of the appendix may occur either lateral to the cecum or colon—the usual position—or mesial to it. Its chief interest in this position lies in the fact that there is danger of confusing its symptoms with those originating in a diseased gallbladder or kidney, and also in the fact that operation is rendered slightly more difficult. In the pelvic position the appendix points almost directly downward and is wholly or in great part within the pelvis proper, and so in relation with the pelvic peritoneum whose reaction to inflammation differs somewhat in symptomatology from the peritoneum of the general abdominal cavity. Here the danger is that a severe inflammation may masquerade under symptoms which are misleading because of their apparent mildness. In diseased conditions we occasionally find the appendix adherent to gallbladder, spleen, kidney, median line of the abdomen, either anterior or posterior wall, and rarely it is found stretched across the abdomen and adherent to the sigmoid colon, or the upper rectum. Incidentally in this latter type of inflamed appendix, I am convinced that the primary lesion lies in a diverticulum of the sigmoid, in a fair percentage of cases; the diverticulitis is not recognized at the operation for the drainage of a localized abscess, the appendix being inflamed merely as the result of its association with the abscess as part of the abscess wall, the inflammation of the appendix being secondary and extrinsic, the result of extension of infection through its peritoneal coat. This would account for two peculiar facts—first, the comparative rarity of reported cases of diverticulitis, and, second, the fact that patients with left sided abscesses do remarkably badly as a rule—the prognosis of diverticulitis being notoriously unfavorable.

Occurrence.—In a general way a bird's eye view of the occurrence of acute appendicitis may be well secured in this way: It is very rare in infants; uncommon in very young children; common in older children; very common in young adults; common in adult life; uncommon after fifty; and rare in old age. Thus we have an ascending scale which, starting at zero in infancy, steadily climbs till it reaches its high point at about thirty, after which the scale becomes a descending one till it again reaches zero in extreme old age.

Predisposing factors.—As predisposing causes we must turn first to errors in diet. Here we must lay the ban especially upon excessive meat eating and the ingestion of overripe or underripe fruits and vegetables. Habits of diet which tend to constipate unquestionably have their influence in the causation of this condition, for constipation tends to make the emptying of the appendix itself more difficult, and by the production of stasis therein, increases the virulence of the bacterial content. So, too, gastroenteritis of any kind acts in the same way, namely, by increasing the virulence of the bacterial content of the gastrointestinal canal.

Exciting cause.—The exciting cause is, in every instance, bacterial invasion, and this invasion is in most cases in the form of the streptococcus, which is soon superseded and overgrown by the pyogenic cocci of the common varieties, the Bacillus coli communis, pneumococcus, etc. Perhaps the most commonly found organism, the Bacillus coli, gets altogether too much credit for the causation of this condition, and probably has the same relation to the inflammation as does the colon type of human animal who waits for someone to start something and get it well under way, and then jumps in, makes a great fuss and noise, and takes all the credit.

Symptomatology.—The teachings of the late J. B. Murphy, of Chicago, have left an indelible impression upon the consideration of this phase of the question, and in many ways it is well to follow his lead. I believe that his insistence upon the chronological position of the various symptoms is too dogmatic and that it would be well for the clinician to be on his guard in this respect and be ever ready to place reliance upon his examination of the patient rather than upon the success of his efforts to draw, from an acutely ill patient, a chronologically exact history in reference to the order of appearance of the classic symptoms. These signs and symptoms are as follows: pain; nausea and vomiting; tenderness and rigidity; temperature and increased pulse rate; leucocytosis; and eventually a mass.

Pain.—The primary pain of appendicitis is practically always referred to the epigastrium a little above the umbilicus, and in the median line. It is cramplike in character and, as a matter of fact, is probably the result of disorganized peristalsis of the small intestine, which, in turn, is caused by the convulsive peristalsis of the appendix in its efforts to rid itself of its infected contents. It is the first sign of appendicitis in the matter of time. Pain in atypical attacks may not be referred to the epigastrium and may come on first over the location of the appendix, and this is especially true of attacks occurring subsequent to the initial attack. As a rule the appendix which directs immediate attention to itself is the appendix which is buried in adhesions and is relatively immovable. After the primary pain has persisted for a varying length of time, usually several hours, it changes both in position and character, being referred to the right iliac fossa, and becoming constant, steady, and of a boring or dragging character. Sudden cessation of pain is a danger sign unless all other signs improve simultaneously, one of the most suggestive signs in the occurrence of gangrene being a sudden cessation of pain. The recurrence of pain, or the changing of the localized pain to a general pain, is suggestive of the occurrence of a diffuse peritonitis because of the failure of the primary defense in the right iliac fossa, i. e., the breaking apart of the agglutinated surfaces, perhaps, and the extension of the infection over a greater area of the peritoneum.

Nausea and vomiting.—The nausea and vomiting are early symptoms and tread close upon the heels of the primary pain. The primary nausea and vomiting are slight and not often repeated. The nausea is comparable to that experienced by the patient who has a stone impacted in the kidney, ureter, bile passages, or bladder, and it, too, may be explained by the efforts of the acutely inflamed appendix to free itself of its contained infectious material or focus. Vomiting which comes on after an interval in acute appendicular attacks is different in type and causation; it is the vomiting of peritonitis and has the characteristics of such vomiting, being merely an emptying of the stomach of the irritating contents of the upper small gut, and occurring without great effort on the part of the patient, who spares himself the contraction of his abdominal muscles which would be productive of pain. Persistence of vomiting usually indicates a spreading diffuse peritonitis with the invasion of more and more of the peritoneum and is the indication of an uncontrolled and perhaps uncontrollable infection. It is an insistent cry for help from the patient and should be so interpreted by the surgeon. Vomiting is very likely to be absent in the patients whose appendices occupy the pelvic position, for here the peritoneal reaction to infection may not be expressed in terms of nausea, a peculiarity of the region itself.

Tenderness.—This is at first general over the location of the small intestine, but quickly transfers itself to the right iliac fossa. It is probably a great deal earlier in its occurrence than we are inclined to believe, because, in many instances, it is not sought for until the patient calls the attention of the doctor to the fact that the original diffuse pain has localized. The typical tenderness of appendicular inflammation is "point" tenderness, which can be appreciated by pressure with the point of the finger, and which is exquisite, as contrasted with the general soreness of the iliac fossa. It is usually found about an inch below the points of McBurney and Munro, which points indicate the position of the ileocecal valve. In retrocecal positions of the appendix the point of tenderness can be found about half way between McBurney's point and the free border of the ribs, "a little too high for the appendix, a little too low for the gallbladder, and not far enough back for the kidney." In children, especially, I would lay particular stress upon the rectal examination and the detection, thereby, of a tender point along the right brim of the pelvis. Unquestionably the rectal examination is of great value.

Rigidity.—Rigidity is the mainstay of diagnosis in acute inflammation about the appendix. It is an indication of inflammation about the appendix, and is our most reliable diagnostic point. It is appreciated by light palpation over the right rectus and the right iliac fossa, and I make it a rule when examining for rigidity to approach the region from the portion of the abdomen which is totally free from pain, if there is such a portion. The characteristic rigidity is of reflex nature and it should be the aim of the examining surgeon so to handle the abdominal wall that all voluntary resistance, the result of fear on the part of the patient, is done away with if possible before the hand is allowed to investigate the actual region of disease. I always try to determine first whether the right rectus is more resistant than the left, then if the lower part of the right rectus resists more than the upper, and finally if the area over the actual site of the usually placed appendix is more resistant than the similar point on the left side of the abdomen. This method of gently and slowly creeping up on the inflamed appendix tends to unmask the rigidity and give real information to the examiner. It is, of course, understood that rigidity is a symptom of the peritoneal inflammation about the appendix, this localized peritonitis being properly considered a part of the condition and not a complication. Upon the skillful elicitation of the sign of rigidity depends the correctness of the diagnosis in the doubtful case.

Temperature.—Temperature is seen within a few hours of the first pain of appendicitis and is, in the average case, an elevation to 100.5° to 101° F., perhaps a degree or so higher in children. Very high temperatures I am accustomed to look upon with suspicion in the early stages, as perhaps indicating chest inflammation with referred pain. Of course when the case has gone on to abscess formation within the peritoneal cavity the temperature takes on the usual abscess type and is as a rule higher than just stated. The occurrence of a chill at the inception of an apparent acute appendicitis is also a sign which I look upon with suspicion, especially in children, in whom the exanthemata occasionally simulate intraperitoneal inflammation. The occurrence of a chill after the primary rise of temperature I am accustomed to look upon as a distinctly suggestive sign of the occurrence of gangrene. A sudden fall in temperature is a bad sign, gangrene or perforation being indicated unless all other signs improve in like manner.

Pulse.—Observation of the pulse rate may frequently put the physician on his guard early in an attack of acute abdominal pain. As a rule I should say that the pulse rate is increased almost from the beginning of the attack and the increase is surely present before fever occurs. As a rule the pulse gains fifteen to twenty beats on the temperature and holds that ratio of increase for about forty-eight hours, or until the temperature begins to indicate serious involvement of much peritoneal surface. The actual character of the pulse differs so in individuals that I have come to feel that the rate alone is reliable.

Leucocytosis.—Leucocytosis is constant in this condition and is of great importance both as a matter of diagnosis and of prognosis. It is to be borne in mind that the total count of white blood cells is indicative of the resisting powers of the patient to the particular infection, while the percentage of polymorphonuclear cells is a good indication of the virulence of the infecting organism. Percentages of ninety or above mean that the infection is of such a nature that gangrene is likely to ensue. Percentages of eighty to ninety mean that the infecting organism is of such character and virulence that the inflammatory reaction will not stop short of the formation of pus. A total count which is steadily rising with a stationary percentage count or one that is falling is a good prognostic sign. A falling total count with a rising percentage count is of bad prognostic import. The very high counts, 30,000 or more, make me suspicious of pneumonia, some other form of general infection, or gallbladder infection. Once the diagnosis has been made I am accustomed to place great faith in the white blood count, looking at it from the standpoint of prognosis.

Mass.—Mass is a positive sign of appendicular inflammation which comes as a rule when we do not need it to make the diagnosis. It occurs very rarely within the first sixty hours. The matter of the "apparent mass" has been dealt with in speaking of rigidity. The real mass of appendicitis is an indication that the peritoneal cavity has been definitely invaded by the infection. The mass consists of adherent coils of intestine, omentum, and parietal peritoneum. It is readily appreciated, as a rule, by the flat of the hand applied to the right iliac region and, in children especially, by rectal palpation. The size of the mass is no indication of the amount of contained pus, massive adhesions frequently forming about an acutely inflamed appendix without macroscopic pus. Mass is a condition which has relatively little diagnostic importance because when it occurs the other signs of the condition are well marked and the diagnosis is not much in doubt. Mass, however, I am accustomed to look upon as a distinct indication for drainage of the operative wound whether pus is apparent or not.

(*To be concluded.*)

Treatment of Acute Gastritis.—Harold H. Redfield (*Medical Summary,* April, 1917) states that in his treatment he tries to assist Nature to correct the condition. If there is a tympanitic or dull note on percussion over the stomach, lavage should be done, and if emesis should seem desirable apomorphine hydrochloride may be given in the dose of 0.005 gram hypodermically. The diet during the first few days should consist of milk with the addition later on of strained barley water or weak tea. When the appetite reappears about the fourth day light soups should be allowed with an occasional soft boiled egg. If there is pyrosis calcined magnesia, sodium bicarbonate, and peppermint sugar should be given in equal quantity every two hours, and pain may be controlled by codeine.

OBSERVATION AND INSPECTION IN THE PHYSICAL EXAMINATION IN PULMONARY TUBERCULOSIS.

By Charles Rayevsky, M. D.,
Liberty, N. Y.

The physical examination in pulmonary tuberculosis should lead to the recognition of the signs in the early incipient state of the disease, as their detection in the moderately advanced stage, with present knowledge and experience, should present little difficulty. The chief methods in the physical examination are: inspection, palpation, percussion, and auscultation. It is difficult to say which of these four is the most important and useful one, but it can be said with certainty that auscultation is the method most practised and relied on; the other methods are usually depended on in the reverse order they were enumerated.

Inspection, or observation, as I prefer to call it, is practised by many, but with little study or analysis. Most practitioners consider that inspection begins when the patient is stripped and observed for respiratory movements, general outlines and symmetry of the chest, the relation of the clavicles, the position of the scapulæ, and so forth. This is not sufficient; observation should begin earlier. It should be begun with the entrance of the fully dressed patient into the office or examining room. His gait is to be noted, his facial expression should be studied, his posture when sitting or standing should not escape attention; his manner in talking and answering questions must be considered.

Each observer has his individual method in examination and from time to time discoveries of new signs are announced, which are very important according to the observer's opinion. All signs are important, but one man may elicit one sign better than another observer, or he may elicit it in a different way and therefore think he has discovered something new.

In this paper I intend to discuss observation and inspection as aids to the diagnosis of early pulmonary tuberculosis. I am certain that I have not discovered anything great or new, but years of experience have developed my own technic, and because of a difference in the personal equation it differs in some respects from the ways of others; and the more ways and variations we know and practise in arriving at a diagnosis, the better we diagnose.

Patients who present themselves for examination may come of their own free will, or they are brought in by their frightened friends or relatives. Those who come by themselves are usually of a more intellectual type, and a good history may be obtained from them. They are seldom nervous, they take things philosophically, and their suspicion of being afflicted with pulmonary tuberculosis has usually some good foundation. In weighing the evidence from observation and inspection, if the other evidence is not sufficient and conclusive, their coming to be examined should be laid on the positive side of the scale. There will also be a considerable proportion of scared and nervous persons who apply for an examination. Their coming cannot be considered as evidence that leads to a positive diagnosis, as it is due often to the reading of patent medicine advertisements or to the fact that some distant relative or a neighbor died or is suffering at present from pulmonary tuberculosis. A thorough investigation of their fright should be made, and if found reasonable it is important not so much in the diagnosis as in the prognosis of the case, if it should prove to be a positive one. The prognosis in a nervous patient is always more grave than the prognosis in a philosophical patient, who can cooperate intelligently with the physician.

Patients who are brought or forced into the office by a frightened friend or relative should also be classed as intelligent, nervous, or ignorant. Their visit is less suggestive than the coming of those who come voluntarily. Their willingness or unwillingness to answer questions is to be noted. If they give a decided negative answer to all questions they should be suspected of hiding the truth. A question should be put to them, the answer to which is positive in the best of health, and the result will be selfconvicting. It is habitual, though, with some not to admit even to themselves that they are ill. A total denial of any and all symptoms, a negation to every question, should add weight to the positive evidence of disease if it is suspected through the other methods of physical diagnosis.

It is best not to hurry with the invitation to the patient to be seated. After scrutinizing the patient's face on entrance, receiving the impression as to his intelligence and nervousness, and ascertaining whether he came of his own volition, or was forced by friend or relative, let the patient stand a while and be watched as to postures assumed.

In health the human body is symmetrical; disease distorts this symmetry to a certain extent. Healthy people as a rule assume on standing an evenly balanced position. A few may rest more on the right leg and throw the left somewhat forward; this is probably because the liver, the heaviest internal organ, is on the right side. Should the patient throw the balance on the left thigh, suspect the left lung. By leaning on the left side the patient immobilizes partly that side of chest; he fixes the side by preventing respiratory motion, principally the expansion of the chest on the fixed side. This is especially true if the focus is situated near the diaphragm or is close to the pleura. This is done by a number of patients even in the earliest stages of the disease without any conscious purpose. Should the patient while standing rest more on the right leg he should be directed to change the position. The patient's mind must be distracted now by some conversation, and he should then be watched to see whether he resumes the former posture. If he does, it is then certain that there is a diseased condition on the right side. In enumerating various signs as found in my practice, I wish to emphasize the fact that under no circumstances are they considered pathognomonic, but only suggestive of a diseased condition and indicative of the main focus.

After the patient's facial expression and his posture on standing have been observed, he should be invited to be seated. In doing so the patient must be thrown off his guard, as at about this time he has found himself and he usually watches the physician more closely than the physician watches him. If the patient is timid, downcast, and pessimistic, he should be addressed in a friendly and cheerful way; if he is too much at home, voluble, or pert, he should be addressed coolly and shortly. History taking should now be begun, and patient watched as to positions assumed while seated.

While seated the patient may try in various ways either to fix the diseased side or to give more room for expansion to the healthy side. He may lean to the afflicted side, or he may slightly fix it by pressing it harder to the back of the chair or by keeping his arm closer to the chest on the diseased side. Resting the arm on the side of the chair or on the edge of the table usually does the opposite; it gives more room for expansion; but placing the elbow on the arm of the chair and supporting the head limits the expansion of the chest on the side so supported.

Crossing the legs while seated may indicate a diseased side. There are two ways of crossing legs. In the thigh over thigh crossing, the side of the thigh raised is partially fixed. The other way of crossing the legs is raising and resting one leg on the thigh of the other; this gives more expansion on the side of leg raised. An action which may be noticed with the second method of crossing the legs, is pulling with the hand opposite to the thigh so raised at the shoe or cuff of the trousers; this motion usually fixes the other side. Of course all these movements may be the result of bad habits or ill manners, or they may be caused by the nervous condition the patient is in during the examination. The patient should therefore be requested to change his position and even to change his seat while the history is being taken, and if after distracting his mind by the continuation of history taking the patient assumes the former posture, or one analogous to it, this deportment then becomes more suggestive.

After the patient has been observed as to his favorite positions while standing and sitting, he should be told to undress. It is customary to let the patient disrobe behind a screen in privacy. I believe this method to be in opposition to the best interest of the patient. He should strip in the presence of the physician, who notes postures assumed or, what is more important, unnecessary movements made while undressing. All these should be noted and analyzed, and the cause of them ascertained. While watching the patient undress, his habits and cleanliness may be learned, and this will help to some extent in the prognosis of the case.

To proceed with a closer examination let us begin at the top. In observing the hair we must note whether it has a natural color and gloss, or is dull, having lost the healthy lustre. Tuberculosis, beside its other properties, is a toxemia, and it affects all organs and tissues of the body directly and remotely. The hair is frequently affected in pulmonary tuberculosis, it loses its lustre and becomes dry, and the color fades somewhat. After noting color, lustre, and general changes in the hair, the condition of the scalp should be examined. Almost invariably dandruff will be found in persons suffering from pulmonary tuberculosis; it may not be pronounced, but there is certain to be evidence of its presence in the great majority of cases. This condition of the scalp is probably due to the same cause as the loss of natural lustre in the hair. In cases where the scalp seems to be in a good condition, the use of oily hair tonics should then be ascertained by observation and direct questioning.

In inspecting the skin and its appendages, blemishes of the mildest kind should be considered. These are usually caused by faulty nutrition which may be the result of the presence of the tubercle bacillus. The eyes of the patient should be observed. They may present two variations. They may be somewhat more lustrous than naturally as in the majority of early cases, in which the toxins of the microorganism have only slightly affected the patient. If the toxins are more abundant, they produce a depressed effect and the eyes look dull and wistful or sad. The sclera are often pale, much more often than the conjunctivæ are. The alæ nasi seldom give any signs, unless in nasal obstruction or in the advanced stages of the disease. Decayed teeth do not point to anything significant, but they may prove a contributing agent to the progress of the disease. The lips are occasionally parched, especially if there was a slow protracted course of slightly elevated temperature that escaped observation. In many cases the lips are either slightly cyanotic, as in chlorosis, or they appear anemic.

In inspecting the chest proper it is advisable to walk around the patient quietly and slowly several times and note the different shades on the chest walls during respiration. If necessary, the patient may be gently swung around on a revolving stool for better observation, and the points where the shades are deeper should be marked for a closer examination by the other methods.

The muscles of the neck, as they enter into the chest wall formation, may be found to present a slightly spastic condition on one side or the other; sometimes it may affect the whole of the platysma, but usually only a few fibres of the muscle. A thickened sternocleidomastoid is also a suggestive sign of the disease, and will point out the side affected. A visible enlarged gland in the supraclavicular fossa must not be overlooked, and the color of the skin in the fossæ will occasionally appear somewhat deeper.

The clavicle, even in the well nourished or obese individual, can be observed to be somewhat more prominent on one side. In emaciated or thin persons the outer third or the flat portion of the clavicle will be found to be nearer the horizontal plane on the affected side. The curved portion seems usually more curved. This is probably not always the case; it is simply less covered by adipose tissue and its curvature is more noticeable. The subclavicular fossa is slightly deeper on the affected side, due to integumentary and muscular changes on that side.

Diminished respiratory expansion of the chest is noticeable only when disease has slightly advanced. In early cases it may be noted only when the pleura is involved, and more so if it is the diaphragmatic pleura. The respiration may not be affected in rate, but sighing and the frequent taking of a deep breath may be noted. These points are suggestive; they probably constitute an unconscious attempt to compensate shallow breathing. The pulse rate in pulmonary tuberculosis, even during slight activity, is usually increased, and a pulse rate above 84 in the male and above 90 in the female should be looked upon with suspicion.

In conclusion I wish once more to emphasize that each sign by itself is of no special weight, but a number of them taken together are significant in the diagnosis of pulmonary tuberculosis, and if supported by the other methods of physical examination, they become all important.

75 Chestnut Street.

CARDIAC ARRHYTHMIA.*

By C. L. Palmer, M. D.,
Pittsburgh,
Department of Internal Medicine, South Side Hospital.

Cardiac arrhythmia is probably the most puzzling circulatory condition with which the general practitioner is confronted. On looking into the literature on the subject he is met with such terms as pulsus alterans, pulsus bigeminus, pulsus trigeminus, Reigel's pulse, pulsus paradoxus, auricular flutter, auricular fibrillation, and numerous other descriptive names, until he is practically lost, and is unable to apply these terms to definite clinical circulatory conditions with which he comes in contact almost daily.

In the study of cardiac arrhythmia it is necessary to consider the normal factors concerned in the production and maintenance of processes in the normal circulation. The heart with its pericardium, specialized muscle, and endocardium is to a great extent under the control of extrinsic nerve fibres, namely, the vagus or inhibitory, and the sympathetic or accelerator, and these are in turn subject to the control of the cardiac centre in the medulla. This centre is susceptible to various reflex effects coming from nearly all portions of the body. This is demonstrated by the increase in pulse rate on sipping water caused by reflex stimuli set up in the terminal filaments of the esophageal branches of the vagus; the change in the rate and force of the heart beat caused by reflex stimuli set up in the pulmonary nerves; the increase in pulse rate set up by stimulation of certain peripheral nerves, such as the sciatic and brachial nerves; the effect on the pulse rate caused by fear, anxiety, etc., together with numerous other instances. These help to prove that the cardiac centre is susceptible to various reflex stimuli. It is also susceptible to altered chemical composition of the blood, as shown by slowing of the pulse in jaundice, due to the presence of bile salts in the blood, or the acceleration of the pulse due to muscular activity which is probably caused by metabolic products in the blood. Physical conditions, also, have their effect on the cardiac centre, as evidenced by the slowing of the heart as the blood pressure rises in asphyxia, or the change in the rate of cardiac contraction during change of position of the body, which causes in turn a change in the blood pressure supplying the cardiac centre.

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Besides the nervous control the normal heart possesses certain properties, such as persistence of contraction after the nervous connections are completely severed as long as its chambers are kept filled with a certain chemical solution under proper pressure and at the proper temperature. This property of the heart is known as automatism. Cardiac muscle also possesses the properties of rhythmicity, or the power of responding to continuous stimulation by a series of rhythmically repeated contractions, and the power of coordination causing the various parts of the heart to beat in regular sequence. Since rhythmicity exists the heart must also possess a refractory period, which is a time during its cycle in which the stimuli are not responded to.

The vasomotor nerves, dilators, and constrictors, together with the elasticity of the vessel walls, are the main controlling factors in maintaining the proper equalization of blood pressure, and inasmuch as the cardiac centre and the pulse rate are subject to change with changing blood pressure, it can be readily seen that the scientific study of cardiac arrhythmia involves a careful consideration of the pathological conditions, bacteriological, metabolic, or physical, which underlie the particular change or changes in one, all, or any combination of the factors concerned in the production and maintenance of the circulatory phenomenon.

For the purpose of studying clinical cardiac pathology various instruments of precision have been invented, including the electrocardiograph, the polygraph, and the sphygmomanometer. The electrocardiograph is probably the most scientific instrument for this purpose at the present time. It depends for its action on the electromotive force set up in the contraction of the myocardium, causing a deflection of a string galvanometer which is photographed on a moving plate. The records thus obtained have been of inestimable value in the scientific study of clinical myocardial pathology, showing definitely by the alteration of its waves, auricular fibrillation, auricular flutter, origination of the wave of contraction, direction and deflection of the contraction wave, location of preponderant contraction, and the length of time between the contraction of various portions of the heart. In auricular fibrillation and flutter there is a marked increase in the number of auricular waves to a unit of time over the ventricular wave. Preponderant action is shown by the direction of the wave; by the direction and time of the wave it might be possible to determine the relative electromotive force set up in each side of the myocardium. The electrocardiograph is also susceptible to skeletal muscular contraction, such as muscular twitches, peristaltic muscular contraction, atmospheric electricity, etc., but these waves can be ruled out by compensation in the apparatus.

The electrocardiograph has demonstrated its efficiency in the study of these conditions, and will be of much more practical aid in the future when statistics can be obtained relating to the effects of various therapeutic measures directed against cardiac pathology. This instrument is not accessible to every general practitioner as yet, and much is to be learned of its scientific value in certain diagnosis and treatment. It is also possible that many new forms of arrhythmia and other pathological cardiac conditions will be elicited.

The polygraph is also a valuable instrument in the study of clinical myocardial pathology, and has revealed, when accurate tracings have been obtained, facts which are of great value in the diagnosis and treatment of certain myocardial conditions. It is sometimes impossible to obtain an accurate tracing with this instrument, particularly of the auricular activities, because in some individuals the arrangement of fat and muscular tissue over the jugular vein is such that an impulse is not produced sufficient to set up vibration of the air in the receiver and tubes and strong enough to influence the writing lever; again, in some cases the intravenous pressure is not sufficient to produce a tracing. Muscular twitches and carotid pulsations are frequently interspersed in the tracing, which make it very difficult to interpret properly.

The orthodiagraph or Röntgen ray measurement of cardiac outline, or a plain röntgenogram of the heart is very valuable; they show the relative size and position, the relation to other organs, and the evidence of hypertrophy or dilatation of certain chambers, together with gross changes in the immediate structures, such as aortic dilatation and other mediastinal conditions.

The sphygmomanometer is the only instrument which is accessible to the practitioner, and with it and palpation of the radial pulse, careful inspection, palpation, percussion, auscultatory percussion, and auscultation of the heart a fairly accurate diagnosis of cardiac pathological conditions can be made. By palpation of the radial pulse, the rate can be accurately determined, together with abnormalities of the rate, if the pulse is counted during two or three units of time of ten or any number of seconds to each successive unit, and the rate mentally recorded in each unit. By palpation of the radial pulse, together with auscultation of the apex beat, pulse deficit can be determined. In marked so called pulsus alterans the variation in the strength of beats can be discovered. By inspection of the cardiac region of the thorax the location of the apex beat can be determined, together with abnormal contraction waves due to hypertrophy or dilatation. In palpating over this area thrills and large bruits can be felt. By percussion, particularly auscultatory percussion, the size of the heart, together with hypertrophy or dilatation of certain chambers and pericardial effusion can be fairly well outlined. By auscultation valve lesions, murmurs and bruits, and other adventitious sounds can be heard and fairly well localized.

With the sphygmomanometer the systolic, diastolic, and pulse pressure can be determined, and from these the heart load, cardiac energy index, and the relation existing between the systolic, diastolic, and the pulse pressure can be at least theoretically interpreted and the cause of faulty relation suspected. In using the sphygmomanometer by the auscultatory method it will be noticed that on releasing the pressure after complete occlusion of the artery, if the pressure is equal in all the beats, the arterial sound will be heard with equal intensity, even though the rate is not regular. If the pressure is less in some beats than others, the beats of greater pressure will be heard first and those of less pressure will be heard later.

It will be readily seen that by these simple methods of examination cardiac arrhythmia can be classified as follows: 1, cardiac arrhythmia of rate; 2, cardiac arrhythmia of pressure; and, 3, cardiac arrhythmia of rate and pressure. Heart block is the only arrhythmia left out, but it can be suspected if the pulse is permanently below forty-five to the minute, and the ventricle stops long enough to produce cerebral circulatory changes, which induce the periodical syncope occurring in these cases.

The cardiac arrhythmia of rate includes premature systoles followed by a pause which is or is not compensatory, some of the arrhythmias due to various toxic effects on the nerve supply to the heart, the various mechanical arrhythmias due to displacement of the heart from extracardiac thoracic conditions and from presence of conditions such as mediastinal tumors, accumulation of fluid in the pleural and pericardial cavities, etc., on the heart or its great vessels and nerve supply interfering with the proper emptying and filling of the cavities of the heart. The arrhythmias occurring during the convalescence of acute infections are usually of this type. The cardiac arrhythmia of pressure includes pulsus alterans, which is usually due to defective myocardial contraction and occurs as a rule in the later stages of cardiac disease, such as chronic endocarditis affecting one or more valves and accompanied by cardiac hypertrophy, and in the late stages of cardiovascular renal disease with beginning cardiac decompensation. The arrhythmia of pressure is usually considered a bad prognostic sign.

The cardiac arrhythmia of rate and pressure, or absolute arrhythmia, includes auricular fibrillation and some of the arrhythmias mentioned before. It indicates interference with the conductivity of myocardial contraction in some instances, together with myocardial pathology. It occurs also in the later stages of chronic endocarditis affecting one or more valves and accompanied by cardiac hypertrophy in which degenerative changes have spread to the myocardium. This arrhythmia sometimes occurs in hearts that are clinically normal as far as size, shape, and the valve sounds are concerned. The diagnosis of all these arrhythmias involves a careful study of the heart sounds, pulse rate, and blood pressure findings, together with examinations by the instruments of greater precision.

The etiology of these arrhythmias involves a careful study of the circulatory apparatus, using all ordinary methods of physical examination, together with a complete clinical history, a complete physical examination, x ray examinations, laboratory tests, and a careful insight into the patient's psychological makeup. These findings should all be carefully interpreted and theoretical deductions should be made regarding the possible presence of chronic toxemias which might set up pathological changes in the circulatory apparatus and its nerve supply. A theoretical interpretation of the various blood pressure findings should be made. The relationship of diastolic, systolic, and pulse pressure should be noted, which give some idea of peripheral resistance and cardiac force. A theoretical interpretation of the possible balance between the endocrinal secretions should be considered. In short, the entire field should be gone over and an attempt made to decipher the possible cause or causes of the condition, not only within the circulatory apparatus, but in the organism as a whole.

The prognosis of this condition is fairly well established in some of these arrhythmias. In the arrhythmia of rate due to temporary pathology in the heart muscle or nerve supply as a result of acute infections, the prognosis is good. In the persistent premature systoles with compensatory pause, a number of cases have been reported in which patients have recovered and suffered no ill effects.

The arrhythmia of pressure is considered a bad prognostic sign and occurs late in various chronic cardiovascular conditions, involving endocardium, myocardium, pericardium, and bloodvessels. Cases have been seen, however, of this form of arrhythmia following or occurring during the course of various acute infections which were only temporary. These patients apparently made a good clinical recovery. The arrhythmia of rate and pressure is of uncertain prognostic value, and the outcome, not only in this form but in all others also, depends largely on the response to treatment. While the prognosis in all these conditions is conceded fairly definite, yet it is always advisable to present the condition to a responsible member of the patient's family, so that future embarrassment to the physician may be avoided.

The treatment can be divided into general and specific. The general treatment involves a careful study of the patient's psychological makeup, his diet, his activities, together with a careful clinical deduction concerning the factors before mentioned regarding the extracirculatory conditions which might exist in an individual case. The psychological condition of the patient must be dealt with in a firm and diplomatic manner. The diet should be governed by extent of complicating lesions such as nephritis and various gastrointestinal conditions, permitting the patient foods which maintain nutrition as manifested by weight, but still keep him comfortable and with the least possible degree of intoxication.

The activities should be governed by the ability of the circulatory apparatus to compensate for certain forms of exercise or work. If with certain exercises the patient's pulse becomes too rapid or arrhythmic or he shows signs of slight loss of compensation, such as dyspnea and edema of the feet and ankles, the patient's activities must be cut down until the circulatory apparatus is able to compensate without embarrassment. The patient's extracirculatory condition must be carefully considered and various foci of infection and irritation should be relieved if possible. Gastrointestinal, genitourinary, and pulmonary conditions should have appropriate treatment, and a careful deduction of the balance between the internal secretions should be made and the proper extract of these glands be given if possible.

The specific treatment depends on the proper administration of digitalis, atropine, strophanthus, and antiluetic treatment if indicated.

Digitalis in some form is indicated in nearly all the cardiac arrhythmias in which the pulse rate is rapid and signs of loss of compensation exist. It should be pushed until a marked slowing of the pulse is accomplished, and if one preparation does not seem to do this, another one or even a fresh preparation of the same one should be tried.

Atropine is indicated in cases in which the vagus nerve seems to be involved, due to various disturbances, such as gastrointestinal conditions which produce a reflex effect or various intoxications which might set up a vagus neuritis, altering the flow of stimuli passing through the vagus nerve to the heart. In fact, atropine alone or in combination with digitalis may be tried and in some instances will produce effects in cases in which no clinical condition is apparent indicating its use.

Strophanthin seems to have its best effects when administered intravenously in the dose of 0.02 to 0.01 grain. Remarkable relief in this condition has been reported by this treatment. Finally, lues should never be overlooked in these cases, and if demonstrated or even suspected, appropriate treatment should be instituted.

308 Diamond Bank Building.

MESENTERIC VENOUS THROMBOSIS FOLLOWING AN ABDOMINAL HYSTERECTOMY FOR FIBROIDS.

Report of a Case with Unusual Symptoms.

By M. Rabinovitz, M. D., F. A. C. S.,
New York.

Mesenteric embolism and thrombosis are not readily diagnosed, the main reasons being the varied nature of the symptomatology and the relative rarity of the occurrence. The clinical evidence of this pathological entity is at best only circumstantial, and often the true nature of the disease is not discovered until an operation or an autopsy has been performed. These facts, however, do not deter us from attempting to reach an approximate diagnosis, particularly in the early stages of the thrombosis when operative measures may be effective in about one third of the cases. A brief review of the symptomatology would therefore be desirable in order to illustrate the unique features of the case I wish to report.

The clinical varieties of mesenteric thrombosis. 1. Patients suffering from endocarditis, alcoholic, or syphilitic cirrhosis of the liver, or an arteriosclerosis of any origin, are susceptible to mesenteric embolism and thrombosis. The vessels affected in these conditions are usually the arteries, although the veins may be involved with equal frequency. The question whether the arteries alone, the veins alone, or both sets of vessels are obstructed is of purely theoretical value, for I doubt whether it is ever possible clinically to differentiate between them with any degree of certainty. Before the occlusion in the arteries becomes complete, these patients suffer for months or years from repeated attacks of abdominal cramplike pains which radiate to the lumbar regions and are accompanied by constipation, alternating diarrhea, and occasionally bloody stools. The pains are due to intestinal claudication, termed by Orthner (1) "dyspragia intermittens angiosclerotica intestinalis." Once the obstruction in the mesenteric artery has become complete, the above symptoms increase in severity, and the patient ultimately succumbs to the toxemia resulting from paralytic ileus with its classical signs of abdominal rigidity, tenderness, vomiting, obstipation, increased rapidity and weakness of the pulse, exhaustion, and finally death.

2. Venous thrombosis of the mesentery may be primary or secondary. The primary condition results from a septic phlebitis arising from an infection in the intestinal tract, in the vermiform appendix, or in the female pelvic organs following labor or abortion. The secondary type results from an obstruction in the portal vein, thereby retarding the return flow in its tributaries. The portal obstruction is due to extraneous causes, such as primary or secondary cancer of the liver, gummata, syphilitic perihepatitis, gallstones, or cancer of the gallbladder. The primary type of venous mesenteric thrombosis is of greater importance clinically because it occurs more frequently and because of its readier amenability to surgical treatment. In this type of cases there is as a rule a period of latency from a few days to several weeks intervening between the time of the causal infection and the onset of the symptoms. The disease is ushered in by an attack of severe abdominal pain, a sharp rise of temperature, an increased leucocytosis, repeated chills, and slight jaundice. As the disease progresses, and the thrombosis extends, the involved loop of intestine becomes paralyzed and the terminal stages of paralytic ileus, identical in nature to those observed in the arterial variety supervene. Some of these patients may be saved by an early operation consisting of resection of the thrombosed intestine with the corresponding obstructed bloodvessels, or resection or ligation alone of the infected veins.

3. This type of mesenteric thrombosis is met with in patients operated on for inguinal hernia with resection of part of the omentum, or for strangulated hernia; also after myomectomies, partial thyroidectomies, gastroenterostomies, or any operation involving the section and ligation of large bloodvessels. An analysis of the cases recorded in the literature reveals the fact that there existed no causal infection at the time of operation. The etiology of the thrombosis in these cases must therefore be assigned to mechanical causes whereby an aseptic embolus has been carried by the bloodstream from a remote region into the mesenteric veins. The symptoms in this group of cases develop either immediately after the operation and death takes place shortly thereafter, or after a period of latency of one or more weeks, after which the disease breaks out in full severity and then resembles the arterial type of thrombosis.

4. There is still another group of cases mentioned by Trotter (2) in which abdominal symptoms are

altogether wanting. The other symptoms are also indefinite and defy the diagnostic acumen of the most astute clinician. My case may with propriety be classified under this heading, and its atypical course makes its recording worth while.

CASE.—Anna K., aged forty-two years, married twenty-two years, gave birth to a child twenty years ago, but has not conceived since then. Her menses began at the age of fourteen, regular in type, moderate in amount and painless. For the past three months her menses have been irregular and more profuse in amount. She is bleeding now. On September 26, 1916, she was taken ill with severe abdominal cramps localized in the epigastrium and radiating to the lumbar regions posteriorily. After twenty-four hours, the abdominal pains became more diffuse in character, grew less in severity, and were accompanied by pressure sensation in the hypogastrium. There was no vomiting, and her bowels have moved daily. Physical examination showed a well nourished woman, tongue moist, pulse fair quality, rate 92, temperature 99° F., respirations 24. Uranalysis was negative. Blood count: white blood cells, 12,400; polymorphonuclears, seventy-nine per cent.; small mononuclears, twenty per cent.; eosinophiles, twenty per cent.; hemoglobin, eighty per cent. Abdomen was enlarged, palpation revealed a smooth solid tumor, corresponding in size and location to a seven months' uterine gestation. Vaginal examination showed a small cervix, slightly lacerated, merging into the abdominal tumor with which it formed one mass. The base of the tumor was wedged into the pelvic fossa very tightly, rendering it almost immovable. The uterine annexæ could not be palpated.

On September 28, 1916, I performed an abdominal panhysterectomy and an appendicectomy. On entering the peritoneal cavity, the omentum was found to be adherent to the anterior surface of a large solid tumor which occupied the entire pelvis and extended upward to a level about three inches above the umbilicus. The omentum was separated from the underlying mass to its lowermost attachments where the adhesions were densest. It was then ligated and cut across. This procedure brought the tumor into full view and disclosed it to be a large uterine myoma. On exploring the tumor posteriorly, a few coils of the small intestine were found to be adherent to it. These were separated and a hysterectomy performed. The appendix was also removed, and the abdomen closed in the usual way without drainage. On her return from the operating room the patient presented evidences of moderate shock. Appropriate cardiac stimulation, and proctoclysis rendered gratifying results, and in a few hours her condition became very favorable. Towards evening her pulse rate was 100, and the temperature 101° F.

September 29.—Temperature 99° to 100° F., pulse 96. She vomited once, and complained of epigastric pain, and was restless. One dose of morphine and atropine was administered. September 30.—The temperature and the pulse were the same as on the previous day; the epigastric pain still persisted; the vomiting was a little more frequent and consisted of glairy mucus. The abdomen was soft, percussion over the left hypochondriac, and the epigastric areas failed to elicit signs of gastric dilatation. The tongue was moist, her cerebrum clear, and she rested at longer intervals and retained most of the fluids given her per os and rectum. She voided 400 c.c. of urine in the past twenty-four hours. October 1.—The temperature was 99° F., pulse rate 90; the pain in the epigastrium was less marked, but the vomiting was more troublesome; the vomitus was brownish. The bowels moved by means of an enema, liquid feces and a good deal of flatus were expelled. The tongue was moist and the facies was somewhat drawn. The abdomen was soft, and there was no distention and no rigidity; there was slight pain on palpating the lower part. She passed about 500 c.c. of urine in the past twenty-four hours. Analysis showed a faint trace of albumin and some granular casts. Lavage was resorted to. October 2d.—The temperature was 99° F., pulse rate 100. She felt much more comfortable during the night and during the entire forenoon. She retained most of the fluid nourishment taken. The bowels responded to enemas, particles of feces and a good deal of flatus were expelled. The patient appeared to be somewhat drowsy. Towards evening the vomiting returned with greater frequency and in larger quantities. Its character varied in color from a dark brown to a greenish tint and she complained of indefinite abdominal pain. The abdomen, however, remained soft and was not tender, and the tongue was moist. October 3d.—The temperature was 99° F.; pulse increased from 100 in the morning to 118 towards evening. The vomiting became almost incessant, and its odor distinctly fecoid, but the abdominal condition failed to show clinical evidences of obstruction, for it remained soft, not distended, and painless. The tongue stayed moist, and the bowels responded satisfactorily to enemas. In spite of a preponderance of negative clinical signs of intestinal obstruction, I decided to reoperate.

The peritoneal cavity was free from either serous or purulent effusions. The suture lines over the stumps of the broad ligaments and the appendix presented normal healing surfaces. On the left side of the adbominal cavity a coil of small intestine, apparently jejunum, for a distance of about nine inches, was purplish blue in color, distended to a diameter twice its normal size, with its corresponding mesentery hard and indurated. The rest of the intestinal tract was normal to inspection and palpation. No attempt to resect was made, owing to the precarious condition of the patient. The abdomen was closed, the patient returned to bed, and she died four hours later.

Epicrisis.—At the time of operation no active inflammatory process existed anywhere. The pathological conditions encountered were rather of a chronic type and were most likely due to pressure by the tumor upon the adjacent viscera. A primary focal infection can therefore be ruled out with a fair degree of certainty. The subsequent course of the disease, the absence of temperature elevations to any appreciable degree, the absence of chills and rigors, and the slow pulse rate, with none of the typical abdominal crisis characteristic of mesenteric thrombosis further tend to eliminate the possibility of a septic phlebitis. Furthermore, the absence of peritoneal involvement, as evidenced by the clinical signs and further substantiated by the findings at the second operation, lend additional confirmatory evidence of a nonseptic origin. Our conclusion must therefore be that the thrombosis was of a purely mechanical nature. The only clinical peg upon which we could have hung our diagnosis of mesenteric thrombosis in this case was the persistent vomiting. Whether this sign alone can be relied upon to clinch the diagnosis of mesenteric thrombosis is rather a rash statement to make. Few surgeons, I am sure, would care to reopen the abdomen in the face of so many negative signs as were presented by this case except as a last resort. Yet this case teaches the lesson that such exceptions are worth while bearing in mind, and that postoperative vomiting alone persisting in spite of lavage and open bowels with a soft abdomen should be a sufficient indication for an exploratory operation.

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1. ORTHNER: *Sammlung klinischer Vortrage von Volkmann*, January, 1913, No. 347. 2. TROTTER: *Embolism and Thrombosis of the Mesenteric Vessels*, Cambridge Press, 1913.

1261 MADISON AVENUE.

Superficial Atrophy of the Mucous Membranes of the Tongue and Mouth.—H. H. Hazen (*Journal of Cutaneous Diseases*, November, 1916) describes two cases of this affection which is characterized by a roughly oval, sharply circumscribed patch, with the long axis parallel to the tongue. The color is glistening white. There are absolutely no papillæ present. To the finger it feels like a surface atrophy. There is some impairment of sensation.

Our Readers' Monthly Prize Discussions

Twenty-Five Dollars Is Awarded for the Most Satisfactory Paper

All persons, whether subscribers or not, are invited to compete for the prize of $25 offered for the reply deemed best by the editors to the following questions:

CLXXXIII.—How do you treat excessive menstruation in the unmarried? (*Closed.*)

CLXXXIV.—How do you correct bad spelling and forgetting in children? (*Answers due not later than July 15.*)

CLXXXV.—How do you treat acute tonsillar infections? (*Answers due not later than August 15.*)

The award will be based solely on the value of the information contained in the answer. No importance will be attached to literary style. Answers should preferably contain not more than six hundred words, and should be written on one side of the paper only. All papers submitted become the property of the JOURNAL, and should bear the full name and address of the author for publication. The prize will not be awarded to the same person more than once within a year.

The prize of $25 for the best answer to Question CLXXXII has been awarded to Dr. Nathan Hirsch, of Brooklyn, N. Y., whose paper appears below.

PRIZE QUESTION CLXXXII.

INFANTILE DIARRHEA PROPHYLAXIS.

By NATHAN HIRSCH, M.D.,
Brooklyn, N. Y.

The etiological factors in the production of infantile diarrhea indicate the prophylactic measures to be followed. Improper feeding is probably the most generally active cause of diarrhea in infants. When an infant is breast fed he is much less likely to suffer from diarrheal diseases than when artificially fed. Maternal nursing should therefore be encouraged by every possible means. A child at the breast should not be overfed or fed too frequently, as these may cause diarrhea by deranging the intestinal tract. Mothers should be instructed as to the general rules regarding intervals and length of feedings for the various months. These rules and tables will be found in all standard works on pediatrics. Weaning should better be postponed until after the summer months.

In artificial feeding, if the general rules as to the quantity of food, frequency of feeding, proper modification of cows' milk and all matters relating to the proper care of milk, careful supervision of dairies, the handling of milk in the cleanest possible manner, prompt delivery at home, and careful refrigeration after delivery are carried out, there will be little danger of diarrhea. Any condition bringing on indigestion, such as overfeeding, use of improper foods or impure foods especially impure milk, may be ranked as a cause of diarrhea and should be avoided. During summer, overfeeding is particularly to be avoided. It is a good plan during the hot days to diminish each meal of the infant by at least one half, making up the deficiency with water, and to give water very frequently in between feedings. All water given to infants or young children should be boiled. Infants cry more from heat and thirst than from hunger. Even those at the breast are likely to be given too much. Infants should be fed less frequently during hot weather.

Since pure milk, properly kept and properly given, is one of the best means of averting diarrheas of infants, an effort should be made and is made in most cities to supply such milk. After the adoption of milk stations in certain cities where pure milk and proper information as to the modifying and keeping of it were distributed especially among the poor the number of cases of diarrheas greatly decreased. The best milk to use for infant feeding is certified milk. It is milk which has been obtained from healthy cows, by healthy milkers, or clean machinery, in sterile receptacles, under sanitary surroundings and kept at a temperature of 40° F. or below constantly, and delivered to its destination as soon as possible, usually within twenty-four hours. The next best milk is pasteurized milk, which is heated to a temperature between 120° and 150° F. for twenty minutes, and then kept at a low temperature constantly. Pasteurization destroys some of the nutritive elements of the milk, but is not so bad as sterilization, which kills more bacteria but at the same time destroys much more of the nutritional value of the milk. No bactericidal agent should be added to milk. When the milk supply for the day is received it should be properly prepared according to the age of the infant, poured into as many bottles as the number of feedings necessary for the day and put on ice until needed for use. When the time for feeding is due the contents of one of the bottles is warmed and fed to the child. If the supply is short some other food as barley water or prepared food may be given until the supply for the day is received.

General hygienic considerations are also very important in preventing infantile diarrheas. Cleanliness of children, frequent bathing and proper care of napkins are important. In summer, napkins should either be washed immediately or thrown into a disinfectant solution, especially if the infant is suffering with diarrhea. The infant's mouth should be kept clean and the breasts of a nursing mother should be kept clean. In summer nights avoid exposure of an infant's abdomen and legs.

Cleaner streets and more parks, more air, more sunlight and less crowding in tenement homes and institutions would help to diminish diarrheas. In summer those who can afford it should go to the country with their infants. Day excursions do much good where a prolonged stay is impossible. Early and prompt attention should be given to all the milder derangements of the stomach and intestines. Prompt attention at the outset will avoid many serious attacks.

67 SUMNER AVENUE.

Dr. Joseph N. Zierler, of Baltimore, contributes:

Many factors contribute to the production of diarrhea of infants. Among them are improper feeding, excessive heat, sudden changes from hot to cold and cold to hot climates, contaminated milk, malnutrition, chronic disorders of indigestion, marasmus, rickets, impure water, poor hygienic surroundings, and the action of saprophytic and pathogenic organisms. The so called summer diarrheas do not differ essentially from those met with at other seasons of the year except that they are more frequent, more severe, and less easily controlled. In order to discuss the preventive treatment intelligently it would be well to consider briefly a classification. That given by Dr. McKee, of Philadelphia, is simple and satisfactory: 1, intestinal indigestion—acute or chronic; 2, fermentive diarrheas; 3, ileocolitis, or infectious diarrhea—acute, chronic, subacute or dysenteric; 4, cholera infantum. Intestinal indigestion represents the simplest form with little or no fever, the disturbing factors being proteid, fat, or carbohydrates. In fermentive diarrheas the saprophytic organisms are at work. In the third group various organisms, the Shiga bacillus predominating, while Bacillus pyocyaneus, streptococci and staphylococci, have been found. Cholera infantum is undoubtedly infectious; real cause is still uncertain.

With the advent of hot weather the general resistance of the infant is lowered. We note a diminution in the secretion of gastric and pancreatic juice which in turn leads to incomplete digestion of the food, and the intestinal contents become a favorable seat for the excessive growth of saprophytic bacteria and in due time to pathogenic organisms and direct infection of the intestinal tract. It seems plausible, therefore, in cases of mild forms of acute intestinal indigestion, to reduce the strength of the food in order to bring it within the digestive capacity of the diminished secretions. In the fermentative type ridding the intestinal canal of the abnormal products of digestion by free catharsis will prevent in a great number of cases the infectious types. Intelligent supervision of the child's clothing and hygiene is important. In very hot weather the child should be lightly clad and even kept indoors, if a cool, shady place outside is not available. Cold sponging with water or equal parts of water and alcohol at a temperature of 85° F. and fanning may be carried out during the hottest hours of the day. A change of climate, away from the city to the country or seashore is desirable.

Breast fed infants will come through the hot summer months if such simple measures as cleanliness, fresh air, regularity in feeding, and quiet are observed. The importance of maternal nursing is obvious and should be encouraged. In over ninety per cent. of cases of summer diarrhea the artificially fed infant is the one attacked. The importance, therefore, of proper mixtures of percentage feeding and the supply of a pure, uncontaminated milk becomes obvious. The infant who is fed on a proper formula, gaining steadily, and who is free from gastric disturbances prior to the advent of hot weather, will in the majority of cases come through the hot summer months with very little disturbance. On the other hand, an infant carelessly fed on patent foods or unsuitable modifications of cow's milk will in the majority of cases fare badly. The high mortality among infants from diarrhea is undoubtedly among this class of carelessly and unscientifically fed cases.

Milk intended for infant use should be thoroughly supervised by the health authorities and should conform to a certain standard. During the hot months the milk should be pasteurized or sterilized, bearing in mind, however, that neither process will render inert the product of bacterial growth in a dirty contaminated milk. The proper handling of the milk after it reaches the house should be impressed upon the mother. It is remarkable how often some of the worst cases of diarrhea will show rapid improvement when put on a suitable formula of clean pasteurized milk. Intelligent feeding and the proper milk supply, therefore, cannot be too strongly emphasized as the most important prophylactic measures at our command. A bottle fed infant should be placed on a proper formula of percentage feeding, from the very outset and remain under the supervision of the physician throughout the nursing period, the formula to be changed from time to time to meet the individual requirements. The directions to the mother for the preparation of the mixture should be simple and explicit, and the physician should satisfy himself that his instructions are carried out thoroughly.

Dr. Joseph H. Marcus, of Atlantic City, N. J., says:

Of prime importance in the prophylaxis of diarrhea, are the following regulations: The child should not be weaned during the summer months; encourage the continuance of maternal nursing, and adopt measures to make this possible. Instruct mothers on matters akin to artificial feeding. Insist upon the use of pasteurized or sterilized milk during the summer. Good milk can be supplied to those who are too poor to afford it. Artificially fed infants should be watched carefully either by visits to the home or in the milk station. If certified milk cannot be obtained, the best that can be had should be pasteurized and kept cold until feeding time. Insist upon scrupulous cleanliness of bottles, nipples, etc. Do not give food in too large quantities or of a sort not adapted to the age and condition of the child. Feed at regular intervals, and do not permit the too early and too frequent use of of table foods. Boil all water given to infants.

The following hygienic measures are of great help in the prevention of diarrhea: Whenever possible city children should be sent to the country or seashore for the summer months; where a prolonged stay is impractical, daily excursions should be practised. Keep them out of doors as much as possible and do not allow too much walking; clothing should be light and consist of one piece. A very small percentage of cases may be due to some disturbance in the mother, during lactation, such as pregnancy, tuberculosis, syphilis, etc., or a prolonged nursing with deficient fats and proteins.

Medicine and Surgery in the Army and Navy

THE COLUMBIA WAR HOSPITAL.

By Francis Carter Wood, M. D.,
New York,
Director of Cancer Research, Columbia University.

The proclamation of the President that a state of war existed between Germany and the United States found this country largely unprepared to fill the contract which it had undertaken. Indeed, the extent of that undertaking is not at all realized even yet by the public, and the shrewdest and most farseeing public men are still unable to compute to what lengths we may ultimately be led. There is, however, a complete realization that war at the present time has ceased to be a matter of personal valor or of muscular strength in the individual soldier; the muscular strength in this war is supplied far more by those who labor in factories than by the proportionately small number who fight battles. It is estimated that seven times as many people work for the war behind the lines as in the trenches; war has become a question largely of munitions and food and is conducted to a great extent by machinery.

In another way the lessons of the wars of the last fifty years have brought home the fact that the preservation of the health and life of the soldier is just as important as is his military training, for in recent campaigns many more men died from disease than from bullets. As a result of these lessons, the position of the medical officer has greatly altered in the last ten years. Instead of being merely contract physicians, whose advice to the commanding officers may be interesting but need not necessarily be followed, the medical officer now ranks with officers of the line and exercises powers which he never before had. Today every death from typhoid fever is a criticism of the efficiency of the army management, and it is realized also that a large percentage of those injured by missiles can be saved, either to return to the battlefield or to lead useful lives in peaceful occupations.

These conditions, together with the great increase in destructiveness of the various instruments of warfare, have led to an extraordinary demand for physicians and for space for the treatment of patients. At the beginning of this war the number of physicians available was extremely small, but nearly 6,000 have since volunteered their services for the needs of their country. Some have already been sent abroad for work in the base hospitals to relieve the hard pressed medical men of England and France. Others will have to serve with the troops in dressing stations, that is, under fire, and must, therefore, know a great deal about modern warfare —the handling of arms, trajectory of projectiles, construction of bomb proofs in which the wounded may be dressed, and reading of maps, in order that they may understand the general position of the troops and the trenches and the best methods of approach to the wounded under fire.

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Columbia War Hospital receives its first patient. The remarkable celerity with which this, the first war hospital in the United States, was erected and equipped is shown by the fact that only thirty days elapsed between the time when the first lumber was delivered on the ground and the completion of the buildings ready for use.

At the time of the President's proclamation there were in this country few facilities for the instruction of medical officers. In a democracy, however, the people must always stand by the government which they have created, and, fortunately, the present administration has welcomed the aid which the citizens of the republic have freely given. The formation of the Council of National Defense with a medical section is a concrete illustration of this fact. With our entrance into the war, necessitating the sending of our troops abroad, and, consequently, the care of the wounded who will be returned to this country on the homeward trip of the transports which carry the troops over, the shortage of general hospital facilities for the army has become most evident. Most of these returning transports will dock in New York, and so attention must be given first to the local conditions here.

Ten years ago, a survey of the hospital facilities of New York city was made, with the result that we were found to lack one thousand beds of the number necessary to care for the normal needs of the lay population. In the realization of this condition, a small group of physicians was called together in the latter part of March by Dr. J. Bentley Squier, of Columbia University, who laid before them a plan for the construction of a base hospital in New York which was to provide accommodations for the overflow from other hospitals, for accident cases, and, when the need came, for wounded soldiers. As finally developed, the scheme also included opportunities for the training of physicians in military medicine, of nurses, orderlies and stretcher bearers, and of other members of the necessary personnel of a base hospital. This plan was formulated on March 31, 1917, and was presented to Dean Lambert, of the College of Physicians and Surgeons, and to President Butler, of Columbia University. On April 2d, Doctor Butler brought the proposition before the trustees of Columbia at their regular meeting, and obtained, as Columbia's contribution to the plan, their approval for the use of the plot of nineteen acres on Bainbridge Avenue and Gun Hill Road, known as Columbia Oval and long owned by the university. This plot is on high ground, opposite the large buildings of the Montefiore Home; was already provided with sewer, water, gas, and electricity facilities, etc.; is accessible from two subway routes and from the Harlem and Putnam divisions of the New York Central and is but a short distance from the Harlem Ship Canal. This last is an especial advantage, because if troops are brought from abroad they can be transferred from the transports to small river boats and thus carried close to the hospital, to which they can easily be taken by automobile ambulances.

This plan was published on April 3d in the columns of the New York *Times,* together with President Butler's appeal to Columbia to do what she could for her country. The same evening Doctor Squier received from Mrs. B. Van Gerbig a check for $10,000, and the next morning a check for the same amount from Mr. Daniel Guggenheim and one from Mr. William H. Woodin for $1,000. Mr. Woodin also offered to place his office staff at the disposal of the committee to handle any further funds which might be received, and he was thereupon asked to take the treasurership, which he very generously consented to do. Encouraged by this extraordinary response to the suggestion of the need for preparedness for the medical and surgical defense of New York, President Butler appointed a committee to carry out the plan, its membership being extended ultimately to include Dr. Samuel W. Lambert, Dr. J. Bentley Squier, Dr. Francis Carter Wood, Dr. William H. Bishop, Dr. A. V. S. Lambert, Mr. Frederick A. Goetze, treasurer of Columbia University, and Mr. Willard V. King, a trustee of the university. This committee has been greatly assisted by Mr. W. B. Osgood Field, who has accepted the post of quartermaster to the hospital.

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Columbia War Hospital. The kitchen of the hospital, showing the dishwashing and sterilizing machine to the left.

After deliberation, it was decided to construct a portable base hospital, not only because the necessary buildings could then be rapidly assembled and quickly and easily removed when the war is over so as to leave the Columbia Oval unencumbered for the future development of the Medical School, but also because such a hospital would act as a model for training men who are to work in similar institutions elsewhere. The plans finally adopted were a composite not only of the work of the committee, but also of much preliminary study by Dr. Sidney R. Burnap and Dr. A. V. S. Lambert, of the Red Cross, by the architect, Mr. Charles Butler, and by Mr. Walter Bloor of the United States Realty Company. The last named and Mr. Arthur Nesbit, vice-president of the Fuller Construction Company, most generously volunteered their services in supervising the construction. The practicality of the scheme attracted a number of gifts, including one notable donation of $175,000 from Mr. Daniel G. Reid through his friend, Dr. Alexander Lambert. The support and interest of an advisory committee of public spirited citizens was quickly obtained, and approval of the scheme was secured from the War Department, the Surgeon General of the Army, the Mayor of New York, and the chairman of the Mayor's Hospital Committee, Dr. S. S. Goldwater.

As finally adopted the plans for the institution called for thirty-eight buildings, of which the operating room, laundry, kitchen, and receiving and supply building are constructed of light weight steel so as to avoid risk from fire. These buildings are provided with a large number of ventilation cowls in the roof, so that they will prove exceedingly comfortable even in hot weather. The wards, mess rooms, and buildings for nurses and orderlies are of wood and are entirely portable. It is estimated that with a sufficient amount of unskilled labor the entire hospital, covering ten acres, can in three days be taken down and packed in the sixty box cars which brought it to New York, and this without any damage which would prevent its being erected on another site. Although but three months have elapsed since the idea was first conceived, nearly half of the plant is already erected; the laundry and kitchen apparatus is installed; the operating room equipment and x ray machine are waiting and ready to be placed in the building, and it is probable that by August 1st the institution will be ready to receive patients. The committee has prepared lists of the medical personnel necessary to run the hospital, and plans are being formed to provide the various helpers, engineers, and others who will be needed for the final organization. A number of ambulances have already been donated by generous friends.

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Columbia War Hospital. Corner of one of the wards.

The whole is a splendid example of the prompt response which the American people make to a call, once they are convinced of its important need. Although the committee has at no time made a formal campaign for funds, yet up to the present time over $260,000 has been given, and there is a promise of more if need arises.

The most efficient way in which this building can serve the country is through a connection with the army, and it is probable that the War Department will join with the executive committee in the operation of the Columbia War Hospital. Just what the conditions will be under which this combination will be effected is not at present settled. The sudden change which has come in the situation, owing to the Government's recent determination to send a considerable body of troops to Europe and the actual appearance of a good many thousand soldiers of the United States Army in France has greatly altered the circumstances which existed when the idea was first formulated. The Mayor's Committee has arranged for an increasing number of beds to accommodate the civilian overflow and also a certain number of wounded soldiers. This provision may be sufficient under fairly normal conditions, but it is evident that the determination of the army to bring back to New York as many wounded as can be transported has added great difficulties, and it is necessary for the army to have a distributing hospital in New York city, in which the wounded can be assembled, studied, classified according to the conditions found, and then redistributed to special hospitals or regular Government hospitals for convalescents. If five hundred wounded soldiers were to be landed in New York some morning, the only place where they could be cared for would be the Columbia War Hospital, for at present the public and private hospitals of the city are full. It is likely, therefore, that the Secretary of War will decide to take over the Columbia War Hospital, and that its name will then become, for official purposes, General Hospital No. 1, but it is to be hoped that even under its new title it will continue to fulfill all the functions for which it was planned by the small group of physicians who have tried to do their bit for their city and for their country.

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Columbia War Hospital. Doctors examining the icemaking machine. Colonel Edwin, Medical Department of the British Army, is talking to a lady at right.

The Medical Service of the United States in the War.—Dr. Karl Connell, who lectures on military surgery at the College of Physicians and Surgeons, served as a major, Medical Corps, National Guard, New York, on the Mexican border. He has been in charge of the Medical Section of the Military Census of New York State, and served half a year in the war zones of France, Germany and Austria in 1914-1915. In the *Columbia University Quarterly*, June, 1917, he reviews as follows the work in medicine and surgery done by Americans on the fields of Europe during the present war.

Great as seemed to us the outpouring of substance and of relief effort in hospital contributions, surgical units, and floods of dressing supplies, yet in proportion to the enormity of the demands, the material total has been so small as to be almost negligible. Of the total world's casualty list of some fifteen millions, America has brought material medical service to about one in seven hundred, and of the total medical burden of the warring nations she has borne not a two thousandth part. These proportions are analyzed not in the spirit of selfdepreciation, but to impress on the American mind the enormity of the medical problems which we now face. Small up to the present as has been the medical relief proportionally, yet this relief has become a future asset of incalculable value.

To analyze these efforts of the past and to apply them to the present developments, a few concrete examples suffice. The best example of a civilian hospital brought into existence in war emergency is the American Ambulance in Paris.

Through army influence, an unfinished beautiful high school was commandeered, in a suburb of Paris over the protest of the citizens of that community, and by American energy was rushed to completion. In the face of the great apparent need, however, this hospital, like the bulk of the sixty thousand beds in Paris, lay idle. The civil relief agencies of Paris clamored for wounded; but the cold military situation demanded that the capital be kept cleared of wounded, as in theory any armed camp should be. Then came the battle of the Marne, and the invader was turned back. A sudden flood of wounded overflowed the channels to the south of France and seeped past the barriers into Paris. So the real war activities of the American Ambulance began when theory was overwhelmed by actualities. From then on the work broadened, and this hospital became the most widely known of all the American relief agencies. Similar institutions in Munich, Budapest and Petrograd served humanity well when they did their emergency best with the skill and material at hand.

Turn now to the local relief agencies of the American colonies in the warring countries to the Red Cross of yesterday. The war had scarcely broken out when the International Red Cross sent out its call for aid. The American Red Cross sounded a local call, and wherever possible it gathered groups of doctors and nurses. These were hastily equipped and organized and were dubbed complete units. By the relief ship load these units were distributed to the capitals of Europe, to take their pictured place on the battlefields. But the days of waiting lengthened into weeks and the units remained unassigned. Gradually the knowledge dawned on these units and on the organization behind them that the cooperation of war demands nothing short of the highest skill and that units untrained by cooperation in peace have no place in the work of war.

The hospital and university units were the next stage of development in our relief efforts. In October of the first months of the war, ex-Ambassador Robert Bacon came home on a flying trip for financial aid and medical relief. The first friend he approached furnished the financial aid, and Columbia University furnished the medical relief. Thus, with the donor, Mrs. Harry Payne Whitney, a group of the teaching staff of the medical school of Columbia University, and a group of nurses from allied hospitals, a party under Dr. Walton Martin, professor of clinical surgery, sailed on the *Lusitania* early in November, 1914. After a hard schooling in Paris as to what difficulties of purchase and equipment the surgery of war may involve in a country so disorganized by invasion as was France, this unit was finally linked with the French sanitary scheme and established a useful work in the town in Juilly, serving the general battlefield of the Aisne. With this as an example, the later units came better equipped: units from the medical schools of Harvard and Pennsylvania, and units from the universities in Chicago, Baltimore, and Cleveland. These units, together with those from the French and German hospitals of New York, found a hearty welcome and rendered most acceptable relief to the countries where they were assigned. Thus by rendering organized relief through units trained together in the surgery of peace, a real service was rendered to Europe, and a real lesson came to America, namely, that she must prepare in time of peace for the surgical work of war.

A more individual achievement was contributed to the Balkans in the summer of 1915. Cooperating in a notable expedition, Dr. Hans Zinsser, professor of bacteriology at Columbia University, was sent with a corps of assistants for the study and control of typhus, a disease then ravaging Serbia. This unit worked in the wake of an efficient English relief expedition, and rendered signal service.

Into the research side of the war the Rockefeller Institute sent to France one of her most brilliant workers, Dr. Alexis Carrel, who set as his goal the sterilization of wounds. As a coworker with Carrel a brilliant physiological chemist, Doctor Dakin, was sent; he set himself a chemical and physiological problem of finding a substance highly destructive to bacteria yet not harmful to living animal tissue. The fruit of their work, the Dakin-Carrel method of wound sterilization, is one of the real surgical achievements of the war. America has already accepted this treatment as of sterling value, and many hospitals of New York have begun the routine application of this method to their everyday accidents.

The medical lessons of the war in preparation, organization and more preparation have not been neglected. While the United States Government was sending over military observers, a single officer to each nation, the medical profession was sending over observers by the scores. Some three hundred medical workers have reported their observations; and the reaction on America has been far reaching. The Red Cross, efficiently reorganized, has become a regular auxiliary of our small but efficient army medical service. On the basis of the lesson learned, the Red Cross has organized around each great hospital and teaching centre a series of base hospital units, of which Columbia University and allied hospitals have organized four. These are now completed, ordered to be ready for service, and, before this goes to press, may be serving on the fields of France.

An army without an efficient medical department is defeated by disease before it ever meets a human foe; and wound repair constitutes a large part of military activity. The medical profession is therefore represented on the war council of the nation by an organizing genius, Dr. Franklin H. Martin, serving as a member of the advisory commission on the Council of National Defense. From the council the medical preparedness efforts ramify through State and county committees down to the individual doctor, who in turn is putting his house in order awaiting the call to service. The proportion who must serve for each million men called to arms is equivalent to one doctor out of each fourteen in this country. Of the 15,000 doctors in New York State, a thousand must answer the first call. If we are to put an army in the field of decisive power, one doctor out of every three must serve the colors.

In order to develop the resources of New York orderly and efficiently without the waste motion of the volunteer system, a special medical census has been completed by the adjutant general of this State. Each doctor in the State has been sorted to his place. The lists show the younger men below thirty-five years of age who should serve with the marching troops, and the specially qualified groups from thirty-five to fifty-five who should man transports and war hospitals. These lists are prepared, classified, and await the call of a great leader who shall demand of the medical profession, as of every man, just and equal service toward victory of democracy.

Correspondence

MEDICAL NEWS FROM WASHINGTON.

Chief Pharmacists Appointed Assistant Surgeons in the Navy—New Work in Health Protection of Troops in Cantonments—Studies of Drug Addiction in Enlisted Force—A Department of Social Hygiene—Recommendations for Medical Officers' Commissions.

WASHINGTON, D. C., *July 9, 1917.*

The following chief pharmacists of the navy have been appointed assistant surgeons in the navy for temporary service during the war: Edward R. Noyes, Oscar G. Ruge, Charles E. Alexander, and Stephen Wierzbicki, of Washington, D. C.; Richard F. S. Puck, of San Francisco, Cal.; Howard E. Sausser, of Annapolis, Md.; Laurence O. Schetky, of Philadelphia, Pa.; Paul J. Waldner, of Olney, Pa.; Maury D. Baker, of Wilkinsburg, Pa., and Carl B. Furnell, of Wilton, Me.

Important new work has been inaugurated by the surgeon general of the army with a view to the protection of the health of troops at cantonments and those with the expeditionary forces in France. Colonel George E. Bushnell, Medical Corps, recently in command of the general (tuberculosis) hospital at Fort Bayard, New Mexico, and recognized as an authority on tuberculosis, will have charge of matters relating to that disease in an effort to establish such sanitary regulations as will prevent the admission to the military forces of men so afflicted and avoid the dangers of communication. Colonel James B. Glennan, Medical Corps, has charge of the supervision and maintenance of hospitals of the camps.

Lieutenant Colonel Frederick P. Reynolds, Medical Corps, has charge of the sanitation of the camps. Lieutenant Colonel Edward L. Munson, Medical Corps, has general charge of the training camps for medical officers, four of which have been established, at Fort Oglethorpe, Ga., Fort Benjamin Harrison, Ind., Fort Riley, Kans., and Leon Springs, Tex., where a large number of medical reservists already are under instruction.

Medical officers of the army and navy are continuing investigations on the subject of the prevalence of the drug habit among the enlisted force. Some important observations as a result of studies of drug addicts are made by Passed Assistant Surgeon Walter A. Bloedorn, of the Navy Medical Corps, who suggests a procedure that would decrease the availability of the drugs. He finds that heroine is the drug that lends itself particularly to the formation of habit and that the menace of heroine is growing; that a large percentage of the addicts begin the use of drugs in early adult life or while they are still minors, and that an addict has a tendency to spread the evil and thus is a menace to his associates. He says that drug addicts cannot be placed in the class with mental defectives. The availability of the habit forming drugs constitutes one of the chief reasons for their use, and the solution of the evil does not rest on the administration of any specific or cure, but rather on the removal of the underlying causes of which the drug addiction is merely an expression. Doctor Bloedorn recommends the following as a help in the general campaign against drug addiction: 1. Predisposing causes should be removed as far as possible, such as overcrowding, insanitary surroundings, the lack of facilities for healthful recreation, and the prevention of contact with drug addicts. 2. The aftercare of drug addicts following discharge from hospital is considered highly desirable, as a long change of environment, country life, or a change of residence to avoid old associates would help to decrease the number that return to the use of drugs following discharge from hospital. 3. Facilities for building up these men physically before throwing them on their own resources would be desirable, as many are physically unable to secure and keep employment immediately following the discharge. 4. All habit forming drugs, their manufacture, distribution, sale, and importation, should be controlled by the Government.

One of the most important provisions for the protection of health and morals of the members of the enlarged military force to be employed at the various cantonments is that of the creation of a Department of Social Hygiene under the auspices of the Council of National Defense and in general charge of Colonel L. Mervin Maus, Medical Corps, retired. It is proposed to maintain such conditions within the zones of protection prescribed in the vicinity of the cantonments as will protect the men from the consequences of dissipation and evil associations. This will be accomplished by the aid of the science of moral prophylaxis, a system approved by the Secretary of War, and, with similar purpose, for naval camps by the Secretary of the Navy. It is expected that it will be possible to enlist the assistance of members of the civil communities, men and women, who will contribute as much as possible to the welfare of the soldiers, not only by agreeable and helpful association, but also by reporting to the authorities the presence of those persons whose intent and influence are harmful. Of course, the municipal and State health authorities will be called upon to aid in this good work, and it is desired to effect a hearty and harmonious cooperation between them and the federal authorities. By this means it is hoped to maintain a condition that will be of benefit, physically, mentally, and morally. The project is of substantial dimensions, and the details remain to be worked out through boards of citizens and officials. It is intended that in the end soldiers will be surrounded by all the measures to defeat the agencies of dissipation and immorality.

Since the war began, the surgeon general of the army has recommended 9,637 physicians for commission as medical reservists; and many of them have been commissioned and ordered to active service, preference being given to those who are less than forty-five years of age. About 200 members of the profession are being recommended for commission in the Medical Reserve Corps every day. About ninety candidates qualified in the June examination for appointment as first lieutenants in the regular Medical Corps of the Army. About 235 candidates qualified in the June examination for appointment as assistant surgeons in the regular Medical Corps of the Navy.

Editorial Notes and Comments

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EDITORS
CHARLES E. DE M. SAJOUS, M.D., LL.D., Sc. D.
Philadelphia,
SMITH ELY JELLIFFE, A. M., M. D., Ph. D.,
New York.

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WAR AND DUTY: HOW SHALL THE PHYSICIAN DECIDE?

This war, so different from every other war, has completely altered the face of the old chivalric ideal. Heroic rush to arms must give place to a calculating sense of duty which demands courage of a no less robust and enduring fibre. This must be the attitude not alone of the citizen who has much to offer his Government, but as well of the Government, which must employ its complex forces and conserve them for the most effective onslaught upon the enemies of peace and the most complete building up finally of that world peace at which it aims.

Time was when the Connecticut farmer could leave his plow in the furrow, saddle his horse, and join his country's defence. The duties and responsibilities of civilized communities have increased marvelously since that day in number and in intricacy and demand for skilled training and resource. The spirit in the medical profession as elsewhere remains the same and would answer to the same impulse to shoulder the kit of tools and make for the front. Slackers are not found within the profession most stimulated by pressing need and absorbing interest to serve its fellowmen at all times and under all circumstances.

There is, however, no profession more thoroughly trained nor more conscientiously impelled to consider the question from the hard matter of fact side. It is sobered by the magnitude of the task which it shares in the greater government problem of offence, defense, and conservation of forces for war and for subsequent peace. Twenty thousand medical men are needed now to serve not only at home, but to take up their station at the front, which is no longer a protected zone. There are numbers who will not return. There is therefore an equally important consideration to be given to the home side of the question. No physician may answer the call to military service without duly pondering several things. It is not amiss to refer to a searching examination into one's own motives, for with this physicians are more and more confronting their patients in their therapeutic duties with them. Some insight into the psychology of the impulsive response to go or the too calculating decision to stay might set both right. Is some secret personal wish skulking behind an apparently commendable adherence to duty, making it merely egoistically easier to slip away from exacting claims at home or rendering it impossible, on the other hand, to leave one's position here? Slackers, no; but secret human motives conceal their strength behind the most plausible of rationalizations. Or is each physician facing the situation in the clearest light of reasoning, endeavoring to his utmost to comprehend the full extent of the burden falling so largely at this time upon the medical men? It is here that the Government too must approach the matter with a clear and sane grasp of the whole situation. The drafting of physicians upon a medical census is being urged in Washington on the ground that there is a shortage of volunteers and that the indiscriminate volunteer system is "sure to result in confusion, waste, and failure."

Too much emphasis cannot be laid upon the necessity on the part of the physician desiring to volunteer to consider well where his duty lies, nor upon the Government's evident duty in the matter. Indiscriminate drafting would certainly be no safeguard against "confusion, waste, and failure," but a middle course, whereby a just and wise selection of physicians should be made, would help each individual to solve his problem. It would also appraise the country's medical resources both for service abroad and for the equally important maintenance of practice at home, and a distribution of the same more in accordance with the partial depletion of medical resources which must take place.

Physicians, too, have their family duties, social responsibilities, and in many cases large practices where they and they alone are needed to carry on their particular branch of work. There must be sacrifice in the case of every one who goes, personal sacrifice and loss to his clientage here. Nevertheless this loss should be on some basis of selection and adjustment. The welfare of the nation is bound up in the health of the people. So also is the future of the army. A third class, moreover, will all too soon be added to the physician's care at home, the maimed and crippled in mind and body whose "rehabilitation and reeducation" for the business of living will be an important medical task of the near future.

A SPECIAL INVESTIGATION INTO THE POLIOMYELITIS EPIDEMIC IN NEW YORK IN 1916.

Although cases of poliomyelitis have been reported through the winter and spring in every issue of the Department of Health bulletins, the condition has kept well within the average endemic status. Apparently we shall go through the summer without a repetition of last year's experience. The bacteriology and many other causative factors are still unknown, but a practical procedure in a future crisis can now be worked out and can be followed with a reasonable degree of confidence. On July 17th last year a committee appointed by the Mayor and supported by the Rockefeller Foundation began work "to cooperate with the Department of Health in combating the epidemic of poliomyelitis prevailing in Greater New York in the summer and autumn of 1916." Under the medical directorship of Dr. Alvah H. Doty, a field force of doctors and nurses pursued investigations into the sources of infection, methods of transmission, and the incubation period of the disease, by tracing contacts and undiagnosed and suspicious cases, and reporting new and hitherto undiscovered cases to the Board.

An incidental and extremely important result of this investigation was to disprove several conjectural theories of infection. In accomplishing the positive phase of the study, nothing new was discovered. Personal contact, the classical and the commonest mode of transmission, it is concluded in the official report, is the means by which poliomyelitis is spread, and slight and nonparalytic, or abortive, cases are the most frequent sources of infection. Of great value is the elimination of false theories. The medical director reports that there is no evidence to prove that the disease is transmitted by food, especially milk, by cats, dogs, chickens, rats, flies, fleas, mosquitoes, etc., or by clothing. In this knowledge workers in this field will be getting on firm ground. False theories in such a terrible emergency are like quicksands swallowing up young life. Valuable time is wasted in guesswork and speculation as to causes exposes more and more victims to the disease. While attention is directed toward futile procedures in a vain attempt toward protection, the disease makes headway and panic begins to run riot. Doctor Doty's report shows evidence of a thoroughly scientific procedure and a constraint in assertion that encourages confidence in his statements. The value of a study of this kind is entirely dependent upon the openmindedness of the investigator, his keenness of observation, and powers of deduction. Such a study requires detective powers of no mean proportions, and the ability to get at the truth in the face of ignorance and deceit on the part of those who will benefit by this work. This special report, in conjunction with the monograph on the Epidemic of Poliomyelitis in New York in 1916, published under the direction of the Department of Health of New York City, contributes important material on the practical public measures that may be depended on in a crisis.

A RED CROSS FRANKENSTEIN.

We learn from the *Army and Navy Journal* of recent date that to facilitate the work of the Red Cross officials, other than those incorporated in the Army Medical Corps, who thereby cease their connection with the Red Cross, they are to have a corresponding military rank appropriate to their titles in the scheme of the Red Cross organization. Officials will receive commissions, employees will receive warrants, and laborers, cooks, and privates will receive certificates of identity as enlisted men. Titles and duties are prescribed as follows: chairman of the war council to have the assimilated rank of major general; war counselor and vice chairman of executive committee, brigadier general; director general in charge of civilian and military relief, colonel; assistant director general—commissioner to the theatre of war, or bureau head—lieutenant colonel; director—bureau chief Red Cross representative at headquarters camps, base hospitals, supply depots, etc.—major; assistant director—Red Cross representatives with any lesser army detachment—captain; assistant director—storekeeper, adjutant or quartermaster aid—first lieutenant. Other assimilated ranks are as follows: secretary—clerical work—sergeant major; and at base hospitals, corresponding to army grade for Red Cross, master hospital sergeant, hospital sergeants, sergeants first class, corporals, cooks, privates first class, privates, and laborers.

It is hardly conceivable that the War Department would formally authorize that for which there is no warrant in law. As far as we know, no authority exists for applying the grades of the army to civilian employees of the Red Cross any more than of the Navy or of the hierarchy of the church. To be sure, the Red Cross, within the limits of its charter, can organize itself as it pleases, and organization is necessary; its officials can call themselves kings, dukes, or gold sticks and make their rank correspond with princes and potentates if it so pleases them. But the use of the grades of the military bodies and the exercise of authority which such designation implies and invites requires an enactment by Congress which we trust will never be made.

By this time almost everybody knows something of the origin, object, and scope of the Red Cross. It is essentially a civilian organization to act as an auxiliary to the Medical Department of the forces; its functions in their original conception are wholly supplementary to the official body, the duties of which are clearly defined and which is directly responsible, among other things, for the care of the sick and injured of armies. The real strength of the Red Cross lies in the fact that it is essentially civilian. The moment it apes military organization it becomes neither civilian nor military; it relinquishes the strength of its position as representing the people and loses the respect of the forces which would wholeheartedly welcome its aid but would equally resent any assumption of authority. Let us hope that the *Army and Navy Journal* has been misinformed and that the War Department not only does not propose "to authorize the use of military titles, rank, and uniform by representatives of the American Red Cross," but that it will positively forbid and prohibit any such thing.

TUBERCULOSIS IN THE SOLDIER.

It has been believed that the greatest mortality and morbidity in warfare were the results of diseases not actually incident thereto rather than from the violence accompanying it. It is true that wars have been characterized by epidemics—smallpox, cholera, dysentery, typhoid, etc., but these epidemics have taken greatest toll, not from the soldiers themselves, but from the civilian population among whom they were billeted or to whom they returned. War destroyed the strong in battle, but Nature equalized conditions by destroying the weak at home through epidemics. Total war casualties seem very high because the public is wont to consider war morbidity as entirely a wound morbidity, whereas on reflection it can be seen that the soldier has the same predisposition to disease in the field that he has at home. If the general morbidity is subtracted from the total war morbidity the figures for the war will be comparatively low. This applies even to violence, for the number of deaths from violence of all kinds, including industrial violence, is very high in civil life.

Recently the question of tuberculosis among the soldiers has attracted much attention, especially because of the large numbers reported among French troops. An analysis of the figures discloses the fact that not more than about two per cent. of the military population is thus affected, a number no larger than in civil life. The number of victims seems appalling principally because they are all segregated at once for treatment among a people in whom the campaign for the prevention of tuberculosis has not been developed to such a degree as among other belligerents. Nevertheless, it has been urged that examining surgeons take particular pains to exclude from our own draft those who seem susceptible to tuberculosis or who are likely to be sources of infection of soldiers with whom they must be closely associated. It would seem that the hardships and overcrowding incident to a military campaign have a greater tendency to bring out tuberculous disease than similar conditions in civil life, yet the attempt to weed out the unfit in recruiting and the special attention to matters of general health and sanitation render the likelihood of initial infection or increased susceptibility much less. On the contrary, it has frequently been stated that nonactive or arrested tuberculous individuals were benefited rather than harmed by the life and discipline of the soldier. This, of course, is open to question. The arrested case as such is an arrest only on sufferance, and may become reactivated under adverse conditions. To allow suspects or men with an arrested condition to mingle freely among nontuberculous soldiers without the surveillance that they would get in civil life would be to court danger, and to advocate it would be to deny the whole principle of tuberculosis prevention. Aside from the question of infection of others, there are great difficulties and much expense involved in taking care of the sick soldier as well as the burden of pensions. This alone should make it expedient to reject every suspect. It is readily understood that where the man power is limited discrimination cannot be so fine as where it is abundant. Discrimination, however, should be exercised rather in respect to the rejection of disease suspects than of the physically defective. While it is true that most cases of tuberculosis are not clinically positive and that many with positive diagnoses who have received sanatorium treatment are not tuberculous, it is equally true that many unsuspected cases with mild symptoms referable to the respiratory tract are in fact tuberculous. These persons get well under favorable conditions, but it is doubtful whether the hardships incident to military life would act otherwise than unfavorably. That every suspect cannot be excluded from service is evident from the fact, according to Koch, that every human being has suffered from tuberculous infection at one time or another. Many individuals dying from other causes in whom tuberculous infection had never been suspected, show evidences of healed tuberculous lesions. In the final analysis it is not the question of accepting or rejecting the suspect or the phthisically inclined individual, whether from history, physical condition, or previous infections, but rather the difficulty of diagnosis of the vast number of the tuberculous who present no symptoms during the incipient stages, but who are bound to light up under the new and adverse environment of military life. The problem can only be solved by calling in every diagnostic aid and by making the medical examination of recruits as important as it really deserves to be.

AUSTRIAN MEDICAL EFFICIENCY.

The observation has been made that the United States entered the war at a time when the other nations, after experimenting and blundering, had at last reduced chaos to order and had learned efficient methods; consequently all this country had to do was to pick up its instructions ready made and follow them. There is perhaps much truth in this, and the fact that it is alluded to with somewhat of a sneer by certain foreigners of Teutonic propensities does not deter us in the least from taking advantage of it. Thus if the contending forces have developed any new wrinkles in preventive or military medicine we do not hesitate to use them for the benefit of our soldiers simply because we have not paid for them with our own blood.

It is particularly gratifying when from our enemies' camp we are able to extract information which is of benefit to our troops. Thus Major Joseph H. Ford, writing in the *Military Surgeon* for June, tells us of the highly efficient sanitary service of the Austro-Hungarian army. As might be expected, system is the keynote. Field hospitals, he found, were not attached to divisions, but were under the control of the chief surgeons of the various armies. Although there are about three to a division, each accommodates 200 patients, but is expansible to 300. The staff is under the command of a senior surgeon and consists of three surgeons, one chaplain, one quartermaster, one pharmacist, one officer, and about sixty men of the army medical corps. The medical units assigned to divisions are of four kinds, depending on the kind of troops. Thus there are those, 1, with an infantry division; 2, with a cavalry division; 3, with an infantry brigade; and, 4, with an infantry brigade equipped for mountain warfare. The unit for the infantry division may be taken as an example; it has the following personnel: six mounted surgeons, two commissioned officers, about 125 noncommissioned officers, and men of the army medical corps, including two artificers and six cooks. The unit is under the command of the senior medical officer. The train consists of seventy-seven men, 149 horses, and forty vehicles, among them fifteen four horse ambulances.

The Austrian army uses four kinds of litters: a demountable, light litter which can be easily disassembled; a litter for use in hospital trains; a litter which is like a canvas chair with side bars and handles, and a litter resembling a hammock. Major Ford notes that "litters were supplied in such abundance—more than the quantity called for by regulations—that extemporized litters were not often seen except after severe engagements." Surely this is worthy of emulation. The Austrian diagnosis tags are made of heavy oiled paper four inches by two and a half inches, with a metal eyelet through which a stout loop of black thread is passed; they are of two kinds, red for slightly wounded cases and white for severely wounded ones. The first aid dressing packet carried by all officers and enlisted men is two and a half by two and a half inches by three fourths of an inch. It contains two compresses, each formed of a layer of five grams of absorbent cotton between five layers of gauze and a gauze bandage two and a half inches wide and four and a half yards long and a safety pin. One of the compresses is free and the other one sewn to the bandage. The packet is covered with cellulose paper sealed with collodion, then with a waterproof cloth, and then tied with tape fastened by a lead seal. The contents are sterilized. The convalescent camps are really buildings supported by public spirited individuals who supplied all things necessary, often caring for the soldiers in their own homes or buildings on their grounds, while the local doctor makes gratuitous calls.

This is of course but a sketch of some of the features of Austro-Hungarian military medicine. Major Ford gives many other details in his interesting article accompanied by a number of pictures and diagrams. The article as a whole is well worth reading by the American military surgeon of today or the one of tomorrow, who is the general practitioner of today.

Obituary

BROOKS HUGHES WELLS, M. D.,

of New York.

Dr. Brooks Hughes Wells, of 523 Madison Avenue, died on Friday, July 6th, as the result of injuries sustained in a collision with an automobile. The accident occurred as he was bicycling on a road near Southport, Conn., where he has a summer home. Doctor Wells was fifty-seven years old and was graduated from the College of Physicians and surgeons with the class of 1885. He was an emeritus professor of gynecology at the Polyclinic Hospital, associate visiting surgeon at the Woman's Hospital, consulting physician at the Beth Israel Hospital of this city and the Brattleboro Hospital, Brattleboro, Vt., and was an editor of the *American Journal of Obstetrics and Diseases of Women and Children* since 1892. He was vice-president of the American Gynecological Association, a fellow of the American Gynecological Society, and a former president of the County Medical Society. He was recently appointed a captain in the Medical Officers' Reserve Corps and last week was on duty at the Academy of Medicine examining candidates for the medical and dental departments of the new army.

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News Items

The University of Chicago Medical School.—Plans have been filed for the new $5,500,000 medical school of the University of Chicago, which provide for two buildings, one on the Midway and the other in the West Side medical district.

The Health of the Army.—Surgeon General Gorgas reports that during the week ending July 7th the health of the army continued excellent. The hospital list was slightly larger than during the previous week, but there had been no unusual outbreaks of disease or casualties.

Alienists and Neurologists of America.—The sixth annual meeting of this organization was held in Chicago, July 10th, 11th, and 12th, under the auspices of the Chicago Medical Society, Dr. George A. Zeller, formerly alienist to the Illinois Board of Administration, presiding.

French Order Praises Stanford Hospital Unit.—The entire ambulance section of the American Field Service sent to France by Leland Stanford University last February is cited by General Mangin in orders to the division. The citation of the section is made for its "having given constantly since its arrival at the front an example of courage and profound devotion, especially at Verdun and at Moronvilliers, in pushing up to the battle lines under bombardment to carry away the wounded."

A Training School for War Cripples.—The building at the corner of Fourth Avenue and Twenty-third Street, New York, formerly the home of the College of Physicians and Surgeons, is being transformed, along European and Canadian lines, into a training school ready to receive disabled soldiers and sailors and teach them trades which will make them selfsupporting. The school has been organized under the war council of the American Red Cross and is temporarily under the direction of Mr. Edward T. Devine, head of the New York School of Philanthropy. It has been endowed by an initial donation of $50,000 and the use of the building by Mr. Jeremiah Milbank. A staff of experienced educators is being selected, and Mr. Homer Folks has gone to France to report upon the educational and industrial work being done for war cripples there.

Boston City Hospital Ward Buildings to Be Reconstructed.—The Boston City Council has appropriated $74,000 for the reconstruction of two ward buildings of the hospital, one of which was recently destroyed by fire. The reconstructed buildings will be given an additional story each, and four new sun parlors, increasing their accommodations for patients by one hundred.

An Electrotherapeutic Unit for Base Hospitals.—The American Electrotherapeutic Association is planning a unit for each base hospital, for the purpose of furnishing facilities and men to carry out in a thoroughly scientific manner treatment of the wounded by electrotherapeutic and other physical methods. The equipment should include transformers and diathermic apparatus, x ray apparatus for therapeutic use, the practical forms of static machines, therapeutic lamps, sinusoidal machines, and constant current apparatus. The committee having the matter in charge recommends that such a unit should form a part of every base hospital in this country and abroad.

Women Give Hospital Unit.—The first mobile hospital unit to be offered by the women of the United States to the Government will be that of the New York Infirmary for Women and Children, backed by the National American Woman Suffrage Association. The director of the unit is Dr. Charles S. Finley, with an organization committee composed of Dr. I. von Skolly, Dr. Mary Lee Edward, and Dr. Alice Gregory. An organization office has been opened at 2 East Twenty-third street. The unit will have a force, all women, which may number eighty. It starts with a nucleus of twelve doctors, twenty-one nurses, and three orderlies. In England the National Union of Suffrage Societies has nine hospital units in charge of women, and the American suffragists expect to rival this record.

A Hospital for Soldiers at Lincoln, Mass.—The summer home of Mr. and Mrs. James J. Storrow, at Lincoln, Mass., is to be converted into a hospital for convalescent soldiers, to be called the Lincoln Convalescent Hospital, and as soon as the necessary arrangements can be made it will be turned over to the Massachusetts Medical Women's Hospital Unit, which will have it in charge. The house contains thirty rooms, many with sleeping porches or balconies, numerous bathrooms, and one large room which is especially adapted for use as a ward. In addition to the land and buildings of Storrow Farm, Mr. and Mrs. Storrow are contributing such household furniture and supplies as may be utilized for hospital purposes, the services of many employees, the care of the grounds, overhead expenses, such as heating and lighting, and considerable financial assistance toward hospital equipment. Medical women of Massachusetts will furnish the personnel of the hospital staff, including surgeons, physicians, specialists in all branches, and nurses.

Personal.—Dr. Charles Goodwin Gant has resigned as professor of diseases of the rectum at the Post-Graduate Medical School and Hospital.

Dr. William Allen Pusey was elected president of the Chicago Medical Society, at the annual meeting held on Tuesday, June 19th.

Dr. Leverett Dale Bristol, of Boston, has been appointed State health commissioner of Maine, and will take charge at once of the newly organized health department in that State. During the past ten years Doctor Bristol has been engaged in various phases of public health work in New York, Minnesota, North Dakota, and Massachusetts.

Dr. Augustus Ravoglio, of Cincinnati, has been retired as chief of staff of the dermatological department of the General Hospital, after a continuous service of twenty years. His retirement was made mandatory under the recently enacted law making sixty-six years the age limit for medical officers.

Dr. E. T. Newell, of Chattanooga, was elected president of the Tennessee State Medical Association at the annual meeting held recently in Nashville. Dr. Olin West, of Nashville, was reelected secretary.

Dr. A. G. Howard, of Boston, has been elected president of the Massachusetts Surgical and Gynecological Society, succeeding Dr. J. Emmons Briggs.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

THE USE OF INEXPENSIVE DRUGS IN PRACTICE.

By Louis T. de M. Sajous, B. S., M. D.,
Philadelphia.

(*Continued from page 38.*)

In the preceding issue the inexpensiveness of ammonia and the ammonia yielding preparations as diffusible reflex stimulants was pointed out, and the relative disadvantage of alcohol as a stimulant was emphasized except when employed with the additional purpose in view of dilating the skin vessels. In previous instalments the inexpensiveness of strychnine as a stimulant to vascular tone has similarly been referred to. Ingestion of ammonia water or ammonium carbonate in appropriate dose and dilution proved the least costly method of exciting vascular contraction through irritation of peripheral sensory nerve endings, while hypodermic injection of strychnine was found equally inexpensive as a vascular excitant among those agents which directly stimulate the vasoconstrictor centres after absorption.

Turning to a third group of drugs, those which cause contraction of vessels and rise of blood pressure, not by reflex or central action, but chiefly by direct stimulation of the vessel walls themselves, we note that there exists in this group no drug which corresponds in cheapness to ammonia and strychnine in the two other groups. The outstanding members of the group of the direct vasoconstrictors are epinephrin, or adrenalin, ergot, and pituitary extract. The first of these, while its cost has not risen since the beginning of the war, is about one hundred times as expensive, dose for dose, as the salts of strychnine. As Josué has recently emphasized, results in some respects similar to those obtained by hypodermic injection of epinephrin solution can be secured by oral or hypodermic use of an extract of the whole adrenal gland. As commonly supplied, the adrenal remedy occurs in the form of dried adrenal glands—suprarenalum siccum, U. S. P., required to contain 0.4 to 0.6 per cent. of pure epinephrin. Even this preparation, in the moderate single doses, one and a half to three grains, which Josué recommends is about thirty to sixty times more expensive than strychnine, while admittedly inferior to pure epinephrin in promptness and certainty of action. An adrenal extract suitable for hypodermic injection would, furthermore, be more expensive than the ordinary dried adrenals. Ergot showed a marked rise in price in the early months of the European war. By the close of 1914, however, the scarcity had already been largely overcome and since that time a gradual further decline has occurred, with the present price not more than fifty per cent. higher than that prevailing before the war. If a dose of thirty grains of powdered ergot, one of the least expensive preparations, is used, the drug is about thirty times as expensive, dose for dose, as strychnine. The same relationship to strychnine applies at present if an aqueous extract of ergot, the effects of which on the bloodvessels have been held to be relatively greater than those on the uterus as compared to alcoholic ergot preparations, is employed; though, as a rule, the price of aqueous ergot extract of the Bonjean type has in the past been somewhat higher than that of a corresponding amount of crude ergot.

In the case of certain pituitary preparations, expense is far greater even than with adrenal products or ergot. In the customary dose of sixteen minims 1 c. c. liquid pituitary extract, or as it is now officially termed, liquor hypophysis, is approximately ten times as costly as the ten minim dose of epinephrin solution and correspondingly no less than one thousand times as costly as an injection of strychnine. Dried pituitary substance, made from the organ as a whole, is not much more expensive, weight for weight, than dried adrenal gland; the dried preparation of pituitary best adapted for causing vasoconstriction, however, is not that of the whole gland, but that made from the posterior lobe alone, and the cost of the drug would naturally be correspondingly greater if such preparation were used.

Comparing suprarenal products with ergot we note, in the first place, that epinephrin is about three times as expensive to use as powdered ergot or an aqueous extract of ergot, while dried adrenal gland is about once and a half or twice as expensive as ergot, and the question arises, in view of the less cost of the latter drug, as to how far it can be substituted for adrenal products without prejudice to desired therapeutic effects. On the whole, experience has shown that ergot is, from the standpoint of general vasoconstriction and a general rise in blood pressure, a rather uncertain agent. This is by no means surprising in view of the complexity of the drug as regards active principle and the fact that while some of these principles, especially ergotoxine and tyramine, exert a vasoconstricting action, others in particular histamine or ergamine, tend to lower the blood pressure. While the net result of the conflicting actions is usually in the long run a vasoconstriction, the composition of the drug seems not infrequently so to deviate from the type that no effect on the blood pressure is produced. Again, ergot might be thought advantageous as compared to adrenal preparations in acting more efficiently when given by mouth and more persistently when injected under the skin or intramuscularly. The observation of Josué, however, in cardiovascular exhaustion in overfatigued soldiers, together with the previous reports of Satterthwaite and several other clinicians on the oral use of adrenal preparations, seem to show that almost any desired degree and continuity of action can be obtained with these agents under suitable methods of administration. Thus, Josué reports distinct results from the giving of one to five c. c. a day of one in 1,000 epinephrin solution divided into equidistant doses, not exceeding 0.5 c.c., each administered in a little water; in some cases, three c. c. a day was kept up for a month or six weeks without any untoward side effects. In giving the remedy hypodermically, he secured a suitable rate of absorption by combining epinephrin with saline hypodermoclysis, one c. c. of epinephrin solution and 0.01 gram of novocaine being mixed with 250 to 500 c. c. of saline solution just before the beginning of the injection. Oral or hypodermic use of whole adrenal products was also, as already mentioned, found effective, especially in cases of general asthenia and nervous or digestive disturbance associated with adrenal insufficiency, whereas pure epinephrin proved more potent in cardiovascular weakness. On the whole, if these observations and those of Hutinel, Netter, and others are confirmed, as seems likely, epinephrin should prove definitely superior to ergot, even by the oral and hypodermic routes, in the certainty of its action on the vessel walls; and the relatively slight difference in cost in favor of ergot will by no means justify substitution of this drug for epinephrin where a general, direct vasoconstricting effect is sought.

(*To be continued.*)

Treatment of Trench Foot.—V. Raymond and J. Parisot (*Paris médical,* March 24, 1917) describe the results reached after successive trials of a large number of remedies. The affection is due to prolonged exposure to cold water, and presents the characteristics of a mycotic infection, sometimes localized in the feet, and, less frequently, involving the whole system. In the simple edematous form, the feet should first be bathed in warm water and the nails carefully cut. The feet should then be gently washed with the following soap:

℞ Saponis mollis,	1000 grams;
Camphoræ pulveris,	25 grams;
Sodii boratis pulveris,	100 grams.—M.

They are then dried and dressed with a layer of absorbent cotton of the thickness of a finger, wrapped in gauze and dipped in the following solution:

℞ Camphoræ,	1.10 grams;
Sodii boratis,	15 grams;
Aquæ bulliatæ,	1000 grams.—S.

This dressing, which should be covered with some impermeable material, should be carried as high as the edema extends, and is to be renewed daily. When the edema disappears, the dressing should be used for a day or two without the impermeable covering, and later, a little camphorated oil merely rubbed over the parts. Blisters larger than a dime or with hemorrhagic contents should be completely excised, the underlying gelatinous mass removed with sterile cotton and aseptic compresses dipped in a solution of three parts of camphor in 100 parts of ether applied, to be renewed daily. Where necrotic areas occur, they should be softened with a dressing of camphor in ether of of colloidal silver and gradually detached from without inward; the camphor in ether dressings should then be continued for a time. In severe forms with the foot purplish in color, incisions, parallel with the long axis of the foot are made in the infiltrated areas, down to the subjacent layer of fetid edema; foci of suppuration, when present, are widely opened. The foot is first dressed with camphor in ether, then with colloidal silver or, especially in suppurating cases with colloidal gold, or with a solution of one part each of eucalyptol, balsam of Peru, guaiacol, gomenol, and camphor, in 100 parts of ether. Cauterization and surgical procedures are to be strictly avoided. When the sloughs have fallen off and the lesions been freed of infection, repair goes on rapidly under dressing of camphor in ether, saline solution, or ambrine. Skin grafting, hot air, etc., can also be resorted to. In septicemic cases subcutaneous injections of camphorated oil or intramuscular injections of colloidal camphor are of value. All patients should receive tetanus antitoxin, to be repeated weekly in the presence of ulceration or extensive necrosis.

Medical Treatment of Chronic Intestinal Stasis.—Max Einhorn (*Medical Record,* May 19, 1917) advises that these patients be told that no harm will result if the bowels do not move for several days at a time, and should be instructed to go to the toilet at the same hour each day and then not to bother about the bowels until the next day. Nerve sedatives are often of help, and the diet should be ample and varied and should include plenty of vegetables, fruits, and salads. Water should be consumed liberally both at meals and between meals, and if these measures are not sufficient, mild laxatives as cascara, rhubarb, or phenolphthalein may be given. Agar-agar, either alone or combined with rhubarb or phenolphthalein, lubricates the bowel contents and stimulates peristalsis, and can be used over long periods, as may also olive oil or liquid petrolatum in tablespoonful doses on arising and retiring. Other measures are saline enemas and enemas of olive oil or water to be retained over night, abdominal exercises, and massage and electricity to the abdomen.

The Surgery of Amputation Stumps.—G. M. Huggins (*Lancet,* April 28, 1917) deals mainly with the problem of the treatment of the stump, usually after an initial amputation, to prepare it for an artificial limb. Where the stump is good at least three months should elapse before any attempt is made to fit an artificial limb, and then only if the stump has been bandaged tightly and massaged daily. Unhealed stumps are usually the result of guillotine amputations and they should be treated by skin extension or subjected to a second operation. When infected stumps finally heal the skin shrinks greatly and when this occurs the time has come for refashioning the stump. In this refashioning the least possible amount of bone should be removed in most cases, for every inch of purchase is valuable. No secondary operation should be done on a stump previously infected until at least two months have elapsed since healing on account of the danger of lighting up the old infection. No stump should ever have an artificial limb fitted to it until x-rays have proved that there is no sequestrum present. If there is one it should be removed. Sinuses are frequently encountered and are commonly due to foreign bodies, sequestra, or most frequently to silk ligatures. In every case the foreign material must be removed and the sinus allowed to heal or its track be excised. Pain or tenderness in the stump is commonly due to the failure to cut the nerves off short of the site of amputation. When it is encountered all bulbous nerves must be searched for and the bulbous portions removed. The same is true when the pain is due to nerves being caught in the scar tissue. Pain may also be due to sequestra or to the development of bony spurs, which should be removed. In very deep scars infections or eczema is prone to develop; they should be refashioned. In preparing the stump skin alone without muscle should be used to cover the end of the bone which, together with the organized blood clot, will be quite sufficient. The site of each amputation should be chosen with a view to leaving the best form of stump for a given type of artificial member, and particular care should be taken to keep the nearest joint mobile by massage and passive movements. If the joint has become stiff it must be mobilized by the use of suitable apparatus, massage, forcible breaking down of adhesions, or tenotomies and fasciotomies.

Gonorrheal Pyosalpinx.—George S. Whiteside (*Northwest Medicine,* May, 1917) agrees with the general opinion that during the acute stage operation is not indicated and is in fact dangerous to the life of the patient. Operation is usually performed during the subacute stage and includes the ablation of the tubes, partial or total excision of damaged ovaries and curettage of the uterus, if required. Such an operation is well enough, but it does not go far enough for the gonorrheal infection comes from below and the patient will not be cured without complete eradication of the infection from the cervical glands, Bartholin's glands, and possibly the urethra. Therefore, following the operative treatment every patient should be subjected to a thorough course of local treatments for the cure of all foci of infection. This is perhaps the most important phase of the whole plan of treatment and the one usually overlooked.

Crystalline Ouabain in the Treatment of Cardiac Insufficiency.—Vaquez and Lutembacher (*Bulletin de l'Académie de médicine,* March 20, 1917) believe that the occasional instances of fatal toxic action, which have somewhat discredited intravenous strophanthin medication, arose through the fact that the so called crystalline strophanthins extracted from Strophanthus gratus or Kombé are, for the most part, merely variable mixtures of amorphous and crystalline principles, uncertainty in the therapeutic and toxic efforts resulting. Ouobain, a definite glucoside from Strophanthus gratus, crystallizes perfectly, acts with great uniformity, and is no more toxic than amorphous strophanthin. The authors have used it nearly two thousand times without a single death or serious disturbance. As an emergency drug ouabain is particularly adapted for cases of acute distention of the left heart, with angina pectoris and acute edema of the lungs—circumstances under which digitalis is wholly inactive. The ouabain acts still better in these cases if preceded by free blood letting. Intravenous use is alone efficacious, the active dose being 0.5 milligram, dissolved in one c. c. of distilled water. It is well to begin, however, with a dose of 0.25 milligram to test the patient's susceptibility, followed in twenty-four hours by 0.5 milligram, to be repeated for three or four days. Larger doses may cause nausea or even vomiting. The same method of administration is effective in insufficiency of the right heart uninfluenced by digitalis. Often marked diuresis and complete absorption of edema follows. If this effect is not complete digitalis will then prove permanently effective if resumed. Digtalis efficiency may even be restored where the ouabain has seemed without effect. This the authors ascribe to a qualitative difference in the action of the two drugs, the ouabain acting more sharply and exclusively on the heart muscle itself than digitalis.

Severe Infected Injuries of Shoulder and Elbow.—R. H. Jocelyn Swan (*Lancet,* April 7, 1917, urges the immediate resection of the damaged ends of the bones in such infected injuries of the joints, followed by lavage with very hot sterile water and the insertion of Dakin's tubes for the use of his solution. The incision should be left freely open and the part put at rest on a suitable splint. This plan of treatment does not increase the risk of general spread of the infection and greatly enhances the chance of securing a useful new joint. In fact the sepsis is promptly controlled. The earlier the operation is performed after the injury the better are the results and the better the chances of securing sufficient mobility in the new joint. The prophylactic injection of a polyvalent streptococcus and proteus vaccine should be practised in all cases. The results of such treatment are reported for fourteen cases.

Massage and Exercise in the Treatment of Flat Foot.—Hugo A. Oldenberg (*Illinois Medical Journal,* May, 1917) is impressed with the importance of exercise in the various forms of flat foot. Congenital cases are treated by rotating manipulations and orthopedic appliance. In traumatic cases usually following Pott's fracture exercises of inward rotation of the foot should be prescribed with flexion of the toes for ten days before putting the full weight of the body on the extremity. Muscle training and manipulation are of great service in paralytic cases especially those following poliomyelitis, the degree of paralysis determining whether any orthopedic appliance should be worn. In rickets constitutional treatment is of even greater importance than the local measures which will be adapted to the existing deformities. Most cases of flat foot are of the so called static form and the difficulty of getting these patients off their feet is a serious one. If it is impossible for the patient to go to bed, he should at least go about on crutches to take the weight of the body off the feet until the soreness passes away. During this time tender areas in the plantar surface of the foot should be manipulated daily by deep massage and the muscle of the calf should also receive careful treatment. As the tenderness disappears exercises are begun as inward rotation of the foot first without and later with resistance and strong flexion of the toes. As the strength increases the patient is told to walk on the outer edge of the foot, rising up on the toes and walk on the toes while maintaining a strong varus position of the foot.

Therapeutic Use of Extract of Corpus Luteum.—H. E. Happel (*Medical Record,* May 19, 1917), after a review of the literature and a rather extensive personal experience, is convinced that corpus luteum should be given in sufficient doses, and over a long period of time to accomplish satisfactory results. It produces no toxic effect except a feeling of fullness in the head or vertigo, and its action is not cumulative. It is the best remedy available for the nervous symptoms of natural menopause, and also of postoperative menopause, as also in the treatment of irregular or scanty menstruation in young women where it relieves the associated neurasthenic symptoms.

Dispensary Treatment of Epilepsy.—L. Grimberg (*Medical Record,* May 19, 1917) thinks that the disadvantages of the bromide treatment so far outweigh its advantages that its use is rarely justified; atropine is occasionally useful when given hypodermically in large doses; and chloral and its derivatives are not appropriate outside of institutions. Luminal or phenylethylbarbituric acid has been used by Grimberg in twenty-one cases with improvement in sixteen. The adult dose given was 0.75 grain twice daily, while in children seven to fifteen years of age the dose was low to begin with and gradually raised to a maximum of one grain daily. There were no gastric disturbances, the mental condition was not affected, and there was no habit formation. The drug seemed most efficacious in the so called idiopathic cases of grand mal, and petit mal was not affected.

Painless Solutions of Zinc Chloride.—P. Carles (*Bulletin de l'Académie de médicine,* March 20, 1917) referring to the severe pain sometimes caused by zinc chloride solutions injected hypodermically in surgical conditions, asserts that this is due to the lack of purity of commercial zinc chloride, even when marked pure. Arsenic and copper are the chief impurities, but in preparing solutions there may also be formed zinc oxychloride. Pouring twenty or thirty grams of water or ten grams of dry zinc chloride yields a clear solution with liberation of heat. This solution remains clear on cooling, but on subsequent addition of 100 c. c. more of cold water, a turbidity forms, due to formation of the oxychloride. If one filters, as do most pharmacists, after dissolving zinc chloride, a blue color due to copper is noted on dropping dilute ammonia over the filter paper, and the fluid becomes turbid in a few hours because it was filtered while still warm. A properly prepared solution, painless when injected, becomes painful if used when the weather has become colder. Again, dilution of a solution with distilled water to prepare, e. g., a five from a ten per cent. solution, causes a slow deposit of oxychloride, which, if examined microsopically, appears as hexagonal, needle like, or broken crystals or spiny masses, naturally irritating on injection. To prepare zinc chloride solutions for hypodermic injection, therefore, one should use a really pure salt and wait several hours, or better over night, until cooling is complete, preferably adding ice to cool the solution, before carefully filtering. The solution should not be subsequently diluted without repetition of the cooling and filtration.

Tic Douloureux.—G. Wilse Robinson (*Medical Herald,* May, 1917) says that some form of operative procedure is required for the relief of this distressing condition. Among those that have been advised and practised are neurotomy, neurexaresis, removal of the Gasserian ganglion and the injection of neurolytic substances. The first method is not very successful, for the cut ends of the nerve soon unite and the old conditions return. The same is true of the second method. The removal of the Gasserian ganglion is a very formidable operation and it can be done by only a few surgeons. The method which is at once readily applicable and which gives very good results is the last—neurolytic injections. For this purpose the best substance is eighty per cent. alcohol and the most satisfactory technic is that decribed by Wilfred Harris. With this technic, mastered by some practice, it is possible to inject each of the branches of the trifacial nerve and even to destroy the cells of the second and third divisions in the ganglion by injection through the foramen ovale. All of the injections should be done with the aid of local anesthesia only and the extent of nerve destruction should be controlled during the course of the injections by tests of the changes in sensibility. For local anesthesia in this operation a five per cent. solution of novocaine seems to be the most satisfactory.

Observations on Salpingitis.—Paul Rockey (*Northwest Medicine,* May, 1917) believes that in many cases of acute salpingitis recovery without surgical treatment is probable, while in others the condition will become chronic under medical treatment. These two groups constitute about ninety-five per cent. of all cases of the acute form of the disease. The small remainder will either stop in the acute stage or will become progressively worse in the acute stage. Every patient should be given the chance to recover or to pass into a chronic form by being put to rest in bed with the head elevated about six inches; given an ice bag on the lower abdomen; not permitted to take douches; given water only at first and later other fluids: and finally, allowed to make no violent effort to move the bowels. When the fever has subsided the ice bag may well be replaced by a hot water bag, the patient still kept in bed, hot low pressure, saline vaginal douches given and a light diet allowed. Incomplete, infected abortion should be followed by prompt emptying of the uterus and an abscess of the posterior cul de sac should be properly drained. If it becomes necessary to operate for the cure of salpingitis, it will usually be best to remove both tubes, but every effort should be made to retain at least an open stump of one of them and to preserve as much of the ovaries as possible. In such cases pregnancy has followed. For cul de sac drainage the method of freeing the adhesions, packing in a single large piece of gauze, closing the abdominal wound, and then doing a posterior colpotomy and pulling down the end of the gauze gives splendid results. When the salpingitis becomes chronic operation may be required for the relief of a variety of symptoms and the operation will differ with the conditions to be relieved.

Brilliant Green as an Epithelial Stimulant.—R. W. Hodgson-Jones (*British Medical Journal,* April 7, 1917) finds from an extensive experience that brilliant green acts as a very efficient stimulant to the growth of epithelium in superficial wounds, as well as being an effective and nonirritating antiseptic. The most satisfactory form for its use is that of an ointment made by dissolving one part of brilliant green in two of alcohol and incorporating the solution in 100 parts of soft petrolatum. The wound is best treated by removal of all crusts and scabs followed by the application of the ointment upon a piece of gauze cut just the size and shape of the denuded surface.

The Flagellate Diarrheas.—Arthur F. Chace and Arthur N. Tasker (*Journal, A. M. A.,* May 26, 1917) point out that in a certain proportion of cases of diarrheas, occurring in those who have spent some time in the tropical regions, such flagellates as the Cercomonas hominis, Trichomonas intestinalis, and Lamblia intestinalis are the causative agents. The usual intestinal antiparasitic drugs seem to be largely without effect on these parasites, but the administration of medicinal methylene blue by mouth and in the form of high enemas seems to cure the majority of cases. The dose for oral administration should be 0.12 grams every three hours, and the enemas should contain the drug in the proportion of one to 500 to one to 200 and should be given once or twice daily.

Thromboangiitis Obliterans.—S. J. Sinkowitz and I. Gottlieb (*Journal A. M. A.,* March 31, 1917) have obtained favorable results in nineteen out of twenty cases of this affection by the use of Bier's passive hyperemia. The hyperemia was applied to the distal portion of the foot, as far as the ankle, by means of a well fitting suction cup. The treatments were given three times weekly. Two of the patients improved sufficiently to return to work, and all became able to walk without difficulty for longer distances than before, some being able to remain on their feet for the greater part of the day. Among the early permanent effects was increased warmth of the toes and foot, which began in every case after five or six treatments. The color improved, pain was relieved, and when present ulcerations healed rapidly.

Traumatic Injuries of the Kidneys.—Frank Walker (*Boston Medical and Surgical Journal,* May 24, 1917) says that only half the danger exists in operating early that obtains later in the history of the injury. When hematuria continues and a hematoma forms in the region of the kidney which seems to be increasing in size and when there are symptoms of concealed hemorrhage, it is far better to operate then under good conditions than to wait until the risk is greatly increased. Even if the hematoma does not appear a hemorrhage may be dissecting up tissues for a considerable distance, and then the evidence of concealed hemorrhage must take the place of evidence of a hematoma. Delay makes the prognosis more grave. Under modern aseptic precautions the danger of an exploratory operation is not great if undertaken before too extensive hemorrhage or septic infection has taken place.

Treatment of Pellagra.—E. M. Perdue (*American Medicine,* March, 1917) advises the drinking of a water of temporary hardness in order to prevent pellagra. This can be done by placing limestone in the bottom of wells. Hypodermically, one c. c. of a ten per cent. solution of neutral sodium citrate may be administered daily for two weeks, then every second day for two or three weeks more. This is sufficient to cure the average case. Liquor calcis, milk of magnesia, and calcium lactate, as well as sodium carbonate, are also indicated. The rest of the treatment should be symptomatic.

Complete Versus Incomplete Hysterectomy.—E. L. King (*New Orleans Medical and Surgical Journal,* June, 1917) believes that complete hysterectomy is indicated, 1, in fibroid cases where the cervix is badly lacerated or infiltrated; 2, in easy fibroid cases with no complications in which the complete operation will add very little to the duration or danger of the procedure; 3, in the severer types of pelvic infection, especially Neisserian, with a badly infected cervix; and 4, in some cases where drainage is desired when the vagina can be left partly or completely open for this purpose. He does not advocate it when the condition of the patient is poor or the local lesion is such that the removal of the cervix would present technical difficulties that would outweigh the advantage to be gained.

A New and Superior Mercurial Germicide.—Jay Frank Schamberg, John A. Kolmer, and George W. Raiziss (*Journal A. M. A.,* May 19, 1917) investigated a large series of new synthetic mercury compounds and found two which had very great germicidal activity. The first was No. 99 in the series, the second No. 105. The former had the advantage of greater solubility, but both were worthy of consideration. The former, stated to be oxymercuryorthonitrophenolate, occurred as an odorless, red, soluble powder which yielded amber colored solutions. It has been given the name "mercurophen" for convenience. Both compounds were found to be at least fifty times more actively antiseptic than the bichloride of mercury. In ascitic fluid mercurophen was 200 times as active as bichloride and No. 105 was fifty times more active. The Rideal-Walker phenol coefficients were 10,000 for both of the new mercurials as compared with 300 for bichloride. Solutions of one to 5,000 and one to 10,000 of both mercurophen and No. 105 sterilized the skin of the hands after one minute's exposure, while one to 5,000 bichloride required over five minutes and one to 10,000 failed to sterilize the hands. Even in one to 40,000 mercurophen sterilized the skin, and one to 80,000 was the most dilute effective solution of No. 105. Analogous results were obtained in tests with the sterilization of rubber tubing and of emulsions of human fecal material. Mercuric chloride was found to have from four to five times as great a precipitating effect upon human serum proteins as mercurophen and in concentrations as high as one to 5,000 it did not tarnish or corrode nickel plated steel in twenty-four hours. Finally, it was proved that mercurophen was less toxic than bichloride when given intravenously to rabbits.

Miscellany from Home and Foreign Journals

Tuberculosis of Tongue.—Strandberg (*Hygiea,* January 31, 1917) reports a rare case in a man of thirty-five years of age, who two years previously had been treated for an apex involvement of the right lung, from which he recovered. The swelling of the tongue was sudden in its outset and increased rapidly, interfering with speech and deglutition. An incision for supposed abscess only aggravated the condition, and the tongue now protruding from the mouth, was indented at the edges and ulcerated on the surface. The pain, salivation, and difficulty in swallowing even liquid food made the patient's life unbearable. The diagnosis lay between abscess, syphilis, neoplasm, and tuberculosis. The first named was excluded on account of the cartilaginous consistence, the bilateral involvement and the absence of fever. Syphilis was ruled out by a negative Wassermann, the absence of the spirochete, and also *ex juvantibus* large doses of potassium iodide having no effect whatever. Excision of a specimen for examination showed the condition to be tuberculous. X ray treatment reduced the volume of the tongue but had no effect on the excoriations. Relief was only obtained by morphine and penciling with strong cocaine solution. In the meantime complications arose in the form of tuberculosis of the testis, epididymis, and prostate, as well as a tuberculous, laryngitis, which hastened the fatal issue.

Perthes's Disease—Osteochondritis Deformans Juvenilis.—Virgil P. Gibney (*Medical Record,* May 12, 1917), in reporting five cases of this condition first described under its present name by Perthes in 1913, discusses the x ray findings as being characteristic. They show in the earlier stages a slight flattening of the femoral head, a little later a lipping of the head over the neck, and still later a flattening of the epiphysis. The symptoms resemble those of hip disease in the early stages, but become different as the case progresses. Reflex spasm is seen in hip disease, but not in Perthes's disease; night cries occur in the former, but not in the latter. Other lesions about the hip to be differentiated are periarthritis, severe sprain, diastasis, osteomyelitis of the shaft of the femur, bursitis, perityphlitic abscess, and monarticular rheumatism.

Clinical Types of Subtertian Malaria.—A. W. Falconer and A. G. Anderson (*Lancet,* April 21, 1917) saw some 3,600 cases of malaria, of which the majority were of the simple types and responded well to treatment with quinine. Among the cases, however, they noted several groups in which the symptoms suggested other diseases, more or less closely. A large number of the cases presented dysenteric symptoms, but differed in not usually showing mucus and blood in the stools, which were frequent, watery, but feculent. Although quinine was promptly curative in the majority of such cases, some resulted fatally. Two patients were seen presenting choleraic symptoms and dying in fifteen hours after admission to hospital. In twelve cases the symptoms strongly suggested acute appendicitis. All of these responded promptly to quinine. A considerable proportion of the fatal cases were of the bilious remittent fever type with jaundice and collapse. They did not respond well to quinine, even when given intravenously. The next most important cause of death was the pernicious fever type with pulmonary symptoms of the bronchopneumonic form. A number of cases seemed to suffer mainly from symptoms of bronchitis and others from those of lobar or lobular pneumonia. Those with the lobar form of pneumonic involvement proved resistant to quinine and usually succumbed. A small group presented predominating cerebral symptoms or symptoms referable to the central nervous system. Two cases showed generalized edema and ascites and three suffered from gangrene of the foot. In the entire series of cases, excluding true complications, the malarial mortality was slightly under 0.5 per cent.

Improved Method for Estimating Sugar in Blood and Urine.—P. J. Cammidge (*Lancet,* April 21, 1917) describes a very simple and rapid method of estimating quantitatively the sugar in the urine by means of a slight modification of Benedict's solution. The same method can be applied to the blood with excellent results after a simple preparation of that fluid by precipitation of the proteins. The blood test has the great advantage of using only 0.2 mil of blood, an amount readily obtained from a prick in the finger. It is therefore possible to make repeated, or even daily, tests of the blood sugar. The test for either blood or urine requires no special apparatus and can be completed in fifteen minutes.

Bacterial Symbiosis in Wound Infections.—S. R. Douglas, A. Fleming, and L. Colebrook (*Lancet,* April 21, 1917) point out the fact that wounds are seldom infected with a single type of organism and usually contain several types. Experiments, conducted under conditions which represented those present in wounds as closely as possible, showed that the proliferation of Bacillus perfringes or Bacillus Hibler IX was greatly increased when grown in symbiosis with streptococcus, Staphylococcus, diphtheroid bacilli, Bacillus proteus, Bacillus pyocyaneus or a coliform organism. This increased multiplication was not due to neutralization of the medium or to the loss of the antitryptic power of the serum of the medium. The symbiotic growth of Bacillus perfringens with either streptococci or staphylococci also led to a great increase in the multiplication of these two organisms, while the symbiosis of streptococci and diphtheroid bacilli led to increased multiplication of the former and decreased multiplication of the latter. The experiments indicated that bacterial symbiosis was an important factor in wound infections—in fact the most important so far discovered. It would explain the development of gas gangrene in lightly infected cases, in those in which after the opening and cleansing of the wounds the drainage becomes defective, and the almost explosive onset of gas gangrene in some heavily infected wounds.

Physiology and Pathology of Bright's Disease.—L. J. Facio (*La Semana medica,* April 19, 1917) from extensive investigation has decided that so called latent nephritis usually has signs which can be demonstrated on careful examination and which yield to appropriate treatment. In such cases the lesions are localized in the convoluted tubules and classifications are now made according to function instead of histology as first done by Widal. The equilibrium of the albumin in the circulation depends on the integrity of the liver. Hypertension and increased albumin in the circulation characterize the vascular uremias. The diagnosis, prognosis, and treatment of chronic nephritis depend on the study of renal function.

The Control of Heart Disease.—Henry Sewall (*Journal A. M. A.,* June 2, 1917) draws a close analogy between the prevalence of latent disease of the heart and latent tuberculosis and contends that a large proportion of adults have some dormant infection of the heart which may give no definite evidences of its presence, but which can be lighted up by undue strain thrown on the organ through fatigue or intercurrent disease. The presence of such latent cardiac infection can often be recognized or suspected as the result of functional tests of the heart's capacity. Among these the most satisfactory are the graduated exercise tests, the blood pressure tests with rapid alteration of position, and the determination of the character of the cardiac sounds. The initial infection is believed to take place in childhood usually, just as is now the belief with regard to tuberculosis. In the presence of signs of such an impairment of the heart's capacity further damage can be largely prevented by regulation of the patient's activities to meet the conditions. When a break in compensation is threatened, or has occurred, the one most important factor in treatment is absolute physical and mental rest.

Industrial Poisons in Manufacture of Explosives.—Alice Hamilton (*Journal A. M. A.,* May 19, 1917) presents an extensive review of her findings in an investigation of this new and important problem. She visited forty-one plants in which there were about 30,000 workers and was able to obtain evidence of about 2,500 cases of industrial poisoning of greater or less degree of severity. Among the poisons to which munitions workers are exposed are nitrogen oxide fumes, trinitrotoluene, benzene, nitrobenzene and toluene, ether, phenol, mixed acids, sulphuric acid, picric acid, anilin, fulminate, ammonia, mercury, nitronaphthalenes, and chlorine. Only a small proportion of these are likely to cause very serious or fatal intoxication, the most important of which being the first two in the list. In a total of 2,508 cases of poisoning there were fifty-three fatalities, of which forty-eight were due to the first three named substances The symptoms in each form of poisoning are described and attention is called to the fact that few even of the factory physicians have come to recognize the causes of illness among their workers as being largely due to the various forms of intoxication. The field of study of these industrial intoxications is quite new and would well repay cultivation by research and careful clinical study.

Tetany and the Functions of the Parathyroids.—D. Noel Paton, Leonard Findlay, and others (*British Medical Journal,* May 5, 1917) record the results of an extensive investigation of the cause of tetany and of the parathyroid functions. They showed that the symptoms of the disease were due to an alteration in the nerve cells in the spinal cord—chiefly those of the anterior horns. Some action on the myoneural endings was accountable for the increased excitability to electrical and other stimulation. The similarity of the symptomatology of idiopathic and postoperative tetany in man and tetania parathyreopriva and guanidin poisoning in animals showed them all to be of the same nature. Experiments and blood analyses showed that the first three of these conditions were due to the development in the body of guanidin from some disturbance in the functions of the parathyroids which control guanidin metabolism. The course of guanidin metabolism and the precise source of this substance in tetany remain to be worked out, and the solution of these two problems should open the way for rational therapy of all forms of true tetany.

Persistence of Concussion Phenomena in the Wounded Subjected to Intracranial Operation.—Léon Mac Auliffe and Armand Carel (*Bulletin de l'Académie de médicine,* May 1, 1917) state that in a large series of trephined subjects, the symptoms noted in the ten per cent. of cases in which the dura had been opened differed in no way from those in the larger number in which the dura had not been incised. The average interval between the injury and the time of examination in the series was eight months. All the subjects showed persisting concussion manifestations. In addition to the well known subjective sequelæ, e. g., headache, dizziness, mental torpor, irritability, insomnia, nightmares, impaired memory, vasomotor disturbances, and various objective phenomena depending upon the precise situation of the injury, there were noted, as especially prominent features, disturbances of the circulation, sexual function, vision, and audition. Tachycardia varying from eighty-six to 140 beats a minute was noted in seventy-two per cent. of the cases, bradycardia in sixteen per cent., and a normal rate in twelve per cent. As Léri had already pointed out, the rate is generally unstable, especially in the cases with the most marked tachycardia. The latter was always more pronounced in the standing position than in dorsal decubitus. The heart sounds were often muffled and arrhythmia was frequent. The time elapsed since the injury had little relation to the tachycardia, which might be noted as well twenty months as three months after it. In all but one case there was diminished sexual activity, attaining complete impotence in thirty per cent. of all the cases. Irrespective of the situation of the injury, narrowing of the visual fields was noted in fifty-six per cent. of the cases and diminished visual acuity in sixty-four per cent., bilaterally in sixty-two per cent. In forty-eight per cent. impairment of hearing, spontaneous or induced nystagmus, or impairment of equilibrium was noted. Practically any subject wounded in the head and subjected to trephining must be considered as being in a state of concussion for at least two years.

THE AMERICAN MEDICAL ASSOCIATION

Sixty-Eighth Annual Meeting

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SECTION IN PATHOLOGY AND PHYSIOLOGY.

June 7, 1917.

The Relation between Bile and Phenol Production in the Intestine.—Dr. Harry Dubin, of Philadelphia, illustrated his paper by two charts showing the phenol output in a normal dog kept on a standard diet containing one gram of nitrogen per kilo of body weight, and in a dog in which a gall-bladder fistula had been produced. It was established that in the absence of bile from the intestine, large amounts of phenol were produced. This increase was unaccompanied by an increase in the conjugation. The unchanged conjugation might be due either to impaired liver function, or to a gradual slow production of phenol, or to a combination of these. The increased phenol production in the absence of bile from the intestine was probably due to the increased decomposition of the intestinal contents brought about by the lack of "digestive activity" and the diminished inhibition of bacterial fermentative secretions. In a previous report it was suggested that the results of analysis of the urine for both free and conjugated phenols might be a valuable index of intestinal putrefaction. The results here reported pointed to a method of differentiating the factor of biliary obstruction.

Dr. I. O. Poleski made one criticism, namely, that an artificial fistula was a surgical condition, and not one which existed in the normal healthy state. He suggested that the duodenal tube be used for the examination of duodenal contents in this study, as it could be easily introduced into the patient, and specimens of duodenal contents containing bile could be removed at suitable times. He thought this would give an accurate idea of the function of the liver, as far as this particular problem was concerned, without producing a surgical condition.

Doctor Dubin replied that as far as the surgical condition was concerned, the dogs were not used for the work until sufficient time had elapsed after the operation to render this factor negligible. Concerning the duodenal contents, they had decided to study urine, as it was questionable whether an examination of duodenal contents would yield any valuable data.

A Comparison between the Chemical Findings in Blood and Spinal Fluids.—Dr. R. B. H. Gradwohl, of St. Louis, Mo., discussed the question of the estimation of urea nitrogen, uric acid, creatinine, and sugar in blood and spinal fluid in a series of twenty-nine cases, mostly cases of tabes, which were under the Swift-Ellis treatment. He showed by the literature that the quantity of urea in all the body tissues is the same, but that there was a difference in the amount of sugar in the spinal fluid and in the blood. He was able to confirm the observation that the amount of urea in blood and spinal fluid was practically the same. In syphilis of the nervous system he showed that the amount of uric acid in spinal fluid was only one tenth of that in blood and in other tests it was about one half. He also showed that the amount of sugar was diminished in the spinal fluid and practically absent in tuberculous meningitis; the latter fact had of course been repeatedly shown.

Doctor Leopold, of New York, said that he had been working on this problem for the last two years, and that his figures were nearly the same as those reported by Doctor Gradwohl, but in spite of these figures and the reports of other investigators, he had found that in children the urea in the spinal fluid did not correspond to the urea in the blood. Myers and Fine had obtained results similar to his, that is, that the urea in the spinal fluid was somewhat reduced. It had not been definitely decided whether the reducing substance in the spinal fluid was sugar. In tuberculous meningitis the sugar might or might not be reduced; in some cases it was normal, in others it was reduced, and at times it was absent. As far as the uric acid was concerned, in normal and some pathological states rarely enough was found to give a positive test.

Doctor Gradwohl said there was a remarkable difference in the blood of children as compared with that of adults.

The Pathological Physiology of the Heart as Revealed by the Polygraph and the Electrocardiograph.—Dr. Louis F. Bishop, of New York, said that he wished to bring before physicians the importance of the McKenzie polygraph and the electrocardiograph. He felt that there was no more remarkable example of the application of physics to medicine than the electrocardiograph. The pathological physiology of the heart, as revealed by the two instruments under discussion, had been divided into seven types of disorders: 1, sinus arrhythmia; 2, heart block; 3, premature contractions; 4, simple paroxysmal tachycardia; 5, auricular flutter; 6, auricular fibrillation; 7, alternation of pulse. He concluded by saying that these seven disorders had been worked out by the use of the two instruments, and they formed the groundwork of our analysis of living pathological hearts.

An Apparatus for the Study of the Dissociation of Oxyhemoglobin.—Dr. W. G. MacCallum, of New York, said that the work of Hufner Bohn Bancroft and others has shown the importance of alterations in the chemical nature of the plasma in affecting the power of the hemoglobin to absorb oxygen. The study of this absorption or its reverse, dissociation, has been made by the use of complex apparatus, difficult to manage and giving comparative, rather than absolute results. The apparatus described was a modification of Van Slyke's apparatus for the determination of the combining power of the blood for carbon dioxide. It was altered by being greatly elongated and graduated throughout. There was a narrow, finely graduated tube holding two c. c. above and below the central part which holds forty-eight c. c. The mercury bulb could be raised or lowered to any point the level of which in the glass apparatus could be read off on a scale. Blood was exhausted in the apparatus until no more gas was given off; then a measured amount, usually two c. c., was shaken in the same apparatus with oxygen at a certain low pressure. Oxygen at, say, twenty millimetres pressure was obtained by introducing about one c. c. of oxygen at atmospheric pressure and expanding it to fifty c. c. The exact pressure at which it stood could be read off from the difference in the levels of the two surfaces of mercury. After the blood was saturated the excess of the oxygen was allowed to escape and that which was absorbed set free in the apparatus by the ferricyanide method and its volume read.

The Morphological Appearance of Cancer Clinically Cured by Means of Radium and Röntgen Rays.—Dr. Isaac Levin and Dr. B. Joseph, of New York, presented an analysis of operative statistics demonstrating that in the great majority of cases of carcinoma the disease recurred sooner or later notwithstanding the most radical operative procedures, and a radical cure of the disease was not frequent. Disappearance of the primary tumor or diminution of the size, cessation of clinical symptoms, and prolongation of life might be considered a clinical cure of the disease. Usually, as shown in previous publications of Levin, this clinical cure was accompanied by morphological changes consisting in degeneration and ultimate destruction of the carcinoma cells and formation of dense connective tissue. The present study was based on a series of cases which showed undoubtedly a clinical cure and at the same time no appreciable morphological change in the tumor tissue. However, it was evident that an inhibition of proliferating power took place in the tumor cells. It was probable that the first steps of the action of the rays on every malignant tumor consisted in such an inhibition of the proliferating power or sterilization of the cells. It was therefore imperative to subject to sterilization every tumor before the performance of a surgical operation.

Dr. Henry Schmitz, of Chicago, said that in the study of the pathology of tissues subjected to the rays the question was often asked whether it was not the indirect action which brought about the peculiar influence on the tumor. The direct action of the rays on carcinoma cells varied. It depended entirely on the specific character of each individual cell. The less differentiated cell was the more radiosensitive. It also depended on the age of the cell, blood supply, and character of the stroma.

Dr. James Ewing, of New York, said that in inoperable and advanced cancer it could only be hoped to bring the tumor to a state of suspended activity, and that if only one tenth could be added to the expectation of life in those cases a great deal had been accomplished. The direct and indirect effects of physical agents was a matter about which there was much difference of opinion.

Experimental Lesions in the Cervical Sympathetic Ganglia and Thyroids of Goats.—Dr. Louis B. Wilson, of Rochester, Minn., continued in this paper, previously reported studies on the pathological changes in the cervical sympathetic ganglia in relation to exophthalmic goitre. In the experiments herein reported, the speaker stimulated electrically and by direct injections of bacteria the cervical sympathetic ganglia of goats, and studied the histological changes resulting therefrom in the ganglia and in the thyroids of the animals experimented on. The histological changes in both the ganglia and thyroids were parallel with those found in the corresponding organs of patients in the various stages of exophthalmic goitre.

Dr. S. B. Wolbach, of Boston, said that about two years ago Doctor Cannon had sutured the anterior root of the right phrenic nerve with the right cervical sympathetic strand in a cat. The animals developed all the signs of exophthalmic goitre. He thought the results reported by Doctor Wilson were in a measure similar to Doctor Cannon's.

Doctor Wilson, of Rochester, replied that his work had been suggested by that of Doctor Cannon. It was difficult to compare the thyroid of a goat with that of a cat, but in general, the changes were somewhat the same. He attempted to reproduce Doctor Cannon's experiments in the goat, but because of the difference in size of the animals, from a surgical standpoint he was unable to make the anastomoses in the goat that Doctor Cannon accomplished in the cat.

Occurrence of Tubercle Bacilli in the Breast Milk of Tuberculous Women.—Dr. Frederick Coonley, of New York, said that Dr. Stanley L. Wang and he had been investigating this suspect in a series of twenty-eight tuberculous women. Specimens of milk were obtained twice a week by breast massage under aseptic precautions. The milk was examined within two hours after withdrawal from the breast. A smear was examined for tubercle bacilli, and the rest of the specimen was reduced with weak antiformin solution and the resultant sediment searched for tubercle bacilli, using the Ziehl-Neelsen technic. Specimens from each of the last fifteen women were injected into guineapigs, which were killed after six weeks and examined for tuberculosis. The patients ranged in age from nineteen to forty years, and the types of tuberculosis varied from the chronic indolent fibroid to the rapid fulminating miliary types. One half the patients seemed to show some improvement, while in the hospital; four died within a month after delivery, and the remaining ten showed no improvement. There was no apparent mammary disease in any of the women. There were about 450 microscopical examinations made twice a week in the series. These were all negative, except one, which was positive once, and another specimen from the same woman which was suspicious once. This case was a pulmonary orthopedic one with negative sputum examinations extending over a period of eight months; the patient had tuberculous bones in both wrists progressing well. She had no signs of active pulmonary tuberculosis and insisted on nursing her child regularly for seven months. The child was one and one half years old, and apparently healthy. The specimens were taken during all periods of mammary activity. Colostrum was frequently examined and injected into two guineapigs. Observations were made on two guineapigs which were fed on breast milk from two tuberculous women three times daily for one month, varying from ten to forty c. c. at a feeding. Small amounts of lettuce and bread were also given. At the end of the period both animals had lost weight. Shortly after the diet was stopped the animals were autopsied, and neither showed evidences of tuberculosis. The author concluded that their results were negative with the exception noted, and that their observations were in accord with other investigators, that is, that tubercle bacilli were infrequently found in the breast milk of tuberculous women who had no mammary disease. The possibility of infection from such milk was very slight, but it was perhaps advisable to stop nursing because of other factors.

A Critique of Banti's Disease.—Dr. Eli Moschcowitz, of New York, reported two cases of Banti's disease, in which the spleens showed marked fibrosis with almost complete disappearance of the Malpighian follicles and sclerosis of splenic veins at the hilus. The clinical features of Banti's disease were absence of known etiology, a time of splenomegaly and anemia, a transitional period in which swelling of the liver was prominent, a final period when the liver was small and there was ascites, and death by hemorrhage or anemia. The pathological characteristics were a marked fibrosis of the reticulum, fibrosis of Malpighian follicles, cirrhosis of the liver which did not differ from the Laënnec type, often an endophlebitis and calcification of splenic veins, and no general glandular enlargement. Banti's conception of the pathogenesis of the disease bearing his name was that the splenomegaly had an infectious origin, the splenic enlargement caused a production of a toxin which in turn produced cirrhosis of the liver and changes in the splenic veins, and finally that the anemia was due to the toxemia and to the hemorrhages. Considering the clinical and pathological features of Banti's disease, Doctor Moschcowitz said there was no single feature or group of features which was pathognomonic. Many of the so called cases of Banti's disease did not prove to be so on a close analysis; for example, characteristic cases had been reported when a definite cause, such as syphilis, had been found. The pathological characteristics Banti described were found in other conditions. His theory of the origin of the disease was also unsatisfactory, as it was hard to believe that a toxin could cause splenomegaly which produced a toxin which in turn caused cirrhosis in another organ. Doctor Moschcowitz stated that Banti had not succeeded in differentiating a definite pathological condition from the broad group of splenic anemias. He pointed out the relation of Banti's disease to splenic anemia, Laënnec cirrhosis, pseudoleucemia, and allied conditions. Splenectomy as a cure for Banti's disease was of doubtful value, as some of the cases had been reported entirely too soon, and other cases which had been called cured were probably not true Banti's disease. The conclusion was reached that Banti's disease was entirely a nosological entity with no well defined clinical or pathological characteristics, and that it would be well to substitute the term "Banti's complex" for that which was now in use.

Immunological Studies in Poliomyelitis.—Dr. Edward C. Rosenow, of Rochester, Minn., explained that further studies had shown that it was possible to develop in the horse a serum that had very high specific cross agglutinating power over a streptococcus which he had isolated from cases of human poliomyelitis and from poliomyelitis in monkeys. The blood had the power of neutralizing the virus in the test tube and of protecting monkeys against injections of virulent virus. In the treatment of a series of monkeys that had symptoms when the first injection of serum was given there was a recovery rate of seventy per cent., instead of a death rate of 100 per cent., which was the rule with the severe type of paralysis. Whether the serums would keep he did not know, but that for a certain time it had some effect was seen from the series of experiments here reported, which were all carefully controlled. Its value might be only short in time. Doctor Rosenow felt that these facts were important in bearing out the idea that this form of organism had an etiological relationship to poliomyelitis, but he did not maintain, and never had maintained, that the streptococcus in the large form was the cause of the disease. However, he did feel that these experiments, which had been done in such large numbers, particularly the agglutination experiments, showed that this organism had an etiological significance.

Dr. Morris Cohen, of Philadelphia, said that he had been doing some opsonic experiments with various organisms, among others, Dr. Rosenow's, but mostly the Kolmer organism. Many samples of serum from recovered poliomyelitis patients were tested with the Kolmer organism, and they showed a high opsonic index in nearly every case, which was not shown in normal serum. Rabbits were inoculated with Doctor Rosenow's and Doctor Kolmer's organism. They could not be made sick, though given severe doses. The serum of the rabbits was used for the opsonic tests, and the cells were so full of organisms that they could not be counted.

Dr. Carrol G. Bull, of New York, was much interested, since his results were diametrically opposed to those of Doctor Rosenow. He used streptococci obtained from the tonsils of poliomyelitis patients and from various other sources, nonpoliomyelitic in origin. He was unable to find any difference in the pathological effect. The animals developed abscesses and lesions due to streptococci, but nothing that showed the pathology of poliomyelitis. His results had been absolutely negative in the establishment of any relation between the pleomorphic organism of Rosenow and the poliomyelitis virus.

Doctor Rosenow replied that all his experiments were carefully controlled in every possible way. He pointed out that the conditions under which they were done were somewhat different from Doctor Bull's, and in a study of this kind a slight variation might make considerable difference. It was known that poliomyelitis was a condition that affected small, young animals, although the older ones were not immune. Doctor Bull used twelve guineapigs weighing from 400 to 500 grams, while the speaker never used a guineapig that weighed as much as 350 grams. Then again Doctor Rosenow's experiments were done in midsummer when the epidemic was at its height, and Doctor Bull's were done in the winter. The conditions of the injection of the virus were different, as was the method of growth of organisms. The question was extremely difficult and little variations in technic might make the difference between positive and negative results.

Ether Therapy in Surgical Infections and Its Effect on Immunity.—Dr. John Saliba, of Elizabeth City, N. C., said that experimentally and clinically ether, whether in its vaporous or liquid state, had been proved to have a bactericidal action. Vincent's typhoid vaccine, which had been used frequently and with excellent results, was sterilized by ether instead of by heat. Ether had never failed to sterilize albuminous culture media. The structure of a bacterium was regarded generally as consisting of protoplasm surrounded by a cell wall. Ether by exerting a solvent power for fat caused an increase in the permeability of the wall and, consequently, a modification in the aggregation of the colloid protoplasm particles. Ether helped the vital resistance in the following ways: 1. It was an agent which increased the outflow of lymph by inducing active hyperemia. In this way it increased the various immune bodies which may be supposed to be present in the exudate—the antitoxins, the antiferments, the bacteriolysins and the bacteriotropins. 2. Ether was a cell proliferant. 3. By its tonic action on the circulatory and nervous systems ether might have a stimulating influence on the hematopoietic organs. 4. Ether, by directly destroying a large proportion of the bacteria and by modifying those that were not killed so as to render them more easily destroyed by the tissues, might lessen the output of aggressins. 5. Leucocytic emigration apparently went on unaffected in the presence of ether. 6. Ether hastened the formation of fibroblasts in the wound and quickened the regeneration of embryonic tissues without clotting the fibrin. 7. When applied to the most delicate surfaces of living tissues, such as the mucous and serous surfaces, ether produced no injurious effects. 8. When absorbed, all evidence showed that if ether had any toxic action on the body tissues it was very slight.

Ether was a valuable therapeutical agent in the following septic and infectious conditions: Septic wounds, abscesses and sinuses, peritoneal infections, pleuritic infections, joint cavity infections.

The Etiology and Pathology of Rocky Mountain Spotted Fever.—Dr. S. B. Wolbach, of Boston, gave a short account of the work previously done in this field. The pathology of the disease had been investigated very little. First in human patients and later in animals a perfectly distinctive type of lesion was demonstrated which affected the bloodvessels in all parts of the body. It was possible therefore to define the disease as one in which the peripheral bloodvessels, involving the arteries and veins of the skin and in male animals the genitalia, were particularly affected. The disease had been produced experimentally in guineapigs and monkeys as it occurred in humans. There was associated with the lesions described a very peculiar minute organism which was always intracellular and in the smooth muscle fibres. The staining reaction of this organism was different from most bacteria. In the tick a very minute form of the organism was found, which might be demonstrated both in smear preparations and in sections. The difficulty of cultivation, the peculiarity of the staining reaction, and the appearance of these two types, which Doctor Wolbach was convinced were species of the same organism, led him to take it out of the class of bacteria. The exact nature of the parasite was not determined, but in spite of the difference of morphology, it seemed more closely related to the spirochetes than to the bacteria. The organism appeared in two forms, a minute one and a larger, lanceolate paired form one quarter the size of the pneumococcus. It was present in the circulating blood in the form observed by Ricketts. A series of feeding experiments were made with the tick which transmitted the disease. These showed the presence of the microorganism characteristic of infective ticks. The organism was present in the salivary glands, acini, and ducts, which showed the mode of transmission of the disease.

Dr. Louis B. Wilson, of Rochester, Minn., said that fourteen years ago Chowning and he began investigations on this disease, studying it from the epidemiological standpoint. It required only a short period of time to show that epidemiologically the disease was transmitted by ticks. Since 1903 some advances had been made in the study, but until Doctor Wolbach began it, every investigator had made some mistakes. The Public Health Service had done excellent work in attempting to eradicate and to prevent the disease. Doctor Wilson felt sure that Doctor Wolbach was on the right track, and from his preparations and pictures he thought he had an organism which was a definite entity, and is not an artefact or granulation.

Doctor Wolbach concluded that he had been able to produce an exact duplication of the disease in animals, which was one of the reasons why he believed the organism was not a bacterium.

Clinical Pathology and Morbid Anatomy of Experimental Trypanosome Anemia.—In the absence of the authors, Dr. E. B. Krumbhaar and Dr. R. M. Pearce, of Philadelphia, this paper was read by title.

Study of the Streptothrix Isolated in Two Cases of Rat Bite Fever.—Dr. William Litterer, of Nashville, Tenn., said that rat bite fever was a rare disease, only eighty-one cases having been recorded in the literature. Schottmüller and Blake each reported a case in which a streptothrix had been cultured from the blood. These two cases and the ones here reported made a total of four in which a streptothrix has been successfully cultivated. The two cases presented by Doctor Litterer gave a typical history of rat bite fever. The two isolated streptothrices were apparently identical, except that the type in the first case persisted in the formation of very long forms, while the other type almost invariably grew in short filaments. Culturally they were nearly identical with the Streptothrix muris ratti reported by Schottmüller and Blake, and they were very like the streptothrix isolated by Tunnicliff from the lungs of white rats with bronchopneumonia. In the second case the streptothrix was isolated from the blood three different times when the fever was at its height and negative cultures were obtained twice in both cases in the afebrile stage. In each case the patient's blood showed a marked increase in opsonins and agglutinins for the two organisms. In the second case it was definitely proved that the organism disappeared from the bloodstream during the afebrile stage and reappeared during the height of the paroxysms. Autogenous vaccine therapy seemed to have cured the two patients. In view of the recent publications of Japanese investigators concerning a spirochete as being the true etiological factor of rat bite fever, Doctor Litterer stated that it was possible that there were more than one cause of the disease.

Anesthesia in the Curriculum and Clinic.—Dr. Willis D. Gatch, of Indianapolis, said that he had seen a questionnaire addressed to the medical schools of the United States by the American Association of Anesthetists, in which it was generally admitted that the medical schools needed better instruction in anesthesia. The discovery of anesthesia made modern surgery possible, but the schools now recognized that the instruction given in anesthesia was not sufficient to make the students safe anesthetists. The curriculum in our medical schools was much too crowded for the introduction of a long special course in anesthesia, but the suggestion was offered that there were other departments in which the teaching of anesthesia might be introduced and emphasized. The subject touched many others, as physiology and surgery, and it could be emphasized by these professors and approached from a number of different angles. There should of course be training in the actual application of an anesthetic under the supervision of a competent man. Now that medical students would in all probability leave the schools and be called upon to do emergency work of all kinds, it was particularly imperative that they should be able to administer an anesthetic safely. The proper sort of anesthetic in a surgical clinic required the judgment and experience of an intelligent and expert anesthetist and one who was interested in his work. Doctor Gatch closed with the plea that the position of anesthetist be made as remunerative and dignified as the importance of the work requires.

Dr. Arthur D. Bevan, of Chicago; Dr. Edward W. Lee, of New York; Dr. S. J. Meltzer, of New York; Dr. A. F. Erdmann, of Brooklyn, and others discussed the place that anesthesia should have in the curriculum. They agreed with Doctor Gatch's suggestions in the main, and discussed the attitude of the interne anesthetist, the trained nurse who gave anesthesia, the need for research along these lines, and for correlating the teachings of the various departments in our medical schools.

Pathological Pulmonary Changes during Endotracheal Anesthesia in Experimental Lung Surgery.—Dr. Conrad Georg, Jr., of Ann Arbor, Mich., said that the chief dangers to life in experimental lung surgery were pneumothorax and infection of the pleura. Pneumothorax might be prevented by the use of an apparatus which would produce an artificial exchange of gases in the lungs during the period of the operation. Meltzer's insufflation apparatus might be regarded as a simple and safe method for inducing anesthesia for experimental lung surgery when the correct adjustment between the pressure required in the endotracheal tube to overcome pneumothorax and the capacity of the delicate lung tissue to withstand it had been secured. The speaker performed a series of pneumectomies on dogs at the surgical laboratory of the University of Michigan in order to determine the pathological changes which might result from this procedure. Dogs were found to be very unfavorable subjects for these operations on account of the shock which resulted from exposure and loss of body temperature, their inability to stand pneumothorax well and their low resistance to infection in the pleural cavity. The mortality in dogs was high when the distemper infection was present. This was true under ordinary ether anesthesia as well as endotracheal insufflation. The pathological changes observed in the lungs of dogs which were afflicted with distemper and were subjected to operations under general ether anesthesia consisted of congestion with areas of bronchitis and pneumonia. Under endotracheal insufflation dilatation of the alveoli was also observed in adition to the changes which followed ordinary ether anesthesia.

Eighteen lung resections were performed in this series of experiments with four recoveries. The difficulty in determining the exact pressure required to overcome the danger of pneumothorax and the susceptibility to infection of animals confined in a laboratory without an outdoor runway made the mortality necessarily high. It was found that endotracheal insufflation was not without harmful results upon the structure and function of the lungs even in dogs which recovered from the operations. The pathological changes consisted of overdistention of some of the alveoli and bronchioles with congestion and edema of the alveolar walls and emphysema of the unoperated lung with areas of atelectasis and subacute purulent inflammation in the operated lung accompanied by a subacute purulent pleuritis. In the presence of infection with the distemper germ general purulent pneumonia and empyema followed operation. The pathological changes in the structure of the lungs found in animals that died consisted of large hemorrhagic areas with tearing of the walls of the alveoli, accompanied by intense congestion and atelectasis. These harmful effects of insufflation followed when the pressure in the endotracheal tube was too high or too low for the safety of the animal under experimentation.

Dr. Willy Meyer, of New York, pointed out the need for great care in the application of endotracheal insufflation anesthesia. The method was undoubtedly right but in many cases its application was wrong. He agreed with Doctor Georg's conclusion that endotracheal insufflation anesthesia should be limited to intrathoracic operations, but it was also very useful in operations on the brain and in cases where pressure existed on the lower portion of the trachea, due to the presence of tumors.

Dr. Charles H. Peck, of New York, discussed the subject from the clinical standpoint. From a study of a large number of cases, he was convinced that it did not produce postoperative pneumonia. For three years it was used in many types of cases, and as Doctor Meyer and Doctor Meltzer thought it was a safe method when the technic was properly carried out. It did not seem possible that extensive changes could take place in the lungs of human beings without showing bad aftereffects, but in his first series of 216 cases there were only two of postoperative pneumonia, which was less than one per cent., and in those two cases it was not believed that the anesthesia was responsible for the condition. When intrapharyngeal insufflation anesthesia was used pneumonia appeared to be of more frequent occurrence. Endotracheal insufflation anesthesia could be safely used in the two instances cited by Doctor Meyer, and also in operations on the neck, goitre cases, and in some kidney operations. Doctor Peck did not believe that clinically there was any danger of damage to the lung tissues.

Dr. C. A. Elsberg, of New York, said that this method of anesthesia was being used at Mount Sinai Hospital in a variety of conditions, particularly in a selected number of cases of intrathoracic operation where it was used to prevent collapse of the lung; where the giving of anesthesia by the ordinary method would interfere with the operative procedure to some extent, as in cranial operations and tumors of the hypophysis in operations in the upper cavity; in cases where interference with respiration was feared, as in large goitres; and in some cases of acute intestinal obstruction. Very little pulmonary trouble was encountered, and he agreed with the other speakers, that the danger was due to the technic, and not to the method itself.

Dr. Samuel Robinson, of Rochester, Minn., said that Doctor Georg's conclusions did not condemn intratracheal insufflation anesthesia. An interesting point was that when this method was used with dogs with distemper, pathological changes were produced. It was to be hoped that these studies would stimulate researches on the pathological dog, instead of the normal animal. After injuries had been produced, it would then be possible to learn how to treat the diseased lung in animals, and from these studies, in human beings.

Dr. Franz J. A. Torek, of New York, felt that some of the operations performed on the esophagus could hardly be done without this method of anesthesia, and it was nearly as important in brain cases.

Shock during General Anesthesia.—Abstract of this paper by Dr. Frank C. Mann, of Rochester, Minn., appears on page 1157 of the June 16th issue of the Journal.

Dr. Fenton B. Turck, of New York, discussed experiments in shock under anesthesia that he had done with the abdomen open and closed in a large series of animals. Under these two conditions the results differed very widely. The experiments showed, among other things, that there was a loss of antiferments in the blood, that a condition of acidosis was present which was very much relieved by alkaline doses during the experiment, and that the introduction of heat during anesthesia had a remarkably beneficial effect on the circulation of the exposed viscera.

Dr. C. Henry Davis, of Chicago, had performed experiments to determine the toxicity of chloroform, ether, and nitrous oxide in pregnant and nonpregnant animals. Two of four animals given chloroform for six hours died. He showed a number of lantern slides to point out the changes which might occur in connection with these anesthetics.

Artificial Respiration.—This paper, by Dr. George E. Fell, of Chicago, was read by Dr. Albert J. Ochsner. It gave a full review of the literature and of the attempts which had been made to save life by mechanical appliances. The development of the various mechanical methods was described which had been introduced at different times.

Toxic Factors of Some of the Common Anesthetic Substances.—Dr. Evarts A. Graham, of Mason City, Iowa, said that all general anesthetic agents induced a tissue asphyxia and a resultant acidosis. The production of acids was greatest when agents which belonged to the chemical group of alkyl halides were used. Chloroform belonged to this latter class. It was more toxic than ether or nitrous oxide because it yielded hydrochloric acid when it was broken down in the body. The morphological changes in the tissues characteristic of late chloroform poisoning, viz., edema, hemorrhage, central necrosis, and fatty changes in the liver, were probably really hydrochloric acid effects. A brief review of the experimental evidence favored this view. The mechanism of the protective action of glycogen against the production of these changes was discussed. The dissociation of the chloroform molecule in such a manner as to liberate hydrochloric acid left a bivalent carbon residue. This was probably the general type of dissociation of all the common general anesthetic agents.

SECTION IN STOMATOLOGY.

June 7, 1917.

Epithelioma or Cancer of the Oral Cavity.—Dr. L. Duncan Bulkley, of New York, said that the dentist had a great responsibility concerning cancer of the oral cavity, for he of all others was most likely to see the beginning of the disease. An early warning, followed by proper treatment, lessened the prospect of an unfavorable termination. The end results of cancer in this locality were commonly very discouraging. During the year 1914 there were in the registration area of the United States 2,270 deaths from cancer of the oral cavity, or 3.4 persons in 100,000 living; of these 1878, or 82.75 per cent., were in males and 392, or 17.25 per cent., in females. The disease was rare in the young, but after twenty-five years the age of the deaths rose steadily, reaching a maximum of 307 between sixty-five and sixty-nine years of age. Cancer in the mouth had increased more than in any other locality. In 1900 the deaths were 1.6 persons per 100,000, and in 1914 they were 3.4, or more than double, whereas the general mortality had increased only 26.6 per cent.

The principal conditions to be differentiated from cancer were, 1, syphilis; 2, aphthous stomatitis; 3, leucoplakia; 4, simple ulceration, as from dental causes, etc., and, 5, tuberculous lesions. Persistent fissures or abrasions of the lip, which were often precursors of cancer, should be especially warned against. If properly managed they would often yield to medical treatment, even after epithelioma had developed, and only in an early stage was cancer at all amenable to surgery. It was particularly desirable that the dentist should attend most carefully to the condition of the teeth, for rough, broken and decayed teeth played a not inconsiderable part in the production of cancer in the mouth—together with syphilis, and tobacco, and the use of alcohol. However, as these causes were continually operating in millions of persons and relatively few developed cancer, there were other constitutional causes not to be considered by dentists. A caution was given, however, against doing or applying anything which might irritate even a small lesion in the mouth, and the application of nitrate of silver was regarded as almost a criminal procedure. Mild alkaline washes, as of bicarbonate of soda before and after eating, were of much service, as the saliva was often found to be acid in cancer, and the disease was known to develop under conditions of acidity, as in the stomach, large intestine, urinary bladder, etc.

A Composite Osteoplastic Closure of Clefts of the Hard Palate.—Dr. JOHN B. ROBERTS, of Philadelphia, outlined the surgical treatment of clefts of the hard palate as follows: Attack the hard palate and alveolar process at the age of three weeks. Later close the lip with tie beam sutures extraorally. At the age of about one year uranoplasty by the Langenbeck or Lane method should be done. Doctor Roberts discussed the details of each method and the difficulties to be avoided. Tie beam sutures introduced through the cheeks perhaps cause less sepsis in the mouth than plates upon the gums. The Langenbeck flap is best raised with aneurysm needle through a small puncture close to the teeth. Tissue pared from the margins should leave wide contact surfaces and the palatine vessels should be avoided. The soft palate should be detached from the posterior edge of the bone. In the Lane method the flap may include tissues over the alveolus. If the upper lip has been closed too tight it may be widened by a pedunculated flap from the lower lip or V shaped flap may be excised from the lower lip. Tissue pared from the upper lip may be turned into the mouth and retained for later plastic repair. Tension of the palate flaps may be relieved by suturing the pillars of the fauces.

"Soup Bone" Implant for the Correction of Defects of the Skull and Face.—Dr. W. WAYNE BABCOCK, of Philadelphia, pointed out that, while experimental evidence indicated that dead or alien bone introduced into the living tissues was expelled or removed, the experiments had dealt almost exclusively with bone derived from cartilage rather than bone formed in membrane. He presented four clinical experiences showing the usefulness of dead bone in correcting defects of the skull or of the bones of the face. In two cases there were large defects of the cranial vault associated with epilepsy. Portions of scapula taken from the hospital "soup kettle" were perforated with drill holes, contoured, and fitted into the defect, being in contact with the living bone. In both instances after two years there was no evidence of irritation or of absorption of the alien graft, and both patients have been relieved of the epileptic seizures. The bone was boiled on successive days to sterilize it and to free it from animal matter. Portions of mutton and beef bone have been employed. In three other cases portions of boiled bone were implanted under the skin to correct the deformity of saddle nose, a vertical incision being made through a wrinkle line of the forehead, the skin separated from the nasal bones by blunt scissors, and a suitable portion of dead bone slid down into position. In both instances the alien bone seemed to have served about as well as the tibial transplant previously employed by the speaker. It was pointed out that other defects of the bony contour of the face, including the loss of the zygoma, depression or irregularity of the malar or maxillary bones, loss of the orbital ridges, and the like, might also be corrected in this very simple and convenient way. Local anesthesia sufficed for this operation.

Surgical Separation of the Superior Maxillary Bones to Widen the Nares.—Dr. GEORGE V. I. BROWN, of Milwaukee, said that many nervous disorders now recognized as expressions of vagotonia, or tuberculous, otherwise subnormal, and backward children could be benefited by surgical treatment, which was preferable to the slower method of forcing separation of the median palatine suture by the use of appliances alone. He advocated entrance through the intermaxillary suture under the upper lip and expansion of the dental arch with an appliance.

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Book Reviews

[*We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.*]

Diseases of Children. A Manual for Students and Practitioners. By GEORGE M. TUTTLE, M. D., Clinical Professor of Pediatrics, Washington University Medical School; Consulting Physician, St. Louis Children's Hospital; Attending Physician, St. Luke's Hospital, etc., and PHELPS G. HURFORD, M. D., Pediatrician, St. Louis Lutheran Hospital; Assistant in Pediatrics, Washington University Medical School; Physician to Outpatients; Pediatric Clinic of Washington University, etc. Third Edition. Thoroughly Revised and Enlarged. Illustrated with Forty-seven Engravings and Three Plates. Philadelphia and New York: Lea & Febiger, 1917. Pp. vi-599. (Price $3.50.)

In this volume the authors have apparently attempted to include the entire realm of medicine and have not refrained from including most of the specialties and many surgical conditions. The result is that relatively little space is devoted to any single disease or condition and the treatment of the vast majority of ailments is extremely fragmentary. Thus, for example, only six pages are devoted to summer complaint, a little over four to marasmus, a scant three to acidosis, a scant five to bronchopneumonia, about four to bronchitis, both acute and chronic, two to tuberculous adenitis, five to poliomyelitis, and so forth. As a compend for hasty review of the subject the work is very good, but as a textbook for the proper study of the diseases of infancy and childhood it is wholly inadequate, and as a book of reference it is not to be considered at all.

After Office Hours

In the *Country Gentleman* for June 30th Uncle Joe Cannon says in its leading article, "Learn to eat corn." There is a temptation, of course, to say something about cannon fodder, but we refrain.

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The Sunday Magazine of the New York *Times* seems to have established permanently the excellent habit of devoting a page to some medical topic. The issue for July 1st gives nearly the whole of a page to a discussion of the anticipated shortage of doctors.

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The leading article of the *Survey* for June 30th is a review of *Bulletin 219* of the Bureau of Labor Statistics, prepared by Dr. Alice Hamilton and dealing with industrial poisons in munition plants. Doctor Hamilton is well known as an expert on occupational poisons.

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The *Current Opinion* for July offers a wide range of scientific subjects. Thus there is a brief article on wound infection, a sketch of plant sociology, an allusion to chemistry, a mention of an atomic theory, a word about the ideal foot, and a glance at the recent tendency toward spiritualism.

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Since *Peter Ibbetson* appeared as a play, we have been wondering if it were a complete confession of lack of culture not to have read the book. Of course we have all read *Trilby*. But the rest of Du Maurier! It is somewhat of a relief to see the statement of no less a one than Alan Dale in the July *Ainslee's* to the effect that not only has he never read it, but he is rather proud of the fact.

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Th. Ribot seems to be coming into his own in America only after his death. In France for thirty-five years his name has been as well known as Edison's is in the United States, but outside of the small group of scientific men, it has been comparatively strange to the American public. Now that he is dead sketches of him are beginning to appear; the *American Review of Reviews* for July, for example, gives a short account of his life and works.

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Arnold Bennett, who is always saying something interesting, frequently something clever, and occasionally something startling, says in the *Woman's Home Companion* that a dull man is in partnership with the devil. We have had to talk to dull men at times when we wished they would be suddenly called to a partnership meeting or something of the sort. The three attributes of perfect dullness, says Bennett, are lack of a sense of humor, lack of a play of fancy, and lack of imagination. We might describe them otherwise, thus, a dull man is one who does not appreciate this department, who does not like Barrie, or Lord Dunsany, etc., etc.

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Official News

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending July 4, 1917:

Akin, C. V., Assistant Surgeon. Relieved from duty at Stapleton, N. Y., and from special temporary duty at Norfolk, Va., and directed to proceed to Chicago, Ill., for duty in the prevention of the interstate spread of disease.

Bahrenburg, L. P. H., Surgeon. Granted one month's leave of absence on account of sickness from July 1, 1917.

Foster, M. H., Surgeon. Granted two days' leave of absence on account of sickness, June 15-16, 1917.

Galloway, T. C., Assistant Surgeon. Relieved from duty on Texas border; directed to report at Philadelphia, Pa., for duty.

Harrison, W. T., Assistant Surgeon. Detached from Coast Guard cutter *McCulloch;* directed to proceed to Angel Island Immigration Station.

Lanza, A. J., Passed Assistant Surgeon. Directed to attend and address a conference of health officers at Kalispell, Mont., July 9-10, 1917.

McBurney, J. W., Sanitary Bacteriologist. Relieved from duty at Washington, D. C., and directed to proceed to Grove City, Pa., for experimental studies for creamery wastes disposal.

Paine, Liston, Assistant Surgeon. Relieved at Philadelphia, Pa., and directed to proceed to San Juan for duty as Chief Quarantine Officer of Porto Rico.

Pierce, C. C., Senior Surgeon. Relieved from duty on Texas border; directed to proceed to Little Rock, Ark., on special temporary duty.

Schereschewsky, J. W., Surgeon. Directed to stop at Charleston, W. Va., en route to Chicago for special temporary duty.

Streeter, H. W., Sanitary Engineer. Directed to proceed to necessary places on watersheds in the Southern States to assist in field service.

Williams, R. C., Assistant Surgeon. Relieved at Okmulgee, Okla., and assigned to duty on mine rescue car No. 2, with station at Raton, N. M.

Worley, J. F., Assistant Surgeon. Relieved from duty at San Francisco, Cal., and assigned to duty on mine rescue car No. 1, with station at Reno, Nevada.

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Births, Marriages, and Deaths

Born.

Mazor.—In Philadelphia, Pa., on Sunday, July 1st, to Dr. Samuel Mazor and Mrs. Mazor, a daughter.

Married.

Barker-Lowry.—In Watsontown, Pa., on Tuesday, June 26th, Dr. Olin G. A. Barker, of Johnstown, Pa., and Miss Sara Hoffa Lowry.

Burns-Reinhard.—In Baltimore, Md., on Wednesday, June 27th, Dr. William L. Burns, of Cumberland, Md., and Miss Anita Reinhard.

Hall-Murray.—In Chicago, Ill., on Thursday, June 21st, Dr. Frank W. Hall, of Centralia, Ill., and Miss Fronie Murray, of Beloit, Wis.

McGann-Fay.—In Nahant, Mass., on Saturday, June 30th, Dr. Pierce P. McGann, of Somerville, Mass., and Miss Elizabeth Bowditch Fay, of Boston, Mass.

Peters-Lenhardt.—In Norristown, Pa., on Tuesday, June 26th, Dr. Theodore Peters, of Walden, N. Y., and Miss Gertrude Miriam Lenhardt.

Died.

Beardsley.—In Ottawa, Ohio, on Tuesday, June 26th, Dr. Charles E. Beardsley, aged eighty-three years.

Bedient.—In Little Valley, N. Y., on Saturday, June 23rd, Dr. Seba S. Bedient, aged sixty-two years.

Black.—In Gainesville, Texas, on Friday, June 22d, Dr. Robert C. Black, aged eighty-five years.

Christie.—In Lloyd, Fla., on Saturday, June 23d, Dr. E. Christie.

Dick.—In Sumter, S. C., on Wednesday, June 27th, Dr. Alexander C. Dick, aged fifty-six years.

Felts.—In Bloomington, Ill., on Monday, June 25th, Dr. Thomas O. Felts, aged forty-five years.

Garrey.—In Telluride, Colo., on Friday, June 29th, Dr. John E. Garrey, of Aurora, Ill., aged sixty-nine years.

Haven.—In Brookville, Pa., on Thursday, June 28th, Dr. James A. Haven, aged fifty-one years.

Jones.—In Lynn, Mass, on Tuesday, July 3d, Dr. James A. Jones, aged fifty-three years.

Montgomery.—In Mercer, Pa., on Wednesday, June 27th, Dr. James H. Montgomery, of Erie, Pa., aged fifty-eight years.

Partridge.—In Altonpark, Tenn., on Monday, June 25th, Dr. James Partridge, aged forty-six years.

Turner.—In Brooklyn, N. Y., on Saturday, June 23rd, Dr. Christopher Turner, aged fifty-five years.

Wells.—In Norwalk, Conn., on Friday, July 6th, Dr. Brooks Hughes Wells, of New York, aged fifty-seven years.

Willing.—In Baltimore, Md., on Friday, June 29th, Dr. James E. Willing, aged fifty years.

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Original Communications

THE MEDICAL SERVICE IN THE BRITISH ARMY.*

By T. H. Goodwin, C. M. G., D. S. O.,

Colonel, Royal Army Medical Corps; Member of the British Commission to the United States.

In time of peace the officers of the medical service in the British army number about one thousand, ranging in rank from lieutenant general (two) and major general down to lieutenant, which is the rank an officer receives on commission. These numbers have necessarily been enormously increased during the present campaign, and the number of officers in the medical service now totals over 12,000. This enormous increase has been made by the granting of "temporary commissions" to civilian medical practitioners. Some of these, men of high standing and professional reputation, were granted temporary commissions as colonel, lieutenant colonel, major, or captain, and were appointed to positions as consulting surgeons or physicians, specialists in neurological, ophthalmological, or other branches of the profession, while the great majority were given commissions as first lieutenants for a period of one year; on the termination of the first year most of these officers reengaged for a further period of one year and, on doing so, were promoted to the rank of captain. An officer, on being commissioned as first lieutenant, receives pay at the rate of twenty-four shillings per diem. The organization for the collection, evacuation, and treatment as at present carried out by the British medical service is as follows:

1. *The medical service with a division* comprises the assistant director of medical services; the field ambulances; the sanitary section; the regimental medical establishments. The assistant director of medical services has the rank of full colonel; he commands the Royal Army Medical Corps of the division, and is responsible for all questions connected with sanitation, the collection and evacuation of sick and wounded, establishment of dressing stations, and numerous other matters. He has a staff of clerks and an assistant, a major or captain in the R. A. M. C., three units of field ambulances in a division; they are divisional units, under the command of the A. D. M. S. If a brigade should be detached from the division for independent operations the A. D. M. S. will probably detail a field ambulance to accompany and operate with it. Each field ambulance is composed of nine medical officers, one quartermaster and 238 persons of other ranks, fifty-four horses, three motorcycles, seven motor ambulance wagons, three horse drawn ambulance wagons, and some wagons and carts for the carriage of equipment, tentage, and stores. A field ambulance is divided into a tent and a bearer division. The tent division, which establishes the advanced and main dressing stations, consists of six medical officers with nursing, dispensing, and clerical personnel. The bearer division consists of three medical officers, some noncommissioned officers and 108 stretcher bearers, forming, according to regulations, eighteen squads, each squad consisting of six bearers with a stretcher; in practice, however, the 108 stretcher bearers are usually formed into twenty-seven squads, each squad consisting of four bearers with a stretcher. The stretcher is almost identical in pattern with the "litter" as used in the United States army. The sanitary section consists of one officer, usually a medical officer of health, and twenty-five other ranks. The noncommissioned officers and men in a sanitary section must have had previous experience and training in sanitary or laboratory duties, such as sanitary plumbing, work in laboratories, etc. Each sanitary section is furnished with disinfecting plant, consisting of a double Thresh installation mounted on a motor truck, known as a Foden disinfecting lorry. The duties of a sanitary section are very extensive and important, and comprise such work as disinfection of clothing, installation of laundries, installation and working of divisional baths, and supervision of sanitation generally. The regimental medical establishment for an infantry battalion consists of one medical officer, one private and four men, R. A. M. C., for water duties. The battalion also furnishes from its ranks sixteen stretcher bearers with eight stretchers, this number being frequently considerably augmented when an attack is expected. The medical officer is furnished with one horse cart for the purpose of carrying the medical equipment, which consists of one pair of field medical panniers, one medical companion, and one surgical haversack; the equipment is very complete and fulfills all requirements. The regimental medical officer establishes the regimental aid post which, during the present phase of warfare, is usually situated in a bombproof dugout, near regi-

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*Written specially for the New York Medical Journal.

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mental headquarters, which are probably situated a few hundred yards behind the front line trenches. At this regimental aid post the regimental surgeon attends to casualties as they are brought in by the regimental stretcher bearers, adjusts dressings, arrests hemorrhage, immobilizes fractures, and sees that the men are made as comfortable as circumstances permit, pending their early removal by the stretcher bearers of the field ambulance bearer division who are collecting and removing the men from the regimental aid posts to the advanced dressing station of the field ambulance tent division, which is situated probably a mile or so farther to the rear. At the dressing station the patient receives a hypodermic injection of 500 units of antitetanic serum, the first field dressing is removed, and the wound is thoroughly dressed, splints are readjusted if necessary, and the wounded man is fed and prepared for removal by the motor ambulance convoy to the casualty clearing station (see diagram). Few operations other than those necessary for the arrest of hemorrhage, tracheotomies or operations of a very urgent nature are performed at a dressing station. The system of evacuation briefly is as follows: A man wounded in the front line trench is taken to the regimental aid post by the regimental stretcher bearers, who have applied the first field dressing. From the regimental aid post he is taken to the advanced or main dressing station by the stretcher bearers of the field ambulance bearer division, or by the horse or motor ambulance wagons of the field ambulance if these vehicles are able to get forward. From the dressing station he goes to the casualty clearing station by the motor ambulance convoy; from the casualty clearing station to the stationary or general hospitals by the hospital train, and from these hospitals to home base hospitals by hospital ship.

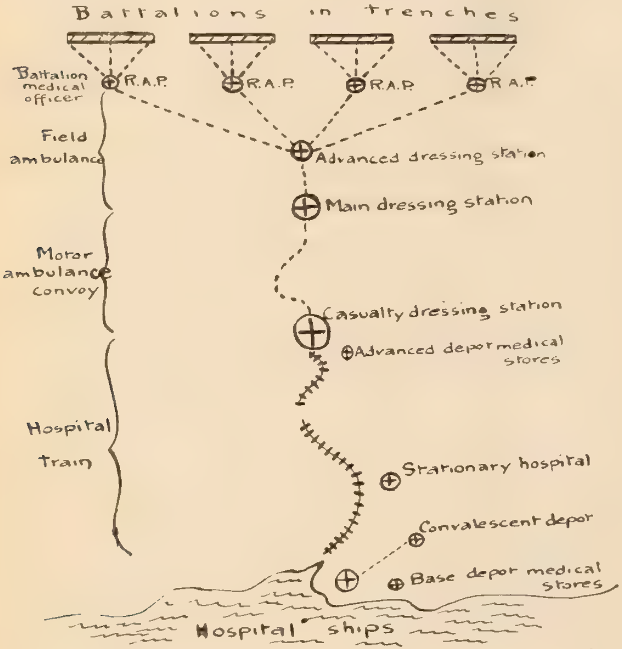

Fig.—Diagram illustrating evacuation of casualties from front line to base.

2. *Motor ambulance convoy.*—This unit is composed as follows: Four officers, R. A. M. C.—the senior commands the unit; eighteen other ranks, R. A. M. C.; four officers and 157 other ranks, Army Service Corps, attached for duty with the mechanical vehicles; fifty ambulance cars; four touring cars; seven motorcycles; three lorries; one workshop lorry. The motor ambulance convoy is detailed for duty in any particular area by the administrative medical officer with the headquarters of the corps or army, the former being a colonel, Army Medical Service, the latter a surgeon general.

3 *Casualty clearing station.*—The personnel of a casualty clearing station consists of seven medical officers, one quartermaster, and ninety persons of other ranks. A varying number of nursing sisters are also detailed for duty with a casualty clearing station, and the staff of medical officers is augmented during times of stress as when a heavy engagement is in progress. Nursing sisters do not do duty nearer the front line than the casualty clearing station, this unit being, as a general rule, situated at a distance of from five to eight or ten miles behind the firing line. At the casualty clearing station a very large amount of operating is performed. One of these units is usually set apart in each area for abdominal surgery, and all cases of abdominal wounds are transmitted to it as rapidly as possible from the front. The Carrel-Dakin treatment is steadily increasing in vogue and is now usually commenced at the casualty clearing station and continued in the hospital trains and base hospitals. A complete x ray equipment is provided at casualty clearing stations, and, as may readily be imagined, a large amount of this work is performed. In addition to the x ray installation at the casualty clearing stations, stationary and general hospitals, a considerable number of mobile x ray outfits mounted on a three ton lorry chassis have been instituted. A casualty clearing station is invariably situated near a railway station in order that patients may readily be transmitted to the base via hospital trains.

4. *Hospital trains.*—The personnel required for a train capable of conveying 396 lying down cases consists of three medical officers, three nursing sisters, and forty-seven persons of other ranks.

5. *Stationary hospitals.*—A stationary hospital of 400 beds, which may be expanded to considerably more than this number, requires the following staff: twelve medical officers, one quartermaster, twenty-seven nursing sisters, and ninety-eight persons of other ranks.

6. *General hospital.*—A general hospital contains 1,040 beds, but is capable of very great expansion beyond this number, the staff being augmented correspondingly. The personnel varies, according to the size of the hospital, as regards officers, sisters, and other ranks. Both stationary and general hospitals are very fully equipped as regards surgical, medical, bacteriological, x ray, and other departments. Every variety of professional work is here seen and an enormous amount of operative procedure of every variety is carried out. From these hospitals patients are either discharged to duty, transferred by hospital ship to England, or transferred to convalescent depots in the vicinity of the hospital.

7. *Convalescent depots.*—These are large hutted or tented camps situated at the various bases, ca-

pable of accommodating several thousand men at a time. Each camp is organized so as to facilitate, by every possible means, the improvement of the mental and physical condition of convalescent patients before their return to the fighting line. Football and cricket fields, libraries, gymnasiums, recreation rooms, etc., are provided, and the men do carefully graduated marches daily. These convalescent depots have proved of immense value in improving the health and physical condition of men who have been discharged from hospital yet are still not physically fit for the strenuous duty at the front line. Being entirely medical units the men are under close medical supervision, so that exercises, marches, etc., can be carefully graduated.

8. *Medical and surgical supplies.*—These are shipped overseas from England to base depots of medical stores, which are large stores situated in suitable buildings at the various bases. From these depots supplies are sent forward, as required, to the advanced depots of medical stores, which are situated at or near the various railheads, usually close to a casualty clearing station. The amount of medical and surgical equipment and stores required for a modern army is enormous, as may readily be imagined when the huge number of medical units in the field is taken into consideration. To mention a few items: Nearly sixteen million c. c. of vaccine, including twenty-one varieties, have been issued, and nearly five million doses of various serums. Practically the whole of the vaccines have been manufactured in the vaccine department of the Royal Army Medical College in London. During three months alone nearly 200,000 x ray plates and 600 x ray tubes were furnished; 243 x ray outfits and seventeen motor bacteriological laboratories have been supplied. During the first two and a half years of war 35,000 miles of gauze and over 3,000 tons of cotton wool were furnished to the various hospitals and depots. These few examples may serve to show the enormous amount of medical supplies needed in a modern campaign.

In briefly reviewing the Royal Army Medical Corps as a career for a young medical man, one may safely say that it is one which offers a happy life, with great opportunities for original and useful work. Every opportunity and encouragement is given for the perfection of work in special lines such as public health, bacteriology, tropical diseases, etc., and the work of Bruce, Leishmann, and others are examples of what may be done by army medical officers. Between the eighth and twelfth year of his service every officer undergoes a nine months' course in London, working at the Army Medical College and at various London hospitals. On the completion of this course he undergoes an examination for promotion to the rank of major. During this nine months' course of instruction the officer selects one special subject, e. g., ophthalmology, advanced operative surgery, gynecology, public health, bacteriology, etc., and undergoes examination for qualification as a specialist in that particular line. According to the result of his examination he is eligible for "accelerated promotion." From this time onward he is promoted to the higher ranks by "selection." The British army medical service has learned many lessons and profited largely from the experience of the present war and it is eagerly looking forward to cooperation and collaboration with the brother medical service of the United States army, from which service it has without any doubt very much to learn.

THE PSYCHOPATHOLOGY OF PROSTITUTION.

By Morris J. Karpas, M. D.,
New York,
Chief of Clinic, New York Neurological Institute, Third Division; Medical Examiner in Psychiatry, Psychopathic Clinic of Children's Court, City of New York; Instructor in Nervous Diseases, Cornell University, Medical Department.

INTRODUCTION.

Of all the social psychiatric questions, prostitution is one of the most important because of its relation to society. The solution of the problem, however, is complex, because of the many underlying factors that determine this abnormal reaction. Indeed, this issue is not purely psychological or medical, but it embraces the economic, sociological, and penal phases, knowledge of all of which is essential for thorough understanding of this subject.

It should be borne in mind that the practice of prostitution is not a product of modern civilization, for it has existed ever since the marriage institution. In early Biblical times prostitution had already been engaged in, and we find in Genesis passages to this effect: "When Judah saw her [his daughter-in-law, Tamar] he thought her to be a harlot; because she had covered her face. And he turned unto her by the way, and said, Go to, I pray thee, let me come in to thee!" And in Numbers: "And Israel abode in Shittim, and the people began to commit whoredom with the daughters of Moab. And they called the people unto the sacrifices of their gods; and the people did eat, and bowed down to their gods. And Israel joined himself to Baal-Peor; and the anger of the Lord was kindled against Israel. And the Lord said unto Moses, Take all the heads of the people and hang them up before the Lord against the sun that the fierce anger of the Lord may be turned away from Israel." Likewise in Deuteronomy: "There shall be no whore of the daughters of Israel, nor Sodomite of the sons of Israel. Thou shalt not bring the hire of a whore, or the price of a dog, into the house of the Lord thy God for any vow; for even both these are abomination to the Lord thy God." It is interesting to note that the strong Hebraic opposition to prostitution was based upon the fact that it disturbed the family relationship, encouraged excessive venery by reason of the numerous sexual objects, and produced strife which was common at that time.

It is well known that man requires friends all his lifetime. Aristotle explains this in the ninth book of his Nikomachean Ethics. When man is in good health and prosperous, he enjoys the company of all his friends; in the time of trouble he is in need of them; in old age, when his body is weak, he is assisted by them. This love is more frequent and more intense between parents and children and among other relations. Perfect love, brotherhood, and mutual assistance is only found among those near to each other by relationship. The members of a family united by a common descent from the same grandfather or even from some more distant ancestor have toward each other a certain feeling of love, help each other, and sympathize with each other. To effect this is one of the chief purposes of the Law. Professional harlots were therefore not tolerated in Israel (Deut. 23:18) because their existence would disturb the above relationship between man and man. Their children are strangers to everybody; no one knows to what family they belong; nor does any person recognize them as relatives. And this is the greatest misfortune that can befall any child or father. Another important object in prohibiting prostitution is to restrain excessive and continual lust; for lust increases with the variety of its objects. The sight of that to which a person has been accustomed does not produce such an ardent desire for its enjoyment as is produced by objects new in form and character. Another effect of this prohibition is the removal of a cause for strife; for if the prohibition did not exist, several persons might by chance come to one woman and would naturally quarrel with each other; they would in many cases kill one another or they would kill the woman. This is known to have occurred in days of old, "as they assembled themselves by troops in a harlot's house" (Jer. 5:7). In order to prevent these great evils and to effect a great boon that all men should know their relationship to each other, prostitutes (Deut. 23:17) were not tolerated, and sexual intercourse was only permitted when a man has chosen a certain female and married her openly; for if it sufficed merely to choose her, many a person would bring a prostitute to his house at a certain time agreed upon between them, and say that she was his wife (1).

The relation of prostitution to primitive religious worship is well known (2). The underlying motives of such rites was to discharge a sacred religious function for a definite mission. All women in Cyprus before marriage were compelled to have sexual relations with strangers at the sacred place of the goddesses, commonly known as Aphrodite, Astarte, etc. In many parts of Australasia similar customs were followed. In Babylon women, no matter whether rich or poor, were obliged once in their life to consort with strangers at the temple of Mylitia and the money thus earned was dedicated to the goddess Ischtar or Astarte. In the words of Frazer, "The sacred precinct was crowded with women waiting to observe this custom. Some of them had to wait there for years. At Heliopolis or Baalbec in Syria, famous for the imposing grandeur of its ruined temples, the custom of the country required that every maiden should prostitute herself to a stranger at the temple of Astarte, and matrons as well as maids testified their devotion to the goddess in the same manner. The Emperor Constantine abolished this custom, destroyed the temple, and built a church in its stead" (3).

The women in Phœnicia practised prostitution for religious purposes, as they were imbued with the idea that by such conduct they would ingratiate themselves into the graces of the goddess. In Byblus there was a custom that the people had to shave their heads every year as an expression of mourning for Adonis. Those women who refused to do so were obliged to have relations with strangers for money which was utilized for the goddess. Sumner (4) refers to the existence of sacred harlotry in Egypt and under the Cæsars.

> Survivals of sacred harlotry are found in historic Egypt. Even under the Cæsars the most beautiful girl of the noble family of Thebes was chosen to be consecrated to the Temple of Ammon. She gained honor and profit by the life of a courtesan, and always found a grand marriage when she retired on account of age. In all the temples there were women attached to the service of the gods. They were of different grades and ranks and were supposed to entertain the god as harem women entertained princes. In the temples of goddesses women were the functionaries and obtained great honor and power.

The ethical phase of prostitution has always been an object of considerable discussion, and it is interesting to note that there are moralists who uphold this practice. Indeed, Augustine spoke in behalf of prostitution and Aquinas (5) said: "Prostitution in towns is like the sewers in the palace; take away the sewers, and the palace becomes an impure and stinking place." Lackey defends it as follows:

> Under the circumstances, there has arisen in society a figure which is certainly the most mournful, and in some respects the most awful, upon which the eye of the moralist can dwell. That unhappy being whose very name is a shame to speak; who counterfeits with a cold heart the transports of affection; who submits herself as the passive instrument of lust; who is scorned and insulted as the vilest of her sex, and doomed, for the most part, to disease and abject wretchedness, and an early death, appears in every age as the perpetual symbol of the degradation and sinfulness of man. Herself the supreme type of vice, she is ultimately the most efficient guardian of virtue. But for her, the unchallenged purity of countless happy homes would be polluted, and not a few who, in the pride of their untempted chastity, think of her with an indignant shudder, would have known the agony of remorse and of despair. On that degraded and ignoble form are concentrated the passions that might have filled the world with shame. She remains, while creeds and civilizations rise and fall, the eternal priestess of humanity, blasted for the sins of the people.

Others maintain that prostitution "is a necessary evil, and at best a beneficent institution, the bulwark of the home, the inevitable reverse of which monogamy is the obverse" (6).

THE NATURE AND CHARACTER OF PROSTITUTION.

The underlying nature and character of prostitution has been very carefully investigated by students of political economy and psychology. There are two conceptions. One, advanced by the economist, is that prostitution is the result of economic and social conditions; the other, maintained by the psychologist, is that this abnormal phenomenon has its root in the mental structure of the individual.

The economic phase.—Such observers as Bebel, Hirsch, Parent-Duchatelet, and others support the economic theory on the ground that a large majority of prostitutes are domestic servants, factory and shop girls, waitresses, saleswomen, and other underpaid wage earners. Since their occupations are irregular and seasonal, they are forced to embrace prostitution because of economic stress. Parent-Duchatelet states (7): "Of all the causes of prostitution, particularly in Paris, and probably in all large cities, none is more active than lack of work and the misery which is the inevitable result of insufficient wages." In Berlin it was also noted that during the hard times the number of prostitutes were on the increase. This is also true of America and Japan. According to Maude Miner (8), over fifty per cent. of the women investigated by her were employed in factories or as domestic servants; and the other girls had positions in stores, restaurants, offices, etc.

> Comparing the percentages of these prostitutes who had been in different kinds of work to the percentage of women wage earners in the same occupations in general popula-

tion of New York city, according to the Census of 1910, we find that servants, waitresses, saleswomen, clerks in stores, and theatrical workers contribute more than their quota to prostitution; that factory employees and telephone operators contribute almost exactly the percentage we should expect; and that clerical workers, bookkeepers, stenographers, dressmakers, and milliners contribute less than their share. It is significant that all the occupations contributing less than their quota require skill and preparation for work. Wages received by girls before entering prostitution were for the most part low.

On the other hand, there is sufficient statistical evidence to the effect that the economic element is much exaggerated by the socialistic economist and social service worker. Strömberg (9) found that out of 462 prostitutes there was not a single case in which the economic cause was the determining factor. Welander (9) in his studies of prostitutes in Stockholm found that sixty per cent. of them were previously in domestic service and were in comfortable circumstances. Leonhard's results (9) are practically the same. In the 100 Düsseldorf prostitutes, poverty was not considered as a cause. The same author examined 500 other records in Düsseldorf and likewise could not establish economic reason for prostitution. Hammer's investigations (7) reveal that out of ninety registered German prostitutes there was not a single case in which low economic conditions played any rôle. In Bedford Reformatory, out of 279 cases, in only nineteen were economic conditions thought to be responsible for prostitution. To quote Kneeland (10): "The surprising thing is that very few directly economic reasons are given. It might be supposed that in friendly conversation a girl would wish to make the greatest possible excuse for herself, and that the one most ready to hand would be the inability to earn a living. But in only nineteen cases was this given as an excuse; and by referring to a similar table for street cases, it will be noticed that only 139 out of 1,106 gave a directly economic reason."

There is no doubt that undue stress is laid on the economic and social issue, and that the evidence so far adduced is not conclusive and adequate. The very fact that the large majority of prostitutes come from domestic service should serve as a strong argument against the economic theory. It should be borne in mind that servants are always in great demand; they are fairly well paid, and during their employment they are provided with shelter and food. Another important point to be emphasized is that in instances where these women were driven to prostitution because of poverty, they were in reality constitutionally inefficient to compete with their fellow beings; in other words, the so called economic factor should be looked upon as a symptom rather than a cause of this condition.

The mental phase.—With the advent of scientific psychiatry, studies of social psychopathological phenomena have received more careful and profound investigation. Prostitution was one of the subjects that engaged the attention of the psychiatrist. Unfortunately, however, the studies have only been directed along the objective lines; either too much emphasis was laid on the purely anthropological relations or wholly on intellectual phases of mental activity. Lombroso was the first to call attention to the fact that prostitution is a natural expression of a criminal predisposition—in other words, an expression of a congenital morbid instinct. In the words of Lombroso (11): "Prostitution largely takes the place of crime for women, thus explaining why women seem less criminal than men, and also giving a probable reason why female criminality is greatest in all ages when prostitution no longer offers a profession." Thus, according to Lombroso and his pupils, prostitution is a type of moral imbecility closely related to constitutional criminality. Aschaffenburg, Lombroso's strong opponent, admits that there is a strong relationship between the male criminal and the prostitute. Indeed, the study of the Jukes family forms an excellent illustration: the female element was represented by harlots, whereas the male members were criminals, alcoholics, etc.

Tarnowsky (12), a pupil of Lombroso, studied prostitutes in Russian prisons and found that they presented striking anatomical stigmata peculiar to the prostitute. Bonhoeffer (13) found that out of 190 prostitutes, fifty-three were feebleminded, 102 displayed anatomical hereditary stigmata of degeneration, most of them had one or both parents alcoholic, and in one third of the cases no definite mental anomalies were noted. Kneeland's (14) material consisted of 647 cases, twenty-one insane and 107 distinctly feebleminded.

Not all of our 647 cases have been examined by our psychologist. One hundred and sixteen, however, have had laboratory tests of various sorts. Among these tests all have been given the Binet tests. The result has been as follows:

MENTALITY BY BINET TEST.

Showing mentality of 5 year old child	2
Showing mentality of 6 year old child	1
Showing mentality of 7 year old child	6
Showing mentality of 8 year old child	6
Showing mentality of 9 year old child	29
Showing mentality of 10 year old child	44
Showing mentality of 11 year old child	26
Showing mentality of 12 year old child	2

The forty-four who have the mentality of a ten year old child and under were unhesitatingly pronounced mentally defective. The seventy-two showing mentality from ten to twelve years may possibly not be so called. The sixty-seven others included among the 107 are those so mentally defective that there can be no question as a matter of observation. Fifty-two others are distinctly borderline cases. This is the group which gives the most trouble in all reformatory institutions. It is safe to say that ninety per cent. of all disciplinary difficulties come from cases of this sort. They can be easily divided into at least two groups. Thus divided, twenty-six are girls who can be taught very little in school, whose general intelligence is low, but who may perhaps be able to learn a certain amount of manual labor; these cannot "stay good" any length of time. The other twenty-six are those who do well in school, are capable of mastering even such subjects as algebra and bookkeeping, but who have no moral sense or continuity of purpose. Eleven others are also properly in this class, but differ from the two preceding groups in the character of their instability. If they were boys, they would be tramps. They are all girls who have run away from home, sometimes a number of times, as well as from any place where they are put to service.

The foregoing figures mean that 193 individuals, or 29.8 per cent. of the number studied, are decidedly mentally defective. This is an extremely conservative estimate.

Maude Miner (15) found that only one third of the women whose cases she investigated were feebleminded. Goddard (16) states: "As to actual statistics on this subject, we have almost none. One very significant record comes from Geneva, Illinois, made by the same Doctor Bridgman whom we have already quoted. She found that out of 104 girls in the reformatory who were committed for immoral life, ninety-seven per cent. were feebleminded. This does not by any means indicate that ninety-seven per cent. of prostitutes are feebleminded, because it is only natural to expect that the feebleminded ones would be the ones to be caught and sent to an institution. This figure, nevertheless, gives some idea of the prevalence of feeblemindedness in this traffic. Many competent judges estimate that fifty per cent. of prostitutes are feebleminded." Walter Clarke (17), the field secretary of the United States Social Hygiene Association, collected 1,872 cases of prostitutes who were examined according to the Binet-Simon test, and the result shows a wide variation of feeblemindedness ranging from twenty-nine to ninety-seven per cent. In Magdalen Home, during the year 1916, ten per cent. of its inmates were pronounced feebleminded.

The sexual life in the prostitute offers another interesting topic of study. Such investigators as Riccardi. Lombroso, Parent-Duchatelet, von Maschka, and Moraglia observed not only homosexuality among them but also sadism, masochism, fetichism, sodomy, and sexual excitement with masturbation following the drinking or perceiving of the odor of men's urine or feces. Again Lombroso encountered frigidity among prostitutes. Merrick (18) studied 16,000 prostitutes in London and found that only few of them adopted prostitution because of intense sexual desires. Moraglia (19) found masturbation prevalent among the 180 prostitutes in the North Italian brothels, and he noted the same thing among the twenty-three prostitutes of the higher grade. Homosexuality is not as common as masturbation, yet it is of frequent occurrence. It is more prevalent in England than in France. Anna Rüling (20) declares that twenty per cent. of the Berlin prostitutes are homosexuals, and Moll (21) estimates twenty-five per cent. Hammer (22) found that twenty-three out of twenty-five prostitutes in reformatories practised homosexuality. Hirschfield (23) states that the Berlin prostitute frequently accosts better class women on the street, and accepts very small or no remuneration for sexual relations with their own sex. Freud (24) maintains that the polymorphous pervert can be demonstrated in a large number of prostitutes. "The same polymorphous or infantile disposition fits the prostitute for her professional activity, and in the enormous number of prostitutes and of women to whom we must attribute an adaptation for prostitution, even if they do not follow this calling, is absolutely impossible not to recognize in their uniform disposition for all perversions the universal and primitive human."

GENERAL INTERPRETATIONS.

Before attempting to interpret this vital and intricate problem, it would be advisable to refer to special statistical data obtained from the Magdalen Home. The material consists of twenty-five women who were committed to that institution for immorality. Seventeen of them began to lead an immoral life between the ages of sixteen and twenty years; and eight between twenty and twenty-four. The direct cause for this life was "a desire for a good time" in seven cases; eight were seduced "in bad company"; four were "in need of money"; four "for the love for a man"; and only in two feeblemindedness figured as a cause. Three of them were legally married; the civil condition in three was questionable; and nineteen were single. In looking over the records of the twenty-three women who were not feebleminded, one finds that these cases presented signs of mental inferiority which was characterized by instability, suggestibility, waywardness, lack of responsibility, lack of feeling, etc. In all of them, the question of an actual economic cause was of no significance.

The following cases will serve as illustrations to demonstrate the development of prostitution:

Case I.—J. was a woman thirty-five years of age, of a limited education. At the age of thirteen years she began to work in a factory, earning from $8 to $12 a week. At the age of fifteen and one half years she had her first sexual experience, and soon following this she embraced prostitution. It is important to note that she was not pregnant at that time. Speaking of that particular experience she said, "It was by force and not by force." She admitted that her seducer encouraged her to become a prostitute. She stated that she consorted with many men, but she had no sexual feeling for them. "Money was the fascination for me; you did not have to work hard." When she was asked to describe her ideal, she said, "A dark haired man; but really it was the money that appealed to me."

Case II.—R. was a woman twenty years of age. She was brought up in a small town in the State of New York. At the age of fourteen years she left school, Grade 7A. Soon after leaving school she began to work in a factory, earning from $8 to $10 a week. At sixteen she came to New York to look for a position. At the age of sixteen and one half years she had her first sexual experience; she was pregnant and abortion was performed by a physician. She stated that she met the man who seduced her one year prior thereto in her country town. Asked why she became a prostitute, she said, "I went to this life shortly after I had an abortion. I could not get a decent position to make a living. No one introduced me into this life. I learned it myself of easy living. There is no one to blame but myself." She declared that she had no love for prostitution, but "this is a business proposition." She had no sexual feeling for the men she consorted with. "I realize," she said, "that this is the only way to do it by not working hard. I am not fond of the life, but I like to live nice. I like to dress nice. I don't want to work hard. I like to go to swell places. I could not make $50 a day on anything else."

Case III.—B. was a woman twenty years old. She left school in the eighth grade and became a telephone operator, earning $8 a week. Two years ago she came to New York from Pittsburgh. Asked why she left home, she said. "Well, because I wanted to see what New York was like." Later she said that she had a married sister in New York, but when she came here she did not visit her sister for several weeks. In the train from Pittsburgh to New York she met a man and "he said this or that about nice clothes and I thought I would try it. I thought I might as well take a chance as all young girls do." She was then seduced by this man, with whom she lived in New York for several days. She received from him $25. She admitted that she did not like him and that she had no sexual feeling for him. Since then she has led the life of a courtesan.

Case IV.—P. was the sister of B. She was twenty-one years of age and had graduated from public school. Her ambition was to be a nurse. For ten years she kept house for her father. At sixteen she was seduced by a man. She was his mistress for three months. "After I had intercourse with him I did not care for him. I did it; yes, a lot of things we do that we do not like." Following this she began to lead the life of a prostitute. In discussing her immoral life she did not seem to show much effect and maintained that by following such an occupation she did not have to work very hard.

Case V.—W. was a girl nineteen years old. She left school at the grade of 6B. She described herself as always mischievous, playful, unstable. In school she was poor in conduct, good in studies, and frequently played truant. At fifteen she eloped with a young man and two days later she was apprehended by her mother. She was then arrested and sent to a correctional institution because of immorality. While there she came in contact with immoral women who told her "how to make money easy." When she was discharged from that institution she tried to obtain several positions, but was unsuccessful, and finally she decided to take up prostitution as an occupation.

In the present state of our knowledge, we are justified in regarding prostitution as a definite biological reaction. Indeed, it is a type of mental inferiority in which the affective and volitional phases of mental life are disordered. To be sure, the relation of prostitution to true feeblemindedness is much overrated; this may be explained by the fact that such investigations were not conducted along purely psychiatric lines. As a matter of fact, the percentage of the feebleminded prostitutes is too low for an adequate solution of this problem. There is no question that the true prostitute presents a definite type of personality, and furthermore, her sexuality is decidedly of an infantile type. This explains why perversions are so frequent among these women. Indeed, on the whole, she does not lead a normal coordinated sensual life, as she does not select her sexual object and the sexual act is performed for a nonsexual end. The undue aggressive tendency, so frequently manifest in the prostitute, is a homosexual trait. This characteristic especially appeals strongly to the neurotic male who is otherwise unattracted by normal women.

In general prostitution may be divided into three large classes: 1, symptomatic; 2, environmental; and 3, constitutional. The first is a symptom of a mental disease, neurosis or feeblemindedness, a class of cases which sooner or later becomes recognized and isolated. The second represents only a small group of cases who enter prostitution because of some economic or social reason. This is the most hopeful class for readjustment and reclamation. The third is the malignant type, inasmuch as the constitutional factors are in the foreground. However, there is a possibility that in the early plastic stage, under proper social adaptation and intensive reeducational methods, something might be accomplished in saving these women from entering the field of prostitution.

With this general consideration of the subject of prostitution, we may now ask what can be done to solve this problem? Granting that prostitution is a moral scourge, the source of venereal diseases, and the disturber of home life, yet it is an evil which will probably exist so long as monogamous marriages will be in practice. Aschaffenburg (25) thoughtfully remarks: "The harshest measures, flogging, the pillory, and capital punishment, proved of no avail in repressing the evil, which continued to spread and thrive only in a more secret and dangerous form, and they were always given up after a tome. Thus in all countries, legislation has oscillated between extremes, turning from the method of herding prostitutes together in barracks to allowing them unlimited freedom, from occasional superintendence to the strict supervision of each individual. The tendency to respect the right of the individual and to place them above those of society on the one hand, and on the other the moral fear of sanctioning the evil by legally allowing it, have always led to the repeal of regulative measures. This has been followed by such a spread of prostitution in its most dangerous, clandestine form that it later became necessary to recognize and regulate it again."

It is obvious that the rational approach of this problem should embrace the following important points: 1. Proper sexual enlightenment should be given to young men and women in schools and colleges. The men especially should be fully acquainted with the nature and character of venereal diseases, and particularly of the effects of syphilis. Efforts should not be spared to emphasize the fact that the prostitute is directly or indirectly responsible for every case of syphilitic infection. 2. Every attempt should be made to recognize the abnormal personality of the prostitute in the formative period and adjust her to such an environment as would meet the needs of her mentality. 3. The necessity of creating hospitals for prostitutes with chronic venereal diseases is selfevident—indeed, their detention there should be determined by the duration of the virility of the venereal affection. 4. The question of actual segregation of prostitutes under strict police control and medical supervision should receive careful and thoughtful consideration, for after all, which is the greater evil: the segregation of this vice, or allowing it to disseminate and exert its pernicious influence upon society?

I am under great obligations to Mrs. M. E. Paddon, ex-executive secretary of the Magdalen Home, for the permission to examine the inmates of that home, and likewise my thanks are due to Miss E. C. Cook for the statistical data.

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24 East Forty-eighth Street.

Complement Fixation Tests in Tuberculosis.—Newell Bly Burns, Francis H. Slack, Philip Castleman, and Karl Bailey (*Journal A. M. A.*, May 12, 1917) tested the antigens suggested by Petroff and that of Miller and Zinsser and found the latter to give much the best results. From study of the reactions of a considerable group of patients to this latter antigen they conclude that the test seems specific for tuberculosis and that it is of considerable diagnostic value if repeatedly positive or negative in suspected cases in which there are no tubercle bacilli present in the sputum. A positive reaction in apparently arrested cases of tuberculosis is indicative of the persistence of an active focus.

THE VALUE OF SPUTUM CULTURES IN THE DIAGNOSIS OF PULMONARY TUBERCULOSIS.

By John A. Roddy, M. D.,
Philadelphia,
Associate in Hygiene and Bacteriology, Jefferson Medical College; Chief Assistant, Department of Clinical Medicine, Jefferson Hospital,
and David R. Brewer,
Philadelphia,
Assistant in Bacteriology, Jefferson Medical College.

The achievements of Griffith (1), Petroff (2), Williams (3), and others suggested the desirability of an investigation to determine the relative value of the different methods recently introduced for obtaining cultures of tubercle bacilli from sputum, and to elucidate further, if possible, the indications for such procedures in clinical diagnosis, together with the import of negative and positive findings. This paper is a preliminary report of such an investigation started last summer.

SPUTUM SHOWING TUBERCLE BACILLI.

To discover the proportion of tubes yielding cultures when planted with sputum known to contain tubercle bacilli, microscopical examination of sputum from patients presenting the typical manifestations of advanced pulmonary tuberculosis was made. Each day for a week specimens of sputum were taken and four smears from each examined. The patients selected, from whom sputum was obtained for the culture tests, were those whose sputum showed numerous tubercle bacilli in every slide examined. In this way a group of fifteen patients was selected. From each patient two to four specimens, taken at intervals of forty-eight hours, were planted on culture media less than three hours after expectoration. Every sample of sputum subjected to cultural test showed tubercle bacilli microscopically.

Griffith's method.—For Griffith's method twenty-eight specimens of sputum from eleven patients were treated as follows: One c. c. of sputum was mixed with an equal quantity of ten per cent. antiformin by repeatedly drawing into and expelling from a pipette and shaking. Two, four, ten, fifteen, twenty, and thirty minutes after mixing, a loopful was evenly smeared over the surface of each of two tubes of Dorsett's egg medium. These tubes were placed in an incubator at 37.5° C. and examined for tubercle bacilli after four, eight, and sixteen days' incubation.

Numerous tubes planted when the antiformin had acted on sputum for two minutes showed an abundant flora in the first forty-eight hours of incubation and had to be discarded, so that we have for consideration 244 cultures, thirty-four of which, or 13.9 per cent., showed tubercle bacilli.

Tubes planted two minutes after the sputum had been mixed with antiformin all contained organisms other than the tubercle bacillus and a smaller per centage of them yielded tubercle bacilli than those planted four, ten, and fifteen minutes after mixing sputum with antiformin. Results from tubes made twenty minutes or longer after mixing showed that such long exposures to antiformin frequently precludes further propagation of tubercle bacilli.

Petroff's method.—For Petroff's method 124 specimens from fifteen patients were treated as follows: Five c. c. of sputum were mixed with an equal quantity of three per cent. sodium hydroxide solution, digested at 37.5° C. for thirty minutes, neutralized, then centrifugated until sediment formed. The sediment was planted on two tubes of Petroff's medium and these tubes incubated at 37.5° C., being examined for tubercle bacilli after four, eight, and sixteen days of incubation.

Williams-Burdick modification of Petroff's method.—This modification consists of the substitution of a culture medium varying slightly from that employed by Petroff; in other respects the technic is the same. Cultural tests were made with this medium just the same as with Petroff's. With Petroff's method 32.7 per cent. of the tubes planted yielded cultures of tubercle bacilli; with Williams-Burdick modification fifty-five per cent. Of the tubes producing tubercle bacilli pure cultures were obtained in fifty-nine per cent. with Petroff's medium and in eight per cent. with Williams-Burdick modification.

Conclusions.—1. Petroff's method is superior to Griffith's method. 2. Petroff's medium is slightly superior to the Williams-Burdick medium and much better than Dorsett's medium for obtaining cultures of tubercle bacilli directly from sputum, especially if pure cultures are desired. 3. Although cultures of tubercle bacilli have been obtained by various workers from the sputum of ninety per cent. of patients, this high average cannot be obtained constantly, especially by methods simple enough to be applicable in diagnostic work. 4. An attempt to obtain cultures may fail when the sputum contains tubercle bacilli discernible with the microscope, therefore sputum culture cannot displace microscopical examination in the diagnosis of tuberculosis.

SPUTUM SHOWING NO TUBERCLE BACILLI.

The second part of the investigation was to determine the value of sputum cultures in the case of patients presenting doubtful, slight, or distinct physical signs and symptoms of pulmonary tuberculosis with little or no expectoration, repeated microscopic examinations during a period of two to six weeks revealing no tubercle bacilli.

Thirty-seven such patients were selected from whom forty-five samples of sputum were obtained. Two tubes were planted from each, following Williams-Burdick modification of Petroff's method. Of the ninety tubes planted, fifteen, or 16.7 per cent., produced tubercle bacilli. These cultures of tubercle bacilli were obtained from the sputum of fourteen patients, demonstrating the presence of tubercle bacilli in the sputum of thirty-seven per cent. of patients where microscopical examination failed to demonstrate them.

Conclusions.—1. Sputum culture will reveal the presence of tubercle bacilli in the sputum when microscopical examination fails; it will do so in cases presenting doubtful clinical signs and symptoms as well as in those presenting distinct signs and symptoms; although such results cannot be expected in every case, they are obtainable in a sufficient number to establish sputum culture as a valuable aid in the diagnosis of doubtful cases. 2. The results of this investigation, harmonizing as they do with previously reported findings, clearly indicate the danger of dissemination of the disease by tuberculous patients whose sputum does not show tubercle bacilli upon microscopical examination.

SPUTUM CULTURE FOR OTHER FORMS OF BACTERIA.

The third part of this work was to detect the presence of higher forms of bacteria—hyphomycetes and blastomycetes—in the sputum of patients presenting clinical evidence of pulmonary disease. In all, sixty-eight patients were selected from whom sputum was obtained. One third of these patients had mild symptoms and slight physical signs and no tubercle bacilli in sputum demonstrable by either microscopical examination or culture, and were classified as doubtful or early cases of pulmonary tuberculosis. Of the remaining patients about half were classified as early cases with slight involvement and the rest advanced cases; all had tubercle bacilli in the sputum, demonstrable by culture only in some cases. The methods of staining sputum to disclose tubercle bacilli do not favor the detection of the higher forms of bacteria. Gram's method, being generally considered best for this purpose, was employed. Sabouraud's medium, believed to be the most favorable for the cultivation of these organisms, was used for one sixth of the culture tests; the rest were made with Petroff's medium, which we believe from preliminary tests will sustain the growth of hyphomycetes and blastomycetes. Four hundred and eighty films from 240 specimens of sputum were examined microscopically. One hundred and thirty-six culture tubes were planted. Only four slides and ten cultures showed higher forms of bacteria and subsequent examinations of sputum from the same patients showed these were not etiological factors.

These findings seem to indicate that pulmonary blastomycosis and pulmonary infections with other forms of higher bacteria simulating tuberculosis are not common, and that very few, if any, of the cases diagnosed as pulmonary tuberculosis are cases of blastomycosis—at least, in this vicinity at this time. The reports of Stober (4), Myers (5), Clark (6), Boughton (7), Jackson (8), Bechtel and LeCount (9), Ashford (10), Castellani (11), and others indicate, we believe, that this region is relatively free of such pulmonary infections, or else that their occurrence is epidemic rather than endemic.

We wish to express our thanks for the kind interest taken in this work by Dr. R. C. Rosenberger and Dr. E. J. G. Beardsley, and our appreciation of the courteous assistance given by the resident physicians and the nurses of the Philadelphia General Hospital.

CULTURE MEDIA USED.

Dorsett's egg medium.—Wash eggs thoroughly with fifteen per cent. solution of carbolic acid. Carefully break the eggs into a wide mouthed flask and shake up the flask until the whites and yolks are thoroughly mixed. Add twenty-five c. c. of distilled water to every four eggs; strain through sterile cloth. Pour ten c. c. each into sterile test tubes and slant in an inspissator and expose to 73° C. for four or five hours on two days. On the third day raise the temperature to 76° C.

Petroff's medium.—Five hundred grams of beef or veal are infused in fifteen per cent. solution of glycerin in water and stored in a cool place. After twenty-four hours the meat is squeezed in a sterile press and the infusion collected in a sterile beaker. The shells of the eggs are sterilized by ten minute immersion in seventy per cent. alcohol. They are broken into a sterile beaker, well mixed, and filtered through sterile gauze. One part of meat juice is added to two parts of egg by volume. A one per cent. alcoholic solution of gentian violet is added to make a dilution of one in 10,000. The three ingredients are well mixed. The medium is tubed and inspissated as for Dorsett's egg medium.

Williams-Burdick medium.—1. Egg white solution. This is made by diluting the egg white with ten parts of distilled water and thoroughly shaking. The fluid is opalescent and contains numerous whitish flakes. To clear it, it is pressed through a thin layer of cotton and then heated to 100° C. to hasten precipitation. It is then filtered through paper. 2. Egg yolk solution. The yolks are diluted with ten parts of water and well stirred. The very cloudy emulsion is clarified by adding normal sodium hydroxide. Too much hydroxide is harmful and therefore complete solution of the yolks is not desirable. The emulsion should be slightly turbid. To attain the proper degree of turbidity, one c. c. of normal NaOH is usually added to each 100 c. c. of emulsion. This is not a constant amount, however, because some yolks will be completely dissolved by less than half this amount of alkali. The solution is heated to 100° C. and filtered. 3. Meat infusion. Five hundred grams of finely chopped lean veal is covered with one litre of water containing fifteen per cent. glycerin and infused for twenty-four hours, then filtered; five grams of sodium chloride is added and the infusion heated to boiling. It is filtered again and rendered plus one per cent. alkaline.

Place 300 c. c. of the ten per cent. egg white solution in a litre flask, 300 c. c. of the ten per cent. egg yolk solution in another flask, and 400 c. c. of the meat infusion, to which is added fifteen grams of powdered agar, in a third flask. These are then sterilized in the autoclave at fifteen pounds pressure for fifteen minutes. They are removed, and while still hot one c. c. of a one per cent. alcoholic solution of gentian violet is added to the broth agar. The contents of this flask are now poured into that containing the egg white and then the egg yoke is added. The whole is poured back and forth in order to thoroughly mix. It is then tubed and slanted.

Sabouraud's medium.—Maltose, four grams; peptone, one gram; agar, one and a half gram; and water, 100 c. c.

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1604 Pine Street.

HUMAN ANTHRAX.

Report of a Typical Case.

By Joseph B. Bissell, M.D.,
New York,
Director and Visiting Surgeon, Bellevue Hospital; Consulting Surgeon, Hospital for Deformities and Joint Diseases; Visiting Surgeon St. Vincent's Hospital; Surgical Director, Radium Sanatorium.

When a group of histories of anthrax cases is reviewed one is startled to find so commonly the record: "Slight abrasion on the skin; engaged in handling hides; noted one or a group of pimples over the lesion, which rapidly degenerated into a pustule with a characteristc black centre." Such is the history that directs attention to anthrax as an important chapter in preventive medicine. It is with this phase of the situation in mind that I report the following interesting case of anthrax recently presenting in my service at Bellevue Hospital.

Case.—W. M., fifty-four years of age, a longshoreman, was perfectly well up to May 23, 1917, when, in the course of his daily work of unloading cargo from a South American freighter, he scratched the left side of his neck in throwing a bundle of hides over his shoulder. The following day he noticed a small red pimple at this point which itched slightly. A pustule soon developed, which was dark in the centre, with much swelling surrounding. This condition progressed rapidly, extending down the right side of the chest so that in a few hours his neck and left thorax were extremely swollen. The cervical and axillary glands of right side were enlarged but not tender; the similar glands on the left side were slightly involved. On May 25th, when admitted to Bellevue, the following surgical condition was recorded: Right side of neck and chest were the seat of a red indurated swelling extending from mastoid down to nipple, involving both sides of chest but not spreading to face. At the upper border of the swelling on the right side of the neck, one inch below the mastoid process, there was an indurated red papule with a brown leathery centre; surrounding this a circle of vesicles more or less concrete. The whole lesion was about the size of a ten cent piece and elevated about 0.25 centimetre above the surrounding skin.

His temperature on the day of admission was 99.4° F.; pulse, 84; respiration, 22. One hour after admission fifty c.c. of anthrax serum was given intravenously. Pulse went to 100° F., temperature and respiration remained the same; no chill or other untoward symptom. Twelve hours after admission a second intravenous injection of fifty c.c. of anthrax serum was given the patient, with no reaction whatever. A blood culture taken at this time was positive, few colonies of anthrax being found; direct smear from pustule showed no bacteria. At 5 p. m., May 28th, eighteen hours after admission, operation was performed which consisted in the removal of an area three quarters of an inch by three quarters of an inch around and including the pustule, going down to muscle fibres and beneath them. The edematous tissues of the neck and chest were laid wide open with longitudinal and transverse incisions and wide dissection under the flap. Blood culture taken again at this time showed positive anthrax colonies, and pathological report on excised pustule showed ordinary anthrax histology with anthrax bacilli in tissues.

Following operation, the patient's temperature rose to 103.2° F.; pulse, 110; respiration, 24. Two hours after the patient had brisk hemorrhage from wound, which necessitated changing the dressing and packing the wounds tightly with gauze. The wound at operation was saturated with fifty c.c. serum. Six hours after, third and last injection of serum was given. This was followed by a chill. On the morning following operation the patient was in a very poor condition. Pulse was very weak; he vomited; temperature dropped to subnormal; respiration was poor and superficial. Infusion of normal saline was given. Whiskey and saline were ordered per rectum, which were expelled. Patient was then put on a diet of buttermilk and beer alternately every two hours for four days, without other food or serum of any kind. Blood culture on the evening of May 28th was absolutely negative, with temperature varying between 99° and 101° F., and his convalescence from then on was uneventful. The patient was discharged on June 8th with wound entirely healed and apparently well.

My appreciation is acknowledged to Dr. S. M. Milliken, my assistant, for his services in this case. Special note should be made of the fact that in the stimulating treatment adopted for the care of this patient, whiskey was not well borne and was discontinued. In its place liberal quantities of beer were given with satisfactory results. The food value of beer here served its purpose as well as the stimulant effects sought. I have observed marked beneficial results following the administration of beer in so many instances that I feel we are warranted in placing a higher value on it as a nutrient therapeutic agent.

The fact that the United States is importing animal products such as, hides, wool, hair, bristles, bone, etc., in large quanties from South America and Asiatic countries justifies careful watching of anthrax cases that develop among our native laborers engaged in handling such commodities. When considering the question of modes of infection an interesting fact has been brought to my attention. The many cases of anthrax reported in New England among people engaged in handling leather while making shoes show initial lesion on the hands. The mortality is relatively low, about forty per cent. In New York and especially at Bellevue Hospital, the cases received almost always show the primary infection in the neck or submaxillary region. This condition is due to the fact that during the process of unloading hides, the skins are thrown over the shoulder and frequently their rough surface causes an abrasion which opens the way to infection. The mortality in these neck and shoulder cases has been well over ninety per cent.

While every effort is made by the authorities to guard against anthrax infected products, the disease is occurring at our ports of entry with unpleasant frequency. This condition would indicate that more rigid inspection should be enforced and greater precautions taken to safeguard those who must handle these suspected materials in the various stages of manufacture. Proper care of the hands, respiratory organs, as well as bench and loft sanitation would materially improve the situation. Such measures of precaution are strongly to be urged because it has been found that ordinary fumigation and germicidal treatments have but little action on the specific spore of anthrax. Antianthrax serums seem to have definite value and their use is to be urged.

46 West Fifty-fifth Street.

THE CLINICAL SIGNIFICANCE OF A FECAL ANALYSIS.

First Communication.

By Louis Winfield Kohn, M. D.,
Philadelphia,

Chief of the Gastrointestinal Clinic at the Samaritan Hospital of the Temple University, Philadelphia; Gastroenterologist to the Northwestern General Hospital, Philadelphia, and Physician in the Jefferson Hospital Gastrointestinal Clinic, Philadelphia.

To look at these things in a deeper sense rather than merely to glance at them necessitates an effort to grasp detail. To cultivate such an ability or to arouse such a latent instinct helps the progress of science.

An investigation significant of scientific progress is that of a fecal analysis which, although not adhered to in its actual performance to the extent that it should be, is nevertheless deserving of special attention because of the valuable information it conveys. The chief reason for the neglect of this procedure is probably the unpleasant nature of the work connected with an examination of this character, as otherwise there could be no objection. More weighty reasons must be advanced before we medical men dare hold aloof from any work that might eventually bring fruition, despite the unpleasantness associated with it. No powerful argument can be adduced that would tend to limit the practice of this method. The results acquired warrant the efforts entailed in its application.

Why should we so strongly encourage an examination of this character? Logical reasoning will convince us of its importance. A fecal analysis should be performed for the same reason that a blood analysis or a gastric analysis is performed. By such investigations we are made acquainted with certain objective phenomena which we at once realize are at variance with, i. e., differ in abnormal states from, those found under normal circumstances. A close study of these findings will convey to us probable reasons or causes for their occurrence. A normally acting gastrointestinal tract will cause the expulsion of a normal appearing residue, as is very evident, and likewise a perverted state of gastrointestinal activity will contribute to the expulsion of a perverted residue. The differences to be noted in the respective stools would, therefore, correspondingly imply differences in their production. In such a manner do logical deduction and sound judgment lead us to valuable information.

Of late, however, we have resorted to other means than fecal analyses for the advancement of our knowledge appertaining to the condition of the gastrointestinal tract, viz., examinations of gastric and duodenal fluids, fluoroscopy, and radiography, but notwithstanding the great value attached to these methods, the importance of a fecal examination has not dwindled in the least.

A knowledge of excretory products should entail a thorough understanding of the superficial and inner characteristics of such material, macroscopical investigation accomplishing the former and microscopical, bacteriological, and chemical examinations applying to the latter. Through this means we are bound to acquire such information as will enable us to attain a true idea of the original cause of the presence of the varied stool characteristics, thus illuminating and bringing to mind the probable or possible conditions existing in those occult organs obscured because of their location in the abdominal cavity. A fecal analysis will, therefore, very often acquaint us with the character of the cause of the disease in the digestive organs.

Test diet.—Just as in our gastric studies, so also in our intestinal studies, we must resort to test diets which, having been acted upon by the digestive functions, result in an accumulation of waste material, the nature of which from a comparative viewpoint is of greatest scientific value, Adolf Schmidt, Nothnagel, Strasburger, and others have through their noble efforts and untiring energy improved this work to the extent that it now belongs to the class of indispensables. The normal stool consists of the excrementitious material resulting from the test diet administered to a so called normal person and has been found to comprise such waste products in normal proportion as the various digestive juices are unable to further dissolve or which the system normally exhibits no predilection for absorbing. An analytical knowledge of a normal stool is, therefore, essential in order that we may distinguish abnormal stools.

The Schmidt-Strasburger test diet was probably the best original diet recommended to patients for whom a fecal analysis was indicated. This diet, it seems, is well tolerated by the patient because of its nonfatiguable and nonirritating influences due to the small, yet sufficient quantity of waste material it possesses for its stimulatory effect upon bowel activity, and because it contains in proper proportion and of sufficient caloric power an admixture of the three chief food stuffs to which we are all accustomed, in fact dependent upon, for subsistence, viz., carbohydrates, proteins, and fats. Slight variations from the original Schmidt-Strasburger test diet do not appreciably alter the result aimed at and we may, therefore, employ a test diet that more closely approximates the thrice daily American style of feeding. The following modification is recommended:

Breakfast—Milk, tea, or cocoa (two cups), one soft boiled egg, two slices of bread and butter, and cereal—a small plate of strained oatmeal.

Dinner—A quarter of a pound of rare beef or chop well cut up, a large helping of mashed potatoes, and bread and butter.

Supper—One plate of soup, two soft boiled eggs, bread and butter. Cereal if desired.

This diet should as a rule be administered for one or two days in succession and sometimes longer, so as to obtain, if possible, a stool originating entirely therefrom. The second or third stool following the ingestion of the test diet will as a rule constitute the material desired for test purposes, particularly in those instances where a laxative has been given at least ten hours before the test diet was taken. In those cases, where a laxative is contraindicated because of untoward symptoms as in intestinal catarrh or diarrhea of functional or organic nature or for other reasons, we may, if not certain that the proper specimen of stool is obtained in the earlier evacuations, either extend the duration of the test dietary for a day or more, so as to give more time wherein additional specimens may be passed, or we can administer at the beginning with our test diet certain coloring agents, harmless in action, which will serve as a marker in differentiating the preceding food waste from that of the test diet waste. The excrementitious material exhibiting the characteristic coloration or that which follows it during the time that the test period is in force, is carefully studied. Carmine powder of five to seven grain dose in wafer or capsule form, or charcoal of one half to one dram dose may be employed and will respectively color the excreta red and black. During the test diet period, two or more examinations may be made for the purpose of further illuminating our minds or for corroboration.

The form or physical characteristics of the remains of the original digestible and indigestible substances ingested in the test diet and which constitute a great portion of the fecal excrement will convey a true idea of the effect wrought upon the foods by the alimentary tract. Already being acquainted to a certain extent with the action of the alimentary secretions upon the different kinds of food, as well as with the resulting remains to be expected in the normal excrement following a test diet, we are better prepared to deduce with exactness the efficiency of the various alimentary secretions. In our consideration of the gastrointestinal tract it is to be borne in mind that the secretions *per se* may be neither the disturbed factor nor the disturbing factor and we must, therefore, perforce pay due respect to probable variations in motility, peristalsis, and absorption, which, of course, may be either primary or secondary in origin, and either functional or organic in nature.

Possible constituents of a stool.—Before discussing the characteristics of the stool, it might be well to ponder a little over the following enumeration of the many possibilities that may occur in a specimen of stool and which may also enable us to take a more comprehensive view of the subject: 1. Food remains as muscle fibres either partially digested or undigested, fat as droplets (neutral), starch cells either partially digested or undigested, cellulotic covers of the starch cells as potato framework, vegetable framework and fibres, oatmeal and cocoa remains, food seeds, connective tissue, tendon, and cartilaginous remains. 2. Substances, the result of either fermentive or putrefactive changes and saponification, as volatile fatty acids, lactic acid, succinic acid, alcohol, carbon dioxide, hydrogen, and methane, which correspond to carbohydrate fermentation; indol, scatol, phenol, ammonia, and hydrogen sulphide as a result of albuminous fermentation. 3. Products direct from the organism in the form of secretory or cellular products as the intestinal, pancreatic, and biliary secretions, mucus, lining epithelium from any portion of the digestive tract, and at times possible secretory and cellular elements from above, i. e., from the oral, nasal, and other portions of the respiratory tract. 4. Pathological organic constituents as blood, pus, excess mucus, definite normal tissue fragments, and tumor fragments. 5. Crystals of various types as calcium oxalate, calcium carbonate, neutral calcium phosphate, ammonium magnesium phosphate, fatty acids, triple phosphates, soaps, cholesterin, hematoidin, and Charcot-Leyden crystals. 6. Bacteria, either saprophytic or pathogenic in nature, which may be present in normal as well as in abnormal conditions, viz., colon and typhoid bacilli, tubercle bacilli, Bacillus dysenteriæ, Bacillus lactis aerogenes, Bacillus aerogenes capsulatis, Bacillus bifidus, Bacillus putrificus, Spirillum cholera, Finkler-Prior bacillus, various cocci, and many others that have been introduced with the food. 7. Foreign bodies as hair, parasites of various types, parasitic ova, parasitic segments, concretions as gallstones, pancreatic calculi, enteroliths, coproliths, sand, and possibly other foreign material that had been taken with the food, as bones, fruit sand, and shell.

Normal stool.—Now that we have an idea of the possibilities that may occur in the stool, it might be proper to enumerate the probable constituents of a normal stool following a test diet, thus enabling us to clearly distinguish an abnormal from a normal excrement. The following elements may be noted in such a normal specimen: Muscle fibre remains in very small quantity and is only noted microscopically as more or less digested nonstriated fibres with rounded ends and of exceptional rarity, seldom striated; isolated potato remains, either empty or crowded with the undigested remains of its original content; a comparatively small amount of yellow calcium salts and colorless soaps; occasionally but rarely a few fatty acid crystals or flakes; little dark flakes of chaffy oatmeal remains; cocoa remains when cocoa is taken with the test diet and detritus consisting of small glandular, globular, and bacterial remains from the food and body organisms. The findings just cited are seen upon microscopical examination since macroscopical investigation, as a rule, only reveals oatmeal and cocoa remains in the normal stool following a test diet. The recognition of undigested or partially digested food elements and abnormal secretions or other substances in macroscopic or microscopic quantity will have some probable pathological significance. Occasionally the normal stool will show some vegetable or fruit remains of food eaten before the test diet was taken. To acquaint one's self with the quality of bacteria present in the stool would necessitate more than an ordinary macroscopical or microscopical examination. Such knowledge could only result from a bacteriological study of different cultures prepared from the stool.

Quantity of residue.—The quantity of fecal material excreted by an individual may vary markedly, depending upon the quantity and quality of food taken, as well as upon the functional activity of the gastrointestinal tract. Where a large quantity of food is eaten, a corresponding increase in the quantity of fecal residue is bound to follow unless in particular instances, where there may be a possibility of voracious intestinal absorption. The quantity of residue following a vegetable diet is bound to exceed that resulting from an albuminous diet and the like because of the greater quantity of indigestible or waste material naturally constituting such a diet. Where a hyperactivity of the entire gastrointestinal tract or even a portion thereof exists, a variation in the quantity of residue may directly be attributed to it. For instance, in cases of hypermotility or hyperperistalsis, where insufficient digestion or insufficient absorption has taken place, the food will probably hasten through the digestive tube, thus showing itself in the stool in greater quantity than is ordinarily expected after such a diet. Very often with this condition there is associated a coexistent hyperactivity of the glandular structures which contributes to the production of a watery stool along with an increase in its solid constituent makeup. On the other hand, where certain portions of the gastrointestinal tract are inactive or lacking in muscular propulsive power, as in intestinal stasis due to atony in any portion of the tract or in such instances where an impediment or obstruction opposes as in obstipation due to any one of many kinds of mechanical interferences, or in such cases where an excessive degree of contraction occurs as in spasm of any portion of the tract, the total quantity of residue may be decreased, due to resorption of a large amount of the retained material, but the evacuation may not occur daily, and when it does occur may do so in apparently large amount. We must in each instance look into the relative importance that the quantity of excrement has in our studies. The average amount of residue from a normal adult is 100 grams in weight every twenty-four hours. The number of stools a day will depend upon the functional and organic status of the gastrointestinal tract and its allied organs.

As a rule, the number of stools voided daily by a normal person is about one or two, although with some even more may result. In those conditions associated with diarrhea, a great many movements may occur during a day. On the other hand, in so called constipative states the bowels may not move for days or only after mechanical cleansing of the lower bowel is practised. Normally, the gastrointestinal tract should rid itself of its contents per rectum in twenty-four to thirty-six hours. This is, however, no fast rule, since there are many apparently normal individuals in whom the food residue leaves the organism in forty-eight hours after ingestion. In some people, the desire for evacuation comes on regularly and uniformly at definite periods, but in others, more often, no such rhythm is noted.

Consistence.—Normally the stool is a cylindrical mass of doughy or soft consistency. At times it varies in form, although its consistence may be normal. When the stool is of unusually small calibre, some organic involvement of the lowermost bowel or rectum may be suspected, as annular stricture of the rectum or anus and prolapsus ani. When ribbon shaped or flattened stools are seen, a condition of partial obstruction is immediately inferred, as occurs in cases of organic rectal involvement, viz., lateral rectal stricture, cancer on the rectal wall only partially obliterating the lumen, some inflammatory lesion situated on the wall with which local congestion or swelling is associated, thus lessening the calibre of the tube, in those cases where some inflammatory lesion from without or mass from without presses or encroaches upon the lumen of the rectum as in ischiorectal abscess, acute or chronic disease of the prostate, uterine prolapse, tumor of either uterus or bladder, etc. A functional spastic involvement of the lower bowel will also favor the production of either pencil or flattened stools. In other instances, where the consistence of the stool is more firm than usual, the shape or form will also exhibit variations in contour. Where the feces have been retained in the lower bowel for more lengthy periods than normal, the material often loses its watery elements because of resorption and assumes a more firm and brittle quality, thus tending to break very easily into small hard masses, or scybalæ, either quadrilateral, fusiform, or rounded in shape. This type of stool is often found representing the excreta from cases of obstinate constipation due to atony or dilatation of some portion or all of the large intestine.

In spastic constipation, the stool though firm is usually of small calibre and pencil or finger form. The consistency may also vary from that of extreme solidity or hardness to that of extreme fluidity. In ordinary diarrheas and enteritis, a semisolid, semifluid, or fluid excrement may obtain. In rare instances, when serous stools occur, cholera, and various poisonings may be suspected. When mucus preponderates and presents itself in thick masses, sometimes in the form of a bowel cast, a mucous colitis is strongly suspected. When a condition of increased or rapid peristalsis or increased motility exists, the stools will usually be unformed and fluid in nature.

Color.—Normally the color is a dark brown due to hydrobilirubin or urobilin (altered bile), especially after a diet such as the test diet. In cases, however, where milk or starchy foods predominated in the diet, a lighter brown may be expected. Fruits such as grapes, plums, berries, and the like, as well as wines, may produce very dark colored stools. These ingredients are, however, not a part of the test diet and may be ignored if the test diet has been subsisted upon for a sufficient length of time. When bilirubin, or unaltered bile, occurs in the stool, we must suspect some pathological state, since normally unchanged bile is known to exist not beyond the ileocecal valve, or, in other words, is practically confined to the small intestine. The color of such a stool is usually green or greenish yellow, and may suggest a hyperperistalsis of the small intestine in which the biliary content of the small intestine is forced into the large bowel before the process of reduction associated with putrefaction has had time to alter it.

When a decided deficiency in the bile content or total absence occurs, a clay colored or very light stool will appear. This tendency toward a light coloration of the stool follows because of diminution in original bile pigments and because of an increase in undigested or neutral fats. This deficiency in bile may be due to an obstruction to the outflow of bile from the common bile duct resulting from either calculi, inflammation of the bile ducts, inflammation of the duodenum, including the papilla of Vater, tumors of either pancreas, duodenum, or the bile ducts, and in cases of pressure upon the common duct from without. We may also have a deficiency of bile resulting from actual decrease in its production, as in anemias, poisonings, rickets, cancer of the liver, cirrhosis of the liver, or amyloid disease of the liver, etc. At times an excess of fat alone, as in the free drinking of cream or milk, may produce a light colored claylike stool. As a rule, however, when fat shows in the stool there is most often an associated defection in bile content in the intestine. Where steatorrhea is met with despite the presence of associated bile in the excrement, we must be ever mindful of pancreatic insufficiency, and localized disease of the intestine, as in tuberculosis or amyloid degeneration.

Visible blood when apparent in the stool is usually due to hemorrhage from some portion of the lower bowel, as in hemorrhoids, ulcer of the rectum or sigmoid, polyps or cancer of the lower bowel, and from any condition in which a break in continuity of the bowel lining has occurred. Rarely, excessive bleeding from above, as in gastric or duodenal ulcer or new growth, may contribute to the exhibition of visible blood in the stool; especially is this the case when a coexistent bowel hypermotility displays itself. As a rule, when the bleeding occurs high up in the gastrointestinal tract, the stool will exhibit a brownish red, chocolate, black, or tarry coloration as in melena. Occasionally in bleeding from as low down as the colon, as occurs in dysentery, the blood may not demonstrate itself visibly, but only in occult form.

Odor.—The odor of the stool may usually be attributed to scatol, one of the products of fecal putrefaction, and in a less degree to indol. In those instances where carbohydrate fermentation manifestly asserts itself, a sour odor will follow from the resulting products of fermentation such as the volatile fatty acids, lactic acid, acetic acid, succinic acid, etc. Where albuminous putrefaction has taken place, in predominating fashion, instead of the ordinary mild scatolic or indolic odor, there may result a peculiarly offensive odor due to the presence in increased quantity of albuminous fermentative products as scatol, indol, phenol, ammonia, and hydrogen sulphide. A pronounced sour odor may suggest a defective starch or fat digestion, whereas a pronounced offensive odor would suggest defective digestion probably associated with some pathological anatomical changes in some portion of the digestive tract. Excepting profound constipation, albuminous putrefaction will establish itself in diseases of the liver, gastroenteritis, pancreatic disease, and either syphilitic or cancerous involvement of the gastrointestinal tract, particularly low down. In these cases the increased putrefaction is due mainly to the degenerative changes in either the exfoliated normal tissue or in the exfoliated or loosely attached diseased tissue, or perhaps in the excess of physiological secretions. On the other hand where an extreme grade of hypermotility involving the entire gastrointestinal tract exists, or where the food residue does not reside in the large bowel for a time sufficiently long enough for fermentive changes to have taken place, the excreta when passed do not possess any characteristic fecal odor, but rather a chymic fragrance or no odor at all. In cholera, for instance, where the ingesta rush through the entire gastrointestinal tract, the stool resembles rice water in appearance and has little if any odor. In amebic dysentery, the odor of the stool may resemble that of glue. When fatty stools have been passed, a butyric acid or rancid butter odor due to fat fermentation may be noted.

Reaction.—The reaction of the stool normally is neutral or faintly alkaline. In those specimens where carbohydrate fermentation has occurred, an acid reaction will probably be demonstrable. When albuminous putrefaction has taken place, an alkaline reaction may be expected. The reaction has no other value than to inform us regarding the character of the predominating fermentation. The degree, however, to which fermentation has progressed will be elicited by other methods such as the Schmidt fermentation test.

Constituent inspection.—Upon detailed macroscopical inspection, especially after the stool has been properly prepared for examination, many additional points of value may be brought to light, which will decidedly enhance our knowledge of the subject. It might be proper here to make known the method of preparation. A walnut sized piece of excrement is ground up in a small glass or porcelain mortar to as fine consistency as possible, while a few c. c. of distilled water are gradually added until a mixture of uniform saucelike consistency is obtained. This is then spread in a thin layer upon a flat plate with a dark background, and the constituent portions of macroscopic size are examined.

The normal stool following a test diet and after the preparation just described will usually present a homogeneous specimen seldom showing more than pin head sized debris, but occasionally red brown pointlike remains which are either chaffy remains of the oatmeal gruel or the remains of cocoa nibs, if cocoa is eaten in the test diet. Vegetable or fruit remains as small fruit sand or seeds resulting from fruit eaten prior to the institution of the test diet may often be observed in a normal stool. As a rule, no other macroscopic ingredients will be noted in a normal specimen.

In pathological specimens, on the other hand, many other ingredients may be noted. For instance, numerous connective tissue and tendon remains from the chopped meat of the test diet which appear in the stool as whitish yellow threadlike substances of solid consistence, will speak for probable gastric disturbance as achylia gastrica, cancer extensive enough to have despoiled proper HCl and peptic secretion, or functional derangement involving secretion or motility either separately or jointly. Of course, our gastric studies would probably help check up these stool findings. As a rule, defective connective tissue digestion points to a disturbance in both peptic and acid secretion, yet it is possible that a marked deficiency in either one may alone produce similar indigestion. We dare never forget that the underlying cause back of these various disturbances may be an ill acting nervous system rather than some purely local anatomical change. At times it may be difficult to distinguish these connective tissue remains from shreds of mucus and in order to assure ourselves, we can employ the acetic acid test through which it will be found that acetic acid when applied to connective tissue dissolves or causes it to disappear whereas if applied to mucus, coagulates or causes it to appear more distinctly. Only rarely do we find occasional isolated tendon fibres in the normal stool.

Muscle remains look like small brown colored rods which resemble splinters of wood that may have been crushed by pressure. These remains when macroscopically visible point to a disturbance in intestinal digestion, most probably a defect in tryptic activity either owing to a diminution or failure in the secretion of trypsin, or owing to a lack in the secretion of bile as a result of which the trypsin is in a more or less inactivated state. Often these remains may occur in conjunction with connective tissue remains which would probably denote associated gastric disturbance. Muscle remains in the stool indicate intestinal indigestion resulting from one or more of many possibilities, such as acute or chronic pancreatitis, functional failure in the pancreatic secretion, failure of the entrance of secretion into the duodenum as a result of stone in the pancreatic duct, stricture of the duct following inflammation therein or from without as a result of adhesions or tumor encroachments, tumor of the entire pancreas either benign or malignant, cholecystitis or cholelithiasis, other diseases of the gallbladder or duct, adhesions resulting from disease in other organs and which oppose the expulsion of bile into the duodenum or in those diseases of the liver which cause a depression in the secretion of bile.

Potato remains in the stool appear like glassy, transparent granules and may easily be mistaken for flakes of mucus. They are usually round or globular in shape and in a flat spread out layer of the prepared specimen, seem to project above the level of the sample and are thus distinguished from mucus flakes which lie flat or even with the remainder of the specimen. They may sometimes be seen in small quantity in those normal cases where a large vegetable diet was eaten and where a bulky so called vegetable excrement results. As a rule, however, these potato remains after a test diet would suggest a disturbance in amylolytic intestinal digestion, either a failure or diminution in the secretion of amylase of the pancreatic juice or in the inverting ferments of the intestinal secretion or both. The underlying condition may be either functional or organic in nature. Causes similar to those previously mentioned in connection with tryptic indigestion may here also manifest themselves. Acute or chronic duodenitis or any organic disease of the duodenum may produce a defect in amylolytic digestion. Very often amylolytic and tryptic indigestion go hand in hand and coexistent therewith, fat indigestion may also occur.

Fat remains may often show in the stool in variable quantity and when in large quantity, the stool assumes a light or claylike color and is of putty like consistency. The less fat there is in the stool, the darker is its color apt to be and vice versa. In rare instances, only small clumps of fat will be noted rather than a homogeneously admixed deposit of fat. Of course, the presence of fat in the stool may be attributed to a lack or deficiency of lipase or fat ferment in the pancreatic secretion or to a lack of proper lipolytic action. Most often where a faulty digestion of fat exists, the stool will present a deficiency in bile content hence the lighter color of the stool. The absence of the bile also probably retards the lipolytic action of the pancreatic juice. The same possible morbid conditions that contribute to the production of tryptic or amylolytic indigestion may here similarly assert themselves.

Thin mucilaginous mucus in scant amount intimately admixed with the remaining excrement is always present in a normal stool, but is hardly visible to the naked eye. When in larger quantity, it has pathological significance. It may be seen in the form of large or small flakes. When these flakes show in fair degree, some catarrhal intestinal disturbance may be suspected. The smaller the flakes of mucus, the greater the probability of catarrhal disturbance in the upper portions of the large bowel as the cecum, ascending colon, and transverse colon but should the stool at the same time be liquid in character then it may be possible that a hypermotility of the small and large bowel existed and these flakes may have had their origin in some portion of the inflamed small intestine. The larger the mucus flakes, the more easily they are recognized and the greater the probability of their origin in the lower portion of the large intestine. The microscopical examination of these various flakes may more definitely inform us regarding their origin. When mucus appears in larger strips or shreds, casts or tubular form, we may at once suspect either a membranous enteritis or mucous colitis. When the mucus loses its original glassy or transparent character and assumes a translucent, whitish, or even brownish coloration or a change in its consistency from that of mucilaginous softness to that of gumminess or even greater hardness, then some other factors must be thought of before considering the cause a functional or neurotic colitis. Such characteristics may point to definite organic involvement. When a purulent mucus exhibits itself, we are forced to suspect some ulcerative process involving either sigmoid or rectum.

Flakes of pus or pure pus would imply some definite organic infective process in the form of either small erosions, large ulcerations, or abscess. When appearing as pus flakes, the large bowel higher up must be affected whereas if in larger quantity, the pus must originate from low down as in ulcer of the sigmoid or rectum, either benign or malignant; rupture of an abscess in the bowel, or from some neighboring organ into the bowel, as a psoas abscess, fistula in ano, etc.

Blood when found, of course, means hemorrhage. The quantity of blood will signify the degree of hemorrhage. The larger the quantity of visible blood, the greater the probability of the bleeding in the lower rectum as in hemorrhoids, ulcer, fissure, fistula and ulcerous cancer. Of course, it is possible to note blood in the stools of patients with a bleeding point high up when there has been a very active movement of the entire intestinal tract. Occult blood will be found through chemical means.

Occasionally large crystals of ammonium magnesium phosphate may be found in putrefying malodorous stools and are recognized by their well known coffin lid shape and chemical reaction, being soluble in acids, as well as the grating sound when the feces are ground up.

We may also at times find foreign substances as fruit sand, stones, tape worm proglottides, and other parasites which all have their special signification.

Thus is concluded a hurried survey of the macroscopical characteristics and significance of the stool constituents. In a later paper the microscopical, chemical, and other stool characteristics will be considered.

1332 Spruce Street.

THE INTRAVENOUS USE OF CALCIUM SOLUTIONS AS AN AID IN THE TREATMENT OF TUBERCULOSIS.

With a Report of One Hundred and Twenty Cases.

By Thomas J. Beasley, M.D.,
Indianapolis.

Attention is invited to three previous articles upon this subject by the author (1). The subject of calcium deficiency and its relation to tuberculosis has been commented upon by many observers, and the deposit of calcium in healed or healing tuberculosis areas in the lungs stands without parallel in pathology. In no other disease manifestation do we find that the organism utilizes calcium so uniformly in walling off disease areas as in tuberculosis of the lungs. All are familiar with the frequency and abundance of calcium deposits in healed tuberculous lesions of the lungs, this being in contrast with the scantiness of these deposits in the lungs of those who succumb to the disease. These facts have been impressed upon us by observation in the autopsy room and in the x ray laboratory. Believing that these facts will be conceded by all, then is it not fitting that we should devote our effort to the study of this peculiar phenomenon in the healing of tuberculous areas of the lungs? As the organism does seem to use calcium in an elective and selective manner in bringing about the cure of this disease and moreover if there is a deficiency of this salt in the blood of the tuberculous, may not the treatment be improved if in some efficient and direct manner we supply the blood with this salt?

The infrequency of tuberculosis among lime workers has been the subject of much comment by many observers, and for many decades various preparations of lime have been used and recommended in the treatment of this disease. However, most of the effort to supply tuberculous subjects with calcium has been by oral administration. While this method may be of some value, the alkalinity of this salt soon impairs gastric digestion and must therefore be withdrawn before much good can be accomplished and again we cannot be assured that a sufficient amount of the calcium reaches the blood to be of value.

Believing that calcium does bear at least some positive relation to the healing of tuberculosis and with these objections to the oral administration of this salt in mind an attempt was made to find if it was possible to inject solutions of calcium directly into the blood stream in order to supply it with an amount of that salt which would be slightly in excess of the usual calcium content. After considerable observation and animal experimentation, it was found that solutions of calcium chloride could be administered intravenously over long periods of time without any apparent harmful results and this form of calcium has been used in the treatment of the cases included in this report.

The dose to be used was given much thought and study and it has been learned that many factors must be considered in adjusting the dose to meet the individual requirements of different patients. It is obvious that one of the most important purposes of this procedure is to saturate the blood with that amount of calcium which is apparently normal or slightly in excess of the normal percentage. To accomplish this it must be borne in mind that the strictest individualization of cases is imperative.

It must readily occur to any one that this saturation of the blood will be more quickly attained in a patient whose body weight is say ninety pounds, which is far below the average, than in one whose body weight is 175 pounds.

Hess (2) reports the calcium content of the blood of normal controls as determined by McCrudden's method. His figures in twelve cases range from 0.062 to 0.075 gram CaO to 1,000 c. c. of blood. In thin patients where the proportion of blood to a pound is greater than in fat ones it may be assumed that the normal calcium content does not exceed in any case calcium equal to twenty grains of calcium chloride. On the other hand patients weighing 125 pounds or less with deficient blood supply showing a long coagulation time and much calcium deficiency, must retain calcium in their blood stream equal to not less than eight grains of calcium chloride.

From this it becomes apparent that in administering calcium intravenously, the body weight of the patient must be taken into consideration in the adjustment of the dose. If an easily applied method of the estimation of the total blood content of the body were available it should be used instead of basing the estimate of blood on the body weight.

It has also been observed that some patients can tolerate larger doses of calcium than others. This may be due to the fact that there is a more marked deficiency of calcium in some tuberculous subjects than in others. A study of the coagulation time of the blood of all the cases treated has apparently been an aid in the adjustment of the dose. The coagulation time of the blood of most of the 120 cases observed has exceeded the normal time of eight minutes. In a number of cases, this time has been more than doubled. From observations of the coagulation time before beginning the injections and after each fifth injection it has been found that, as a rule, the clotting time has been reduced, and in ratio with this time reduction the dose has been decreased. Further observation of this factor is necessary before conclusive data can be presented but its apparent value has been repeatedly impressed upon us.

It has been found that it is advisable to begin with a dose of one grain, gradually increasing until a maximum dose of six grains has been given. At this point the dose is slowly decreased as the coagulation time shortens, and that amount is given which will be found necessary to maintain the coagulation time at normal or slightly below normal. The injections have been continued from six months to one year.

The many difficulties encountered in making a clear stable solution of the calcium salt necessitated a careful routine method of preparation. The pure calcium salt is dissolved in freshly distilled water and brought to boiling. It is then neutralized by either acid or alkali and titrated. From this the proper strength solution is made. The solution of proper strength is then passed through a Pasteur-Chamberland filter into a measuring burette carefully protected from dust. From here the solution is run into sterile ampoules made of tested glass and sealed with rubber stoppers, after which the sealed ampoules are sterilized by fractional sterilization. This method yields a solution free from acid and permanent. It is sterile and ready for immediate use.

Now, after an observation which extends over three years and the treatment of ninety-six cases and the observation of many other cases in the practice of my confrères, it has been concluded that the intravenous use of calcium solutions is of value as an aid in the treatment of tuberculosis. It is not the purpose of this contribution to create the impression that this line of treatment is offered as a radical departure in the treatment of tuberculosis, but, on the other hand, it is believed to have been proved of value as an aid in the treatment, and it is recommended that it be used only in conjunction with any or all of the other recognized and established methods.

The results following this method have in a majority of the curable cases been surprisingly good, and, in many instances, patients who had failed to improve under other methods of treatment have made excellent improvement and uneventful recoveries when placed on calcium injections. Soon after the injections are begun there is a decided change in the clinical picture. The appetite and strength improves, cough lessens, and sputum decreases in amount. Regular sputum examinations have been made, and while the results have not been compared with findings following in cases not so treated, it has been apparent that the number of tubercle bacilli gradually decrease in number and disappear more uniformly than in other cases in which calcium has not been given intravenously. Calcium thus given appears to have a very marked tonic effect. Patients almost without exception become more comfortable and comment upon a feeling of well-being. Tabulation of 120 cases, taken in the order in which they presented themselves for treatment without selections being made, are herewith presented.

INCIPIENT CASES.

No. of cases.	Apparently cured.	Disease arrested.	Improved.	Unimproved.	Dead.
34	22	6	2	3	1

MODERATELY ADVANCED.

No. of cases.	Apparently cured.	Disease arrested.	Improved.	Unimproved.	Dead.
51	15	12	9	8	7

FAR ADVANCED.

No. of cases.	Apparently cured.	Disease arrested.	Improved.	Unimproved.	Dead.
35	3	—	10	4	18
120	40	18	21	15	26

Two cases of nontuberculous abscesses of the lungs have been treated by this method with most excellent results. The author reported one of these cases in the July issue of the *Indianapolis Medical Journal.* Dr. Frank Brayton, of Indianapolis, reports another case of nontuberculous abscess of the lung following pneumonia, treated by intravenous injection of calcium (3). Dr. Arthur A. Rang, of Washington, Indiana, and Dr. Samuel J. Copeland, of Indianapolis, have very kindly supplied reports of twenty-four cases included in the above tabulation.

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427 NEWTON CLAYPOOL BUILDING.

ACUTE APPENDICITIS.

By ALEXANDER NICOLL, M. D., F. A. C. S.,
New York,
Professor of Clinical Surgery, Fordham University, School of Medicine; Surgical Director, Fordham Hospital, First Division; Attending Surgeon, Sea View Hospital.

(*Concluded from page 66.*)

Diagnosis.—It would seem that a careful examination of the patient and the finding of the signs enumerated should lead the physician to the correct diagnosis. I should like to call attention to the fact, however, that when you have made a diagnosis of appendicitis that is all you have done. You cannot definitely and consistently predict the actual condition of the inflamed appendix. The most vigorous rigidity and largest amount of reaction may, in certain patients, be called forth by a comparatively mild attack of inflammation which will take care of itself under any form of treatment, while on the other hand a vicious, deadly, overwhelming infection may placidly masquerade under signs and symptoms which are deceptively mild in appearance until the death blow has been struck and your patient is getting ready to die. The utmost skill on the part of the examiner may not avail in certain of these cases and it is well to bear in mind that cases occur—we meet them every day—in which the patient has appeared to be doing well until a sudden turn for the worse has called the surgeon post haste to open an abdomen in which peritonitis has actually existed for thirty-six hours or more. These things can be avoided, I believe, if the physician will bear in mind the remark just made, that the diagnosis of acute appendicitis is nothing more than a diagnosis of acute appendicitis and it is not possible for any man, no matter how great his diagnostic gift may be, to predict accurately the condition of the appendix and the probable outcome of the inflammation.

The important feature of diagnosis seems to me to be, principally, the ability to differentiate between acute appendicitis, which condition I consider absolutely a surgical condition under practically all conditions, and other conditions which are distinctly nonoperative in their nature. Appendicitis closely simulates quite a number of acute intraabdominal conditions which are surgical in character and which call for laparotomy. The indications for treatment in these conditions are clear cut and differ not at all from the indications for treatment of appendicitis in so far as opening the abdominal cavity is concerned; and our principal concern, as a matter of fact, is the indication for operation. The nonoperative conditions, on the other hand, are serious ones which would be markedly increased in their gravity by an unnecessary opening of the abdominal cavity, and it is of the greatest importance that we make our differentiation accurately between acute appendicitis and this type of condition. Let us, therefore, consider for a moment some of the most common of these nonoperative, so called "medical," conditions. The outstanding conditions are pneumonia; gastroenteritis, especially of the abdominal grippe type; pyelitis; and acute exanthemata. It will be seen that our greatest difficulty lies in the conditions which affect children.

A very good dictum of a distinguished French clinician is "when children complain of pain in the stomach, examine the chest." This may be stretched to include adults as well. Very few surgeons have not at some time been placed in the position, an exceedingly trying one, of having to decide for or against operation in a little patient whose desperate condition is such that operation itself may be either a life saving or life destroying procedure—depending upon the actual underlying condition in the chest or abdomen. It is but fair to say that cases occur in which diagnosis is extremely difficult, and in which the outcome of noninterference is awaited with anxiety by the conscientious surgeon whose judgment has said to him, "pneumonia"! Again, it is not altogether uncommon to meet with the two conditions simultaneously, associated perhaps as cause and effect. The signs which should be of assistance in making a proper diagnosis may be stated as follows: In pneumonia the pain is likely to be irregular in position and to shift with equal irregularity. It is likely to be found high up in the abdominal cavity, almost too high for the pain of appendicitis, or it may be more or less confined to the position of the small intestine. Nausea and vomiting are quite likely to occur in children and not so likely to be met with in adult patients. Children not infrequently continue to vomit for forty-eight hours in pneumonic conditions with marked general symptoms of general septic invasion. Tenderness is likely to be as irregular as the pain, frequently being referred to widely separated points or areas within the abdominal cavity within a short space of time. True rigidity is not present, but the determination of this sign calls for all the examiner's skill, coupled with a vast amount of patience in obtaining the confidence of the patient in order to "unmask the abdomen." Temperature is high from the first, as a rule, 104° to 105° F., and frequently the attack is ushered in with a chill. The examination of the white blood cells shows a very high count, usually over 30,000, and this leucocytosis is present almost from the inception of the attack. Examination of the chest may reveal early signs of consolidation, but unfortunately these signs in the very early stages are very slight or absent and do not put in their appearance until twenty-four hours have passed. A careful observation of the breathing of the patient may disclose increased rapidity and a searching for air with dilating alæ nasi. Cough may be present early and its presence should not be ignored. The patient's face is usually flushed, and may be cyanotic. Enemas will usually produce movement of the intestines. The abdomen is likely to be retracted in the early stages. The patient's condition is profoundly toxic from the inception of the attack, and there is a quite apparent disproportion between the toxemia, the local abdominal signs, and the length of time of the existence of the illness. The patient is much too sick too soon for the condition to be primarily abdominal. A day or two of malaise with headaches may have preceded the attack.

I do not know of any more difficult position in which the general practitioner is placed than the one which calls for the immediate and correct diagnosis early in an attack of gastroenteritis associated with acute abdominal pain. As a rule the surgeon who is called into consultation has a much easier time of it because by the time he has arrived symptoms have had the opportunity of coming to the surface, are more marked, and the patient has had a chance to get rid of the pains and apparent rigidity which are to disappear spontaneously. The medical attendant is naturally torn between two conflicting desires, the wish to do his patient absolute justice and treat him along the lines of greatest safety, and the not unnatural repugnance of appearing in the unpleasant rôle of alarmist. The following suggestions are set down with a clear appreciation of the difficulty of diagnosis early in an attack, and a desire to be of assistance in what is unquestionably, at times, a predicament. In gastroenteritis due to errors in diet the pain is colicky in character, and continues so. The pain may be spoken of as productive in that it is soon accompanied by diarrhea, which is a constant sign. Nausea and vomiting are rare. Tenderness is widespread over the region of the small intestine, and frequently is not present in the intervals of the colicky pain. Both pain and tenderness are relieved by pressure; the patient wishes to lie prone, does so, and feels better for it. The pain and tenderness of appendicitis are aggravated by pressure of any sort, the patient wants to lie on his back, and usually is relieved, or relieves himself, by drawing up his leg or legs. Rigidity is absent. Temperature is rare. Leucocytosis is not present. In gastroenteritis of the so called abdominal grippe type the pain, vomiting, and tenderness are as above. The temperature is present early and may be high from the onset, 103° to 104° F., and the pulse rate is increased in keeping with the temperature. The attack is usually ushered in with severe headache, and the usual signs of severe general toxemia make their appearance early. Again it is clearly seen that the patient is too sick too soon. Leucocytosis is constant and frequently very high, even climbing up to 50,000, as in a recent case of mine which went on to infection of the peritoneal cavity.

In the exanthemata the surgeon is not infrequently called upon to make a diagnosis of appendicular inflammation. The difficulty usually arises, as with pneumonia, before the diagnostic signs of the nonoperative condition have come forth clearly. Indeed, I feel that we have to deal with a condition here which is a little different from the usual problem; for I feel that here the diagnosis must be made between a nonoperative appendicitis and an operative type of the same condition. The explanation of the abdominal symptoms exhibited by these little patients is as follows: the appendix, especially in childhood, is very rich in lymphoid tissue. In the exanthemata, especially scarlatina, there is a general enlargement, engorgement, and hypertrophy of the lymphoid structures resulting in a generalized adenopathy. The faucial tonsils respond to the specific toxin, and the rest of the lymphoid tissue does the same. The collection of this tissue in the appendix wall does its share and the patient has not only a faucial tonsillitis, but an inflammation of his "abdominal tonsil" as well; thus he has, in effect, an inflammation located in his appendix, in reality an appendicitis. This little enlarged, engorged, inflamed appendix is no more to be removed than are the chains of glands on each side of the patient's neck. The importance lies therefore in determining first that his abdominal signs are but the expression of reaction to a specific toxin, and second the nature of the toxin as far as our present knowledge carries us. Points to be borne in mind, therefore, as aids to diagnosis in this type of condition are as follows: The history of the patient should put one on his guard, indicating the existence of two or three days of malaise before the onset of the abdominal symptoms. The fact of the existence of an epidemic is usually mentioned to the physician or surgeon who is not familiar with the conditions of health of the immediate neighborhood, and such warning is not to be lightly passed over. Pain is likely to be referred at once to the appendix area. Nausea and vomiting frequently are seen at the onset of scarlatina, but it is not at all unusual to have the disease set in with a convulsion, at least in the younger patients, a symptom I have never observed in appendicitis. Tenderness is present over the appendix. Rigidity is not present. Leucocytosis usually occurs in the scarlatina cases, but the percentage of polymorphonuclear cells is likely to be low. Mass does not occur. I believe that the best diagnostic point in this type of case is a proper appreciation of the "sickness" of these patients; they are, as a rule, altogether too sick and too generally poisoned for the apparent gravity of their abdominal signs. They, too, are too sick too soon. Careful examination is likely to show a general lymphadenopathy. Examination of the mouth and throat may give signs diagnostic of the exanthemata. The giving of an enema may be of assistance, always giving some result in the exanthemata as opposed to the stasis of true intraperitoneal inflammation. No mention of the appearance of a rash is made because it is only in the cases in which the rash is either absent or much delayed that the diagnosis is likely to be difficult.

Pyelitis at times may offer some difficulty in the matter of diagnosis, and considering the relative frequency of this condition, especially in the young, it may be well to review the points in which the two conditions may resemble one another, and to set down, as far as possible, the symptoms which may be of assistance in differential diagnosis. In pyelitis the history usually indicates a period in which there has been some malaise, before any local trouble is complained of. Pain is likely to be over the kidney region or along the course of the ureter. Nausea and vomiting are not likely to occur except with high fever. Tenderness may be present over the site of the usually placed appendix, but it is also possible to elicit pain on pressure in the costovertebral angle. Rigidity is found, if at all, in the costovertebral triangular space, but it may be found all along the course of the ureter in cases in which there is marked ureteritis. Temperature is usually high early in the condition, 104° to 105° F. in young children. Pulse rate is slow in proportion to the temperature. Leucocytosis is likely to be present, but as a rule the percentage of polymorphonuclear cells is comparatively low. Certain positive signs of pyelitis are likely to be present and their extreme importance is not to be glossed over. They are principally dysuria and changes in the urine, bacilluria, pus, etc. Finally, the patient's general "sickness" is out of all proportion to the severity of the abdominal signs, and he is "too sick too soon."

In conclusion, in reviewing the nonoperative conditions which are likely to simulate acute appendicitis, we are at once struck by the fact that they all have two points in common, and upon the proper appreciation of these two points and the knowledge of their significance depends the success or failure of diagnosis: 1. The history indicates that the abdominal signs were not the primary cause of the patient's illness. 2. A careful survey of the patient warns the surgeon that the patient is too sick too soon for the condition to be primarily appendicitis.

A discussion of conditions other than the nonoperative may properly be dismissed with the statement that there are many conditions which call for operation and which resemble appendicitis very closely. The indication for treatment is clear in these cases, and that treatment is similar, in general operative approach, to the treatment of appendicitis. We have, therefore, our problem reduced to the terms of a more or less purely academic discussion, which may be prolonged at the pleasure of the writer; let us go on.

Treatment.—As to treatment, my own feelings lead me to dismiss the matter almost in a word. The treatment of acute appendicitis is primarily operative, and any form of treatment which delays operative relief is contrary to the best interests of the patient. Many conversations with physicians have led me to believe that there is supposed to be a class of cases in which operation is contraindicated because of various apparent indications that the patient is unable to stand either the shock of anesthesia, the operative manipulations, or the toxicity of general anesthesia. These classes of patients have been indicated as follows: 1. The very aged, in whom any operation is fraught with peril because of the inability of the aged patient to withstand even a relatively small amount of shock. 2. The patient who has a rapidly failing compensation of heart, or liver, or kidneys, in whom the added shock of general anesthesia, plus the shock of operation, and the toxicity of the anesthetic, would be sufficient to cause complete destruction of compensation and the consequent death of the patient from the exacerbation of the visceral disease. 3. The patient whose peritoneal cavity has been rapidly flooded with infectious material as the result of huge perforation, and whose condition is one of tremendous shock, bordering on collapse. Is "reaction" to be awaited here?

I believe that "conscientious objectors" along these lines are objectors because of their failure to understand the ease and simplicity of the properly conducted operation, the possibilities of local anesthesia combined with the administration of gas and oxygen, and the freedom from toxicity of this combination of anesthetics. It is well to point out that the operative procedures are most simple and easy in the class of cases which show the greatest shock and prostration, because of the usual absence of adhesions in this type of case. To answer, seriatim, the above objections we may say: 1. The aged very seldom have appendicitis, but when they do they are more likely to die of the disease than from the methods of relief held out to them. 2. The cases in which there is rapidly failing compensation of visceral lesions will suffer more damage from the toxins of the disease than they will from the above indicated anesthesia, and the operation may be made practically shockless. 3. The patient who is shocked as the result of flooding of the peritoneal cavity with pus will scarcely be improved if the surgeon tides him over his shock only to allow him to be overwhelmed with the sepsis of the untreated focus of infection.

I should be unwilling to leave the subject of treatment in general without putting in a special plea for one class of patients. I should like to be especially emphatic, and say that under no circumstances are there any contraindications to operation, and that operation cannot be done too soon for the children. These little patients have very special indications for early operation, and the two most compelling are these: Children tend to manifest gangrene in a very high percentage of cases. The general peritoneal cavity of children is very poorly protected against infection. There are, perhaps, many reasons for this inefficiency of the protective forces of the child, but one is sufficient, the undeveloped condition of the omentum, that organ without which the surgery of the peritoneal cavity would be as a book that is closed.

When to operate.—As to the question of when to operate, two words suffice: *at once.*

Operation.—The operation to be properly done must meet these conditions: It must be simple in method, it must be gently and quickly done, and it must be complete. The question may be properly approached from a separate consideration of three general clinical pictures which are customarily met with: In the first twenty-four hours; in the face of a diffuse peritonitis; in the stage of abscess formation.

In twenty-four hour cases the pathological process is practically limited to the appendix, the indications are met when the abdomen is opened and the appendix is removed. The question of drainage must be settled by the surgeon who is called upon to make up his mind that the peritoneal process is such that pus either will form or will not. It is usually quite safe to omit drainage altogether in the cases operated in the first twenty-four hours.

In the presence of diffuse peritonitis the peritoneum is visibly inflamed and may contain free pus, or the peritoneal reaction may be expressed in the form of massive, but easily broken, adhesions. In either case drain the region, and it is good and conservative surgery to drain all cases when operation is done in the face of a diffuse peritonitis or one in which the fragility and apparent inefficiency of the adhesions might lead one to believe that the process is still unchecked.

In the stage of abscess formation, I believe that it is well to approach the entire pathological area from a point not as yet involved in the inflammatory reaction. Thus I make it a practice so to enter the peritoneal cavity that the actual entering of the infected mass is avoided. Once in, the peritoneal cavity is to be walled off by a cofferdam of gauze pads, moistened with saline, so placed that the entire infected area is isolated. As a rule I make use of three pads for this purpose, one placed below the abscess to protect the pelvic peritoneum, one to the inner side to protect the centre and left side of the abdominal cavity, and one above the mass to prevent leakage up the right lateral gutter of the posterior abdominal wall. When this cofferdam has been placed the abscess may be approached and dealt with with the utmost safety, in fact almost as though the entire infected area were without the peritoneal cavity proper. When the abscess cavity has been entered sponging is avoided and the fluids removed by means of the Kenyon sucker. The appendix is sought for and removed in as simple a manner as possible, good retraction enabling the surgeon to reinforce touch with sight; drains are placed according to the involved portions of the peritoneal cavity—usually one into the right lateral gutter and one into the pelvis—and the abdomen is closed. The cases in which the appendix cannot be removed in this stage of abscess formation must be very few indeed, and the importance of removal cannot be overestimated; indeed, a paraphrase of the well known legal principle should hold good here—a man should be but once placed in danger of death from an attack of appendicitis.

Aftertreatment.—This phase of the question is so important and so complex that it is not possible to do it justice in a paper of this sort. I shall, therefore, briefly outline the methods which we have found to be successful in the first surgical division at Fordham. As a rule aftertreatment is carried out along these lines: The patient is immediately placed in Fowler's position. Enough morphine is given to control severe pain and to prevent the shock of such pain. After twenty-four hours eserine salicylate is combined with the morphine to prevent undue intestinal relaxation. The morphine is discontinued as soon as possible, but the eserine is given regularly in doses of grain 1/150 every four hours till movement of the bowels is satisfactory. Nothing is allowed by mouth but hot water in sips until nausea and vomiting cease. If vomiting continues after twenty-four hours the stomach is washed out after every vomiting attack. Movement of the bowels is secured by means of enema as soon as there is indication that the peritoneal inflammation has been controlled, usually at the end of thirty-six hours, and never in the first twenty-four hours. Fluid diet is started after the patient has been six hours without vomiting and the first thing given as a rule in something for which the patient expresses appetite. Tea is an excellent beginning for many patients, but I am accustomed to gratify appetite for many strange forms of fluids and find that this attention to the patient's "wants" works well. After twenty-four hours of fluid diet the patient is placed on soft diet.

When pulse, temperature, and local condition indicate that the peritoneal inflammation is under control, and drainage is seen to be efficient, calomel and soda sequence is given, and once the patient's bowels move well from above, he is rapidly returned to regular diet and nourishment is gently forced.

119 West Eighty-eighth Street.

THE TREATMENT OF LOCOMOTOR ATAXIA BY THE MALONEY METHOD.*

By Heinrich F. Wolf, M. D.,
New York,
Chief of the Department of Physical Therapy, Mt. Sinai Hospital and Dispensary, New York.

The term "locomotor ataxia" shows how much importance was given to the symptom of ataxia in cases of tabes dorsalis. At the time when neither the pathology nor the etiology of this disease was known it was natural that the inability to walk was regarded as the cardinal symptom. Frenkel's publication of his system of reeducation was therefore hailed as a great progress. The underlying principle of this method is the replacing of reflex actions as the control of the walking by control by the eye. Frenkel held that the sensibility improved in the course of the treatment, but I have never been convinced of this. I should even say that it is psychologically incorrect. If one function is trained to replace a missing or failing function, the patient will be inclined to use the new activation exclusively to the detriment of the failing one. The same would be true if an active muscle is used instead of a weak and inactive one. I have used the Frenkel methods for about twenty years and I have grown more dissatisfied with it as time went on. I have come to the conclusion that the Frenkel method is incorrect in every feature, but that it accomplished the very important purpose of directing attention to the idea of reeducation . From the new standpoint it appears wrong to allow the patient to control the more or less automatic action of walking by his eyes, as anything which catches his eye and diverts his attention or interferes with vision, as a bad light, upsets at once the established control. This has been the general experience.

The method of Doctor Maloney has practically done away with all the shortcomings of the Frenkel method. There are two basic principles on which Maloney has founded his treatment, relaxation and reeducation. It is immediately noticeable, on looking at a tabetic, that all his attention is focused on his walking and that he keeps his entire body stiff. This is due to fear. The patient is conscious of the lack of natural control when he is walking and tries to compensate for it by keeping all the muscles, even those that are not needed for the particular action, in a tense state. The Frenkel method has tended to increase this tension. Maloney, however, set out to combat this and accomplished it by his method of relaxation. I believe that the importance of relaxation has not been appreciated in the past and I dare say that we do not understand its value even now. Proper relaxation is at the bottom of every great and lasting success. This is a very difficult end to achieve, particularly in this country where everything is done under high pressure and where the nerves are constantly under high tension.

Let us understand the situation properly. The supply of energy that our body and mind may draw upon is limited. Energy used up in one way cannot be used in another. The best athlete is he who uses only those muscles that are needed for the performance of a feat, and not all of them promiscuously. A wrestler could not slip snakelike out of the grip of his opponent if he kept all his muscles stiff. A dancer or a crack runner unconsciously only uses those muscles that he needs, and it is exactly this husbanding of his forces which makes him look graceful. An analogy can be seen in mental feats. How often does one try vainly to remember a word or a fact which has slipped his memory and then, when the effort is given up and the mind allowed to wander, suddenly the elusive fact is recalled. A definite conscious effort to make a poem will rarely be successful. The old meistersingers who constructed poems according to fixed rules did not exactly reach the pinnacle of Parnassus. The Egyptian artist four or five thousand years before Christ formed with his hands potteries which make us gasp; he knew nothing about the science of his work, but natural instinct and his sense of the beautiful guided his hands when he made his form.

In the treatment of every case of locomotor ataxia relaxation is of very great importance. In some cases, which I have described in a recent paper (1), relaxation alone will improve the walking to a considerable extent. The fear subsides, the anarchical action of the muscles gives way to cooperation and a resulting improvement of the walking. Relaxation is absolutely necessary, too, for the second stage of the treatment, the actual reeducation. I have never noticed that the deep sensibility of the tabetics has improved under Frenkel's treatment, but I know that it is accomplished through the Maloney method. It is well known that in destructive and degenerative processes in the central nervous system not all the fibres are destroyed. The discovery that persons who are "hard of hearing" sometimes hear things that are not meant for them is a common and embarrassing experience. This is due to the fact that these people do not always pay attention to the slight impulses which they receive. We know that patients who had an attack of acute infantile paralysis many years ago can gain strength in muscles which were believed to be completely atrophied. I have now under observation a girl twenty years of age who had an acute attack fifteen years ago which left her hand quite useless. Three months' treatment resulted to my great astonishment in a reestablishment of usefulness of the hand. This does not mean that new ganglions, new nerve fibres were developed through the treatment, but that some existed which had not been destroyed and were capable of development. Even in the worst cases of locomotor ataxia in which a first examination would lead one to suppose that sensory nerve fibres were entirely gone, this is not the case. It must be understood that the impulses through these few fibres are so slight that they are of no use to the patient and he therefore neglects them altogether. If you blindfold this patient, induce full relaxation and direct his attention to one particular joint, you will notice that after a certain time the motion which was at first not perceived by the patient can be distinguished later. These impulses are generally so slight that the patient does not notice them and would not learn to notice them if he were not blindfolded or if anything distracted his attention. It is therefore necessary that the treatment should not be given in the presence of others. One joint after the other is taken up in this same way in order that the sensibility should be revived. The patient is placed in a reclining position and relaxes. He may wear pajamas and socks. We generally begin with the treatment of the ankle joints. We grasp the foot with one hand and move it gently up and down. If, as frequently happens, the patient does not recognize the movement, we ask him to focus his attention on any sensation he may have in that foot. After a number of movements the patient will say that he feels something. Now we specify the movement as follows: "The motion which you notice now is a downward motion"—or upward motion. If we continue this for a certain time, the patient learns to associate the sensation with the movement. It often happens that the patient believes he feels the downward motion while the foot is moved upward and it is our task to correct this erroneous interpretation of the sensation. The same exercises are performed with all the joints. Once the patient has interpreted sensation properly, much progress is made and we can proceed to the active, guided, and resistance movements. The rationality of these movements is evident. Even if sensibility has improved, the active motion will not be coordinated, because the proper cooperation of the muscles is lacking, particularly because the energy sent out into the different muscles is not properly distributed. To correct this, we guide the motions, i. e., we allow the patient to make a certain motion, but we guide him on his way, that he may correctly appreciate the sensation he is experiencing. By proper frequent repetition we can make the patient correlate the motion and the corresponding sensation. This means in fact a reestablishment of the normal control of the muscles.

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*Read before the Orthopedic Section of the Academy of Medicine, February 20, 1917.

The object of this paper is not so much to give an exposition of this method, which would be impossible without a demonstration, but to show the physiological and psychological foundation of the Maloney method. The best proof of its rationality is that blind tabetics are very rarely atactic. I would like to mention here a very interesting case. Three years ago I treated a patient who was a blind tabetic without ataxia. He suddenly lost his entire sensibility and was entirely helpless, as he had not the faintest idea of the position of his legs. It was very interesting to note how the patient gradually regained some of the coordination within two months. Unfortunately the patient died from pyelonephritis.

The difference between the Maloney treatment and the Frenkel treatment is very great and it lies particularly in the fact that the pure routine procedure, as it is practised according to the Frenkel method, is impossible. Each joint and each part must be treated according to its condition. Resistance exercises must be graduated according to the strength of the muscles; the strength of the weak one must be educated up to the strength of the stronger one to produce the proper balance. Only after sensation has been improved can we proceed to crawling and walking exercises. We first let the patient crawl on his knees and hands, gradually changing to walking on his knees, and then to actual walking. I personally do not believe in making the patient run or do stunts. I only try to make the walking look as normal as possible. There is much of mechanical treatment connected with it, and as the treatment ought to be given, if possible, twice a day for about an hour each time, I consider it advisable to instruct an attendant or a member of the household in the mechanical part under the supervision of the physician. I prefer women attendants, as these only have the patience which is necessary to do a certain motion hundreds of times without becoming neglectful.

I wish particularly to emphasize the absolute necessity nowadays, since we have an efficient method of treatment, of giving the patient the benefit of the specific treatment. I should never attempt to treat the patient while he is receiving intraspinous injections, as one injection easily undoes the strenuous work of weeks. I realize that this paper is not by any means a complete exposition of the subject, but I intended merely to point out the principles of this method in order that the practitioner might work out the system for himself.

REFERENCE.

1. WOLF: New York Medical Journal, September 9, 1916.

161 West Eighty-sixth Street.

Our Readers' Monthly Prize Discussions

Twenty-Five Dollars Is Awarded for the Most Satisfactory Paper

All persons, whether subscribers or not, are invited to compete for the prize of $25 offered for the reply deemed best by the editors to the following questions:

CLXXXIII.—How do you treat excessive menstruation in the unmarried? (*Closed.*)

CLXXXIV.—How do you correct bad spelling and forgetting in children? (*Answers due not later than July 15.*)

CLXXXV.—How do you treat acute tonsillar infections? (*Answers due not later than August 15.*)

The award will be based solely on the value of the information contained in the answer. No importance will be attached to literary style. Answers should preferably contain not more than six hundred words, and should be written on one side of the paper only. All papers submitted become the property of the JOURNAL, and should bear the full name and address of the author for publication. The prize will not be awarded to the same person more than once within a year.

The prize of $25 for the best answer to Question CLXXXII has been awarded to Dr. Nathan Hirsch, of Brooklyn, N. Y., whose paper appeared on page 73.

PRIZE QUESTION CLXXXII.

INFANTILE DIARRHEA PROPHYLAXIS.

(Concluded from page 74.)

Dr. John P. H. Murphy, of Washington, D. C., says:

In considering the prevention of infantile diarrhea we must remember, 1, that the digestive organs in the young are severely taxed to meet the needs of the growing body; and, 2, that the intestinal mucosa is delicate, vulnerable, and constantly exposed to chemical and mechanical irritation. While infants tend to adapt themselves to environment, each is nevertheless a law unto itself, differing from others in assimilative efficiency; when, therefore, these powers become weak or dormant, digestive disturbances and diarrhea under certain climatic conditions often go hand in hand. As the condition is most prevalent in summer, increasing usually during the hot and sultry months of July and August, the theory that stagnant heat prevailing in poorly ventilated and unhygienic apartments acts as a powerful depressant to infantile vitality seems obvious. Now add improper irregular artificial feeding in overclad babies and the principal etiological factors seem to have been ascertained.

With a view to proper prophylaxis, especially during the dreaded second summer, let us first advise that both mother and child go to the country. If this is impossible, plenty of fresh air in a large, well ventilated room, a cotton slip, diaper, and seasonable clothing are essential with frequent excursions to the seashore, cleanliness, and avoidance of contamination. Breast feeding in a healthy mother is far preferable and she should be educated in the care of her offspring. Her nipples should be kept soft, healthy, and pliable by olive oil, being washed with Castile soap before and after nursing. In artificially fed infants, bottles and rubber nipples should be boiled before using. Pure fresh milk from a herd of Holstein cows, containing not more than ten thousand bacteria to one c. c., delivered by sanitary dealers or from a milk station, is best. It should be heated to about body temperature when used and may be pasteurized if necessary. Overfeeding, especially on hot days, should be avoided. The quantity of each feeding may be cut to one half, the intervals increased, and the deficiency made up by boiled, cooled water given freely, observing of course the digestive capacity without ill effect.

Diapers should be changed frequently and the stools watched. If they show evidences of mucus, become clay colored or dark and foul smelling, 0.1 grain of calomel every half hour for ten doses in milk usually aids in the former, or 0.1 grain of podophyllin every two hours gives relief in the latter case. A small glycerin or soap suppository will often aid, while milk of magnesia, given occasionally in the milk keeps the bowels in good order. A little lime water added to the milk alters the casein and helps digestion, while eructations of gas may be relieved by a few drops of anise, peppermint, or brandy. Keep the mouth and gums clean, especially during teething. The mother should study her mental and physical condition.

Dr. Frank J. Williams, of Albany, writes:

The surest preventive of infantile diarrhea is an exclusive diet of breast milk from a healthy mother whose digestive and eliminative organs are in a normal state of functional activity. Unless the quantity of milk secreted by the breasts is wholly inadequate for the infant's needs, no additions are to be made to this diet except a little boiled water at times.

The artificially fed baby is daily exposed to the dangers of unsuitable food and bacteria, the usual causes of diarrheal disorders. A food combination properly adapted to the child's digestive power, regular feeding intervals and exclusion of all other articles of food are prime essentials. When the baby has a slight intestinal upset, as indicated by an abnormality in the stools, prompt measures will often abort more serious disturbances. A dose of castor oil is indicated when the first evidence of intestinal indigestion is observed, in order that all irritant accumulations may be removed. During the next twelve to twenty-four hours following this purgation absolute rest is ordered and no milk or other food given except barley water. The resumption of feeding is then started with small amounts, and gradually increasing up to the proper formula. With the asset of any acute disease the strength of the formula should be weakened at once to avoid taxing the digestion to its full capacity.

In hot weather the child is to be kept in as cool a place as possible and dressed in light loose fitting garments. Especial care is necessary for the bottle baby during the summer months, since intense heat lowers his resistance to unsuitable food and its bacteria. His milk should be either pasteurized or certified, and the bottles and nipples properly cleansed and sterilized. Bacteria laden pacifiers should be absolutely forbidden and toys should not be allowed to enter the baby's mouth. Paper napkins which can be burned promptly should be employed on a child showing frequent watery green stools suggesting infectious diarrhea. This precaution will minimize the danger of its transmission, particularly if an institutional case or otherwise in close association with others.

Dr. Maurice Chideckel, of Baltimore, Md., says:

1. Preach the gospel of soap and water and of boiled water all the year round. Anything the baby has to take into his mouth must be clean, and any utensil the baby eats or drinks from must be washed with boiled water before and after using. Pacifiers are germ laden and harmful. 2. Encourage the mother to nurse her child. Every mother must be made to know that no milk and no milk formulas can ever equal the milk of mother. 3. Instruct mothers on the importance of correct feeding and the disastrous results wrought by overfeeding. Overfeeding leads to serious gastrointestinal trouble and underfeeding and bad food cause a lowering of resistance and make the baby a ready victim to disease. A feeble, anemic child suffering from malnutrition may drag along during the winter months and succumb to diarrhea in the hot months. 4. Teach the district nurse and the social service men and women the importance of gaining the confidence of those they desire to help. 5. Let practitioners never forget for a moment that there is no prescribed formula for all babies. Each little patient differs from the next one, each possesses a different degree of resistance and an entirely different power of digestion. 6. All dairies should be under the supervision of the Board of Health, and strict precautions observed in every process of marketing the milk. 7. Swat the fly. The common house fly spreads endemic dysentery. Make the screening of doors and windows compulsory. 8. Make summer diarrhea a reportable disease, and treat it like scarlet fever or diphtheria as to isolation. Summer diarrhea is an infectious and a contagious disease. The stools of a diarrhea case must be disposed of as are the stools of typhoid fever. Every community should maintain an isolation hospital for summer diarrhea cases to be situated in the country, where the little sufferer should have the benefit of fresh, healthy air as well as expert medical attention. 9. Teaching the mother the value of fresh air, wide open windows, and the importance of proper dressing of the child. While loss of heat by radiation is harmful and causes a lack of resistance, too much clothing is worse and predisposes the child to summer diarrhea. Cool garments and few is the proper way of dressing the child during the hot spell. 10. The practice of mothers taking their children to country places at the first signs of enteritis should be stopped. A crowded country place with no medical supervision is many times worse than a crowded tenement house. The child should be sent to a hospital in the country or to a hospital in the city where even there an abundance of fresh air is to be gotten besides medical treatment. 11. Do not give so called expectorants to young children. They are unable to expectorate, so they swallow mucus, and acute intestinal disorders are produced. 12. Stop milk at the first sign of enteritis, wash out the stomach at once with sodium bicarbonate besides intestinal cleansing and colonic flushing. These and courageous starvation will often prevent the development of summer diarrhea.

Dr. George F. Baier, Jr., of Philadelphia, writes:

The prevention of infantile diarrhea is first and foremost, a problem of hygiene and cleanliness—the daily morning bath, washing the baby's face at bedtime, cleanliness of his clothes, prompt removal of soiled diapers, dirty flannels, and linens, and cleanliness of bedclothes. Toys and trinkets handled by the baby should be clean and capable of being cleaned. The mother or others who handle the baby should have clean hands and clean clothes. I do not believe any baby enjoys promiscuous kisses on its mouth. If the baby must be kissed, kiss him on the cheek. The elimination of flies is of next importance. Flies are extremely industrious carriers of all kinds of bacteria and dirt. Do not let flies and babies fraternize. Keep the baby covered with fly netting; keep the doors and windows screened; destroy the breeding places of flies. For a baby to withstand the conditions likely to produce diarrhea he should be as nearly perfectly healthy as possible, and one of the agents necessary to bring about this desirable condition is fresh air. I do not believe that a baby should be out on a porch in all kinds of weather, but a plentiful supply of fresh air can be secured without subjecting the baby to hardships. A mother who nurses her baby should keep her nipples clean by washing with a weak solution of borax.

When a breast fed baby with conditions as outlined nearly ideal has diarrhea, the diet of the mother should be looked into. Certain articles of diet and certain drugs have a tendency to make mother's milk laxative. If the mother is constipated, other means than drugs should correct it.

If the baby is a bottle fed baby see that the bottle and nipple are clean. See that the formula is the proper one for the baby. Increasing or decreasing the amount of fat in the mixture may have remarkable results. Never give the baby the remains of a previous meal. When two or three ounces remaining in the bottle are taken a half hour or hour afterwards, the bottle may lie around on the floor or table, flies feast on the nipple and later the baby has a severe diarrhea.

If the baby has diarrhea under good hygienic conditions the trouble may lie in the stomach or intestinal tract. Slight inflammations or so called "colds" may be the cause. These must be sought out and corrected. Worms may be the factor. Some doctors do not believe in worms and I at one time was in that class. I believe now, however, that this trouble should be seriously considered in connection with diarrhea. Also I have read that teething never produced anything but teeth, but here again experience is a great teacher and I believe that teething sometimes produces diarrhea.

Medicine and Surgery in the Army and Navy

GIVE THE MILITARY SURGEON SKILLED AND ADEQUATE ASSISTANCE.

He Cannot Do It All.

By J. Madison Taylor, M. D.,
Philadelphia,
Professor of Applied Therapeutics, Medical Department, Temple University.

Now that history has proved beyond all question that the first line of defense—army or navy—is the ceaseless vigilance, skill, and industry of the surgeon, the medical expert, we can maintain with less temerity not only that the Medical Corps of the army and navy should be composed only of those most highly qualified, efficient, and capable of meeting every emergency, but also, what is equally necessary, that they should be given skilled and adequate assistance. We have no desire to be hypercritical of the Medical Department of the army and navy—we realize fully the serious burdens they are carrying—but in my judgment there is grave peril that in the near future the demands upon the military medical service will be so many and serious that it may break down from overwork. It is to prevent this, to anticipate, that we make the constructive suggestion that steps be taken immediately to provide a sufficient number of assistants skilled in all those branches of service required for the Medical Corps.

How can this best be done? Everyone realizes that medicine has grown and developed by leaps and bounds since the Civil War, that there has been division and subdivision of work so that efficient service can be rendered only by the broadest distribution of responsibilities and the closest cooperation of diversified specialties. The whole subject is merged into a congeries of different and yet coordinated lines of work, and no man living has it in him to be master of them all. Hence, it is practically impossible for any one, however able, to be what is fondly assumed by the public and many selfsatisfied individuals, a complete all-round expert capable of coping with any and all conditions of the variegated medical industries, so to speak. Medicine has grown too far, its demands too numerous, and its necessities far too comprehensive to accomplish all that.

The medical man of the army and navy comes nearest to realizing this symbolic and wholly imaginary embodiment of omniscience, but in view of the terrific demands made upon him by modern warfare in time and work, if ever a man needed skilled and adequate assistance, he is the man, and yet our army and navy is proceeding in the upbuilding of its medical service along the old, old lines of expecting the medical men to "do it all." The military service of France, Germany, Japan, and other countries gives its medical men proper and sufficient assistance. We should do no less; we ought to do more.

There are several ways through which this assistance can be given—by utilizing medical students, by utilizing nurses, and by utilizing pharmacists. The first is economically unwise, because medical students are potential physicians and surgeons, and will be needed later on to take the places of the medical men now in the service. The second is objectionable by reason of the limitation of a nurse's training along medical lines and also her sex. The third is the most promising, because it furnishes material that, with but a little intensive training, could be made most helpful to the physician and the surgeon. He could cover more ground more thoroughly, more deliberately, and more creditably to himself, to the service, to his country, and to all of humanity.

The skilled pharmacist of today has had collegiate training and years of practical experience, with a manipulative skill in the handling of materials that eminently fits him for minor medical and surgical work. At the present time the pharmacist is taught a series of subjects which qualifies him to supplement the work of the surgeon, on closely correlated lines, especially in chemistry, bacteriology, clinical laboratory investigation, röntgenography, in assaying drugs, foods, and other supplies, in analyzing human excretions, blood, sputum, etc., in testing drinking water, food products, soils as well as in toxicology and drug compounding and dispensing. The pharmacist is familiar, also, with minor ailments and injuries and their treatment. With a little training he could readily be qualified to extend this field of activities to an extent which would enormously aid and comfort the surgeon when pressed by urgent demands on his time and attention.

In any event the services he could render are numerous, among them note taking, examinations, diagnoses of minor ailments, prompt clinical laboratory findings and opinions would be invaluable. He could act as expert anesthetist, as assistant in many operative directions, and could apply the less complicated dressings and plaster casts, and variously hold up the hands of the surgeon. He could supply much of the detail of medical advice in hygiene and dietetics. The whole subject of sanitation falls naturally within his purview, the precautions of hygiene, of preventive medicine generally, also applied bacteriology, disinfection, and other prophylactic necessities of modern warfare.

Justice to the medical men of the army and navy demands that they be given adequate assistance in the prosecution of their work, and the suggestion that skilled pharmacists be given a commissioned rank in the army and navy, and that they be made, also, medical and surgical assistants, will meet, we believe not only with the unqualified approval of the medical profession generally, but with that of the public whose interests are still further protected.

1504 Pine Street.

[In connection with Doctor Taylor's well put and, it is to be hoped, well taken plea, attention is invited to the letter of Frederick J. Wulling, president of the American Pharmaceutical Association, on page 147 of this issue.—Editors.]

MEDICAL SCHOOLS IN WAR.*

By Francis Carter Wood, M. D.,
New York,
Director of Cancer Research, Columbia University.

This country, Doctor Wood said, had suddenly found that she had undertaken an enormous task for which she was very ill prepared. Everything now pointed to the probability of a long war, a war which would strain the resources of the country as much as did the war of 1861. Existing conditions had brought the realization that preparation must begin from the bottom up, and it must be remembered that a fundamental part of such preparation was to keep the ranks of the medical profession full of young men who would be able to act as army surgeons. The civil population would have to be cared for by those physically incapable of entering the army or too old to serve. It was imperative, therefore, to continue to turn out medical students, not only this year and next, but for three or four years to come. The experience of France and England showed that the losses occurring among medical men in active service were large. It was reported that the failure of the English to keep the medical schools open, had resulted in a shortage of medical men. In France the situation was reported to be equally bad. In both countries the civil population was suffering from the lack of medical attendance. The insufficiency of proper care was demonstrated by the reports that the English and French returned to the trenches only some sixty per cent. of their wounded, while the Germans returned close to ninety per cent. Therefore, a teaching staff sufficient to train the younger men must be retained on duty in the medical schools. It was particularly important that a large proportion at least of the laboratory workers be held; they would be most needed in the investigation of new problems which would arise, examples of which would occur to everyone. The treatment of gas poisoning cases, for instance, had been very ineffective because of a lack of general knowledge concerning the condition, although a certain number occurred during the year in every large city in this country from the escape of ammonia or other toxic fumes in manufacturing plants. The study of accidental poisonings noted in connection with the manufacture of trinitrotoluol and their effects was a phase which had recently arisen. As canned foods would contribute largely to the diet of the soldiers, the study of epidemics of so called ptomaine poisoning, occasionally noted after the use of such food, should be thoroughly carried out. Such work would be just as important in deciding the ultimate issues of the war as would be the military skill of the soldiers. The teaching hospitals would have to be run with shortened staffs and it might be necessary to fuse during the war some of the dispensaries in order to make up for the shortage caused by the men who had volunteered. The course of medical instruction in the colleges might also be shortened as much as was possible consistent with the existing laws governing medical practice. The summers could be used for clinical clerkships and practical teaching in the clinics. At the end of the second year, the summer might very well be devoted to a course in military hygiene and field work; such a practical course would be very valuable, even if the war did not continue. In the third year, more military hygiene should be taught and certain special work which was necessary for the medical officer, such as map reading, should be given, possibly in the evenings. These courses should be given preferably by army medical men, as had been done at Columbia University this winter; or, if this was not possible, by competent physicians trained by the army staff. For nearly two years, now, credit had been given at Columbia to those who had served abroad in base hospitals as it had been found that this service formed an admirable and satisfactory training. This would shorten the period of preparation required for army service. The new Columbia War Hospital would undoubtedly serve for just this purpose and afford to the army, the Red Cross, and the medical school an opportunity to give instructions to physicians, medical students, and nurses which would fit them most rapidly and efficiently for immediate service to the country.

THE COMMITTEE ON HOSPITAL AND MEDICAL FACILITIES OF THE MAYOR'S COMMITTEE FOR NATIONAL DEFENSE.*

By S. S. Goldwater, M. D.,
New York.
Chairman of the Committee on Hospital and Medical Facilities, Mayor's Committee for National Defense.

Doctor Goldwater gave an account of the part of the work of military preparedness in which the Committee is engaged. Things were happening slowly and the Committee at present was in position to report plans and program rather than actual performance. The reason the Committee was created was because great medical resources had to be built up and organized in the city. Questionnaires from the various departments in Washington had not produced satisfactory results, and it became evident that an organized local survey of the resources of the city should be made for the benefit of the army and navy so that plans could be laid to cover future requirements and accurate and adequate tabulations placed on file. For this purpose a central committee was called into existence which included representatives of all the great municipal hospital departments and fifteen of the leading private hospitals. This did not include all the medical resources of the city. Every general and every appropriate special hospital in New York with a capacity of 100 beds—sixty-six hospitals in all—was represented in the Council of Associated Hospitals. Not only the members of the Committee but the executive office force consisted of volunteers.

The Committee had five functions: 1, to ascertain the requirements of the Government; 2, to make an intelligent, comprehensive survey of the medical institutional resources of New York city and vicinity; 3, to bring about the adaptation of these resources to Government requirements; 4, to conserve these resources, and 5, to expand these resources.

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*Abstract of paper read before the Medical Society of the County of New York, May 28, 1917.

*Abstract of paper read before the Medical Society of the County of New York, May 28, 1917.

Correspondence with the War Department showed that in certain directions needs might present themselves in short order. When Congress decided there was to be conscription and that more than one million men were to be gathered in mobilization camps for training, it was realized that for a time there would be inadequate medical facilities at the camps. It was obvious that a certain proportion of the sick would have to be brought to the hospitals of the nearest cities. General Gorgas said he did not expect to have adequate hospital facilities at first and there would be a transference to the city hospitals of major surgical cases not of an imperative character. The question came up as to pay for this service and under what arrangements the patients would be admitted and discharged. It was arranged that admission and discharge would be done by a representative of the army and the actual care undertaken by the members of the local hospital staff. Suitable compensation for the men performing this work had not yet been arranged; the cooperating hospitals, however, would be paid a per capita allowance. Cases of tuberculosis and insanity would be cared for in institutions belonging to the army and navy, and they would also take care of convalescents in their own convalescent camps.

Taking up the question of the resources of the city, preparations for war included the entire population. The civilian population should not be neglected in order to take care of the soldiers, and that was one of the objects of the Committee. The Committee asked the hospitals what they could do, 1, immediately; 2, in twenty-four hours; 3, at the end of a week, and 4, at the end of a month. The figures given were not regarded as final, but before acceptance were studied in connection with the average number of admissions and discharges—men, women and children; the average of vacant beds, etc. Out of these studies had come the following conclusions: The municipal hospitals, within one month, without seriously neglecting the routine care of the acutely sick, could supply 2,116 beds; private general hospitals, 1,974; special hospitals, 386. As to the adaptation of the resources, some of the special hospitals—for instance, one for women and children—were anxious to turn out their patients and take in soldiers; but they were persuaded to continue their existing work and instead to expand their resources to take in more of the cases they had always handled so as to leave room in more suitable hospitals for the care of the soldiers. Everywhere a disposition to cooperate had been shown; each hospital was ready to adapt itself to the needs of the whole. It might be found necessary to consolidate dispensaries when many of the young physicians enlisted in the army Medical Corps.

The question of the transportation of soldiers from camp to hospital and of patients from one hospital to another to make room for soldiers was arranged with the aid of the Board of Ambulance Service which stood ready to concentrate 110 ambulances for this work. Many women physicians had been anxious to give their services and it had been suggested that those unattached to institutions might arrange to act as temporary substitutes for the men leaving institutional appointments. This was a solution also for the medical men unattached to institutions and too old or physically unfit for active military service. A coöperating subcommittee of the Mayor's Committee for National Defense was making a study of the reserve nursing resources of the city. Women who had received nursing training but were not at present engaged in nursing, would be asked to come into the hospitals to relieve graduate nurses who might go off for service under the Red Cross or in the army.

One of the conservative efforts of the committee had so far failed; this was the effort to secure a bill for exemption from military service for hospital internes until they had finished their service. Internes should be permitted to continue and complete their hospital course for the later protection of the community. The committee's attempt to secure this exemption was begun too late, but of the Senators and Congressmen approached on the subject, two thirds expressed their approval of the proposition and were willing to do what they could to support the committee's effort to secure the desired exemption by executive decree.

The time had not yet arrived for the actual expansion of the hospitals but the committee, looking ahead, had instituted a standardized course of training for nurses' aides in conjunction with the Red Cross. It was proposed to train a large reserve force of volunteers in various hospitals. One hundred and twenty hours intensive practice—training, equivalent to one month, plus thirty hours theoretical work—were included in the accepted course. The training was modeled on that given the nurses' aides enlisted for service with the base hospital units. In each instance the applicant would pledge herself to perform not less than six months hospital service to meet war needs. Should the patients arrive in such numbers that the existing nursing staff was unable to care for them, or should the nurses now on duty in the hospitals be called off so that the nursing staff was depleted, it would be of great assistance to have standing by, women with some training for the simpler nursing duties. Some hospitals so fortunately situated that they could contemplate expansion by building temporary additions were preparing plans to that end. This was a summary of the work that had so far been done by the Committee on Hospital Facilities.

MEDICAL NEWS FROM WASHINGTON.

Health Status of the Navy—Report on Naval Hospital Facilties—Sanitary Precautions in Establishment of Training Stations—Proposed Medical Legislation—Longevity Pay of Medical Officers.

WASHINGTON, D. C., *July 17, 1917.*

Surgeon General Braisted, of the navy, has issued a statement to the effect that the health of the naval service ashore and afloat is excellent. Reports from the fleets and other ships, both at home and abroad, are satisfactory. Measures for the control of certain communicable diseases that were carried to a few of the training stations some time ago by the rapid expansion of the navy and extensive recruiting among susceptible young men in civil communities where these diseases were abnormally prevalent are progressing desirably and conditions in this respect are approaching the normal. Admission rates have fallen and most of the patients under treatment in naval hospitals are convalescent.

The enlarged division of sanitation is proving to be of great value and many questions of interest already are being handled, such as the elimination of mental defectives at the training stations and the detection and treatment of those affected with animal parasites, as well as germ carriers of various types. All stations are being covered rapidly by close daily sanitary inspections. Great activity is apparent in new construction to care adequately for the present and future expansion of the navy.

Surgeon R. C. Holcomb, of the navy Medical Corps, principal assistant in the office of the surgeon general of the navy, has returned to Washington from a tour of inspection that included the new hospital accommodations at the southern naval stations. He reports everything in fine condition, with the prospect that the facilities for the care of the sick and wounded at the various places will be in readiness to receive patients by September 1st, as planned by the naval medical authorities.

At all the stations the temporary hospitals are of a standard type. At Charleston, S. C., there will be accommodations for 240. At Port Royal, S. C., where enlarged hospital construction was authorized by the act of August 29, 1916, it is necessary to make additional provisions similar to those at Charleston. At Key West, Fla., the new construction is dependent upon the selection of a suitable site. At Pensacola, Fla., a temporary hospital for 240 is under construction. At Gulfport, Miss., where the Navy Department is establishing an entirely new training camp, there is need of special work. At New Orleans, a hospital for 240 is under way. At the larger naval places in other parts of the country, work of providing additional hospital accommodations is under way or is being planned. It is proposed to have hospitals of 1,000 beds each at Boston, New York, Philadelphia, Chicago, Bremerton, Wash., and San Francisco. At most of these places, this is simply an addition of structures of the pavilion type.

In working out the new sanitary system instituted by the surgeon general of the navy and being carried forward with the cooperation of members of the Public Health Service, it has been arranged that at the permanent training stations and the other places where newly enlisted men will be congregated in large numbers for preliminary training there shall be a period at the beginnng of the career of segregation in small groups. This is a precautionary measure against the communication of disease that is a natural consequence of bringing so many people together from all sections of the country. It has been found that the men from the country districts are more liable to ailments of this kind than those from the larger communities, apparently because the latter are more immune to children's diseases, to which class of disability the outbreaks of the navy and marine corps are largely confined. This method of observation and control calls for bacteriological work of a high order, and it is believed that the method will be conducive to the preservation of the health of the navy and marine corps, both at the training stations and on board ship.

A bill has been introduced in Congress providing that there shall be established one additional division each of mental hygiene and rural sanitation in the Public Health Service, in charge of commissioned medical officers of that service, who while thus serving shall be assistant surgeons general. The duties of the division of mental hygiene shall be to study and investigate mental disorders and their causes, care, and prevention. The duties of the division of rural sanitation shall be to investigate improved methods of rural sanitation and the prevention and suppression of communicable diseases.

Senator Owen, of Oklahoma, has introduced a bill defining the duties of the Medical Department of the Army. The bill provides that these duties shall be the initiation and the direction of measures for the prevention of disease among troops and avoidance of sanitary errors in the location, construction, and management of posts and camps; the sanitary, medical, and surgical care of troops, the physical examination of all officers and enlisted men entering or leaving the army; the care of and accountability for all transportation pertaining to the movements of men and materials of the medical department and of the sick and injured of the army; and the reparation and preservation of the records of the transactions taking place as prescribed in the preceding. It also is prescribed that it shall be the duty of the senior medical officer of an army, corps, division, brigade, territorial division or department in which an outbreak of disease occurs to investigate at once and determine the reasons therefor.

The Court of Claims has rendered a decision on the question whether a physician, who while serving as a contract surgeon in the army was appointed a member of the Medical Reserve Corps, is entitled to longevity increase of pay for the time he served as a contract surgeon. An act of 1908 provides that officers of the Medical Reserve Corps, when called to active duty in the service of the United States, shall be subject to the laws, regulations, and orders for the government of the regular army, and during the period of such service shall be entitled to the pay and allowances of first lieutenants of the Medical Corps with increase for length of service now allowed by law, said increase to be computed only for the time of active duty. The court holds that this legislation was prospective in its character and operation and does not contemplate the computation of former service in fixing the longevity pay of officers rendering service in the Medical Reserve Corps; that the plain meaning of the law is that officers of the Medical Reserve Corps shall only receive longevity pay while they are on active duty in the active service of the United States in the Medical Reserve Corps, and that no service performed elsewhere, even though performed in other branches of the military service, can be computed in determining the longevity pay.

Editorial Notes and Comments

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EDITORS
CHARLES E. DE M. SAJOUS, M.D., LL.D., Sc. D.
Philadelphia,
SMITH ELY JELLIFFE, A. M., M. D., Ph. D.,
New York.

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VOLTAIRE AN APOSTLE OF MEDICINE.

The vigor of growth which has preserved medical science in the very front rank of advance has been largely maintained by its many sided contact with all other forms of culture and learning. It has seemed often so intensively occupied with its own problems and internal development as to exclude such interests from its sphere, yet it has swung back again and again, even as at the present time, to a realization of its inseparableness from all forms of human interests and its need to keep in vital touch with every variety of means through which human life finds successful expression or that stoppage of energy in the individual or the group which is sickness.

The following of this broader point of view manifest in the followers of medicine or in their sympathetic contemporaries belongs to the minds of the present day which are thoroughly imbued with this constant interdependence of medicine with all other forms of thought and endeavor. Such an appreciation, therefore, of the advance and support accorded to medical history through the genius of Voltaire comes from the pen of Doctor Bailey, skilled alike in such historical evaluation and literary expression of it. [Pearce Bailey: Voltaire's Relation to Medicine, *Annals of Medical History,* vol. i, No. 1, Spring 1917.]

In the days of Voltaire medicine needed a champion outside its own immediate circle, for medical men of originality and progressive temperament were peculiarly lacking just at that time. The great writer's satire expressed his abhorrence of the unworthy physician and that in medicine which was based on false superstition or lost itself in cumbersome ceremonial or the ignorance and sham which paraded as medical practice and knowledge. Nor did his fun loving nature refrain from making the doctor the subject of jest. Yet the kindly sincerity which was fundamentally his, as well as the keen and wide grasp of medical subjects, proved him a savant in medical subjects, a clear thinker and writer, and also a "loyal admirer and defender" of the worthy members of the profession. His unerring insight, Bailey reminds us, led him straight to the truth hidden among the obscurities of the many medical systems of the times. Numbers of important medical topics are discussed by him with a knowledge and practicality which do credit to a much later stage of scientific research and application. He saw in madness a derangement of the faculty of thinking, a functional misuse of the same faculties with which sane men are endowed and the misinterpretation of the same sensations. It was not an especial divine infliction upon certain minds, but it was possible at any time to any one.

He subjects to a charming vein of satire the very slowly advancing theories in regard to generation, but was himself forced to leave the question to further enlightening studies, which did not until long after his death solve the mystery of fertilization through union of the nuclei of spermatozoon and ovum. The subject of inoculation against smallpox occupied much of his writing. He himself had been a victim in his youth of this universal scourge. It was not until his old age that he had the satisfaction of seeing inoculation become general in France, though it had already made its way in England, Russia, and other nations of Europe and had been introduced into New England. Surgery also occupied his interest and attention. In anatomy, as in his general knowledge of medical terms, there is a surprising accuracy and correctness, while he manifested likewise a clear perception of the place which medicine was destined to occupy. The same insight and courage to depart from accepted opinion and custom reveal themselves in his consideration of crime and punishment. He recognized the pathological condition that lay behind the former and also the frequent religious fanaticism associated with it. His constructive view of the reparation to society to be obtained by some other means than the death of a homicide stands yet as an idea in advance of the accepted rule of society.

His extensive writings on the subject of syphilis, "grand pox," as he called it, contain a message which may well be sounded out at this time. If the nations cannot stop now the destruction of warfare to turn attention to this increasing plague, they can at least embody this within their policy of offense and defense. In *L'Homme aux quarante écus* the surgeon says in regard to syphilis: "There is only one way, and that is for all the princes of Europe to form a league, as in the days of Godfrey of Bouillon. A crusade against syphilis would surely be more sensible than those directed in old times against Saladin, Melacsala, and the Albigenses. It would be better to form an agreement for the purpose of stamping out this enemy common to all humanity than to be always busy watching for the right moment to devastate the earth and cover the fields with dead, for the purpose of filching from one's neighbor two or three cities or a few villages. I am speaking against my own interest, for war and the pox make my fortune."

DISTRIBUTION OF THE LEUCOCYTES.

The recent work of Wells on leucemia and hyperleucocytosis is stimulating in that it seems to shed light on the question of the distribution of the leucocytes under different circumstances. The white cells in the peripheral blood have been counted myriads of times, but their distribution among the internal organs and throughout the lesser and systemic circulation has never been accurately described. An adequate understanding of the function of the leucocytes must be based not only on a knowledge of their number and varieties in the peripheral blood, but on the relative and actual number of leucocytes in each part of the body under various conditions.

Lowit early made the observation that the application of moist cold to the surface of the body provoked a leucemia usually followed by a hyperleucocytosis. He erroneously concluded that every increase in the number of white cells was a compensatory new formation of leucocytes and therefore based necessarily on a preceding leucopenia. He is to be credited, nevertheless, with having first drawn attention to a phenomenon of wide occurrence and one which still excites investigation. He first observed that when certain adverse influences are brought to bear on an animal—he worked with rabbits—a reaction occurs characterized by a diminution and then an increase in the number of the leucocytes. He employed particularly lowered temperature to excite this reaction, but also noticed that the mere shackling of rabbits often gave rise to the same phenomenon.

Goldscheid and Jacob then published detailed reports of their painstaking experiments relating to leucocytosis. These authors confirmed Lowit's observations and announced also that the intravenous injection of various protein materials, notably splenic extract and peptone solution, called out the same response as that which Lowit produced by cold, namely, a leucopenia followed after minutes or hours by a hyperleucocytosis. Goldscheid and Jacob, however, found that in many instances the first phase of the reaction, the leucopenia, was omitted, so that a hyperleucocytosis supervened directly or soon after the intravenous injection of the protein material. From this they concluded that the leucopenia and the hyperleucocytosis were two independent and to a certain extent unrelated processes. Moreover, they believed that the promptness of the increase, when it occurred, was strong evidence that the leucocytes were not newly formed for the occasion, but preexistent. In casting about for a reservoir from which to derive these added leucocytes, they chose the bone marrow as the most likely storehouse. These authors also investigated the destiny of leucocytes which disappear within a few minutes after the injection of a foreign protein. In their view, the leucocytes were not destroyed, but were accumulated in some place or places to them unknown, and they suggested the capillaries of the skin as one possible place.

Bearing more directly on the subject of the distribution of the leucocytes was their observation that blood from a large vein, such as the femoral or jugular, contained fewer leucocytes than that from a more peripheral location. This observation was confirmed by Daskalitza Kofman, who made the additional contribution that the number of leucocytes diminishes as the blood travels from the periphery to the heart, so that, of all blood in the body, heart's blood usually contains fewest leucocytes. Widal commented on the peripheral leucopenia which accompanies hemoglobinuria from cold. and advanced the view that the dearth of leucocytes in this condition was due to a transitory storage of leucocytes in the pulmonary capillaries.

Wells, however, seems to have been the first to count the leucocytes in blood taken almost simultaneously from different organs. He worked with rabbits, and caused a readjustment of leucocytes by the intravenous injection of dead typhoid bacilli. His results, as far as the peripheral blood was concerned, were in accord with observations referred to; that is, a leucopenia promptly followed the injection, and gave way after minutes or hours to a hyperleucocytosis. Of more importance, however, was his novel observation that the blood of certain internal organs contained over fifteen times as many leucocytes as the peripheral blood. Contrary to numerous surmises of past authors, the blood of lung pulp did not contain a strikingly large number of leucocytes. The blood of liver pulp and more especially of splenic pulp apparently contained the greatest number of leucocytes, those of the latter organ in one instance numbering 180,000 per cubic millimetre. The author believes that the highest figures for the internal organs are found during the stage of peripheral leucopenia, but it must be noted that some of his animals showed, before receiving injections, an extremely high leucocyte count in blood taken from the internal organs.

Wells advances the hypothesis that the concentration of leucocytes in the spleen is brought about as a result of the fixation in the spleen of a part of the foreign protein injected. This protein, after fixation in the spleen, exerts a positive chemotactic influence toward the leucocytes. This view appears less plausible when correlated with leucopenia and hyperleucocytosis from causes other than injections of foreign protein. Exposure to cold, for example, as stated in the foregoing paragraphs, gives rise to a sequence of events strikingly similar so far as concerns the leucocytes to that observed after bacterial injections. Does then lowered temperature cause the internal organs to exert a positive chemotaxis? Our present knowledge appears to offer little reason for answering this question in the affirmative. Regardless, however, of the explanation of these facts, a new field has been opened up, and we confidently expect an interesting literature to develop on the subject of the distribution of the leucocytes.

DIFFICULT DIAGNOSTIC POINTS IN TUBERCULOSIS.

Writing in the *Military Surgeon* for June, Colonel George E. Bushnell calls attention to some of the difficulties in the way of the army practitioner in diagnosing tuberculosis. One of the pitfalls is the tendency to make a diagnosis from too slight evidence. Recently several German writers, Meisser, Roepke, Fraenkel, *et al.*, have called attention to the fact that many patients are obliged to give up work and go into a sanatorium when in reality there is no active tuberculosis present, old and quiescent lesions, discovered by percussion only, being mistaken for active ones, or a diagnosis being made on too uncertain or slight indications. Thus Roepke says that ten per cent. of the inmates of tuberculosis sanatoriums are not tuberculous. Often fear of being regarded as a poor diagnostician leads to the calling of a doubtful case tuberculosis.

Bushnell calls attention to one important point in connection with this. In civil life, where a patient is well able to afford rest in a sanatorium or elsewhere and really needs it, a mistaken diagnosis, far from causing real harm, may be productive of good; but the case is different in military service. There duty to one's country requires not only that no tuberculous patients should be enlisted, but also that no nontuberculous persons should be exempted on account of supposed disease. Furthermore, once enlisted, none should be excused from duty on this ground unless he actually has active lesions. The patient's own history should have but little weight in the matter for obvious reasons. The medical examiner should base his diagnosis on physical signs alone.

Bushnell also remarks on many of the difficulties of diagnosis. The apices of the lungs are a debatable ground, the chief question being as to whether or not the diagnosis of incipient tuberculosis can be made by physical signs in the upper lobe before râles are present. Radiographs show that the usual origin is in the hilus, whence the disease extends through the lungs as a peribronchial process and may only become clinically manifest when it reaches the apices. At this point it could hardly be called incipient tuberculosis. Many other points are also stressed by Bushnell, looking at the problem from a military standpoint, such as the significance of râles, the various forms of lesions and their prognostic significance, and the diagnosis by tuberculin and by the physical signs.

One important feature of the tuberculosis problem is the x ray picture, its interpretation from the standpoint of the patient and of the army. Radiology is a comparatively new science and its application is so complicated and expensive that we cannot expect every practitioner to be well versed in it. Among the vast numbers of physicians drafted for the war there will necessarily be thousands who will not be able to form a very definite idea as to the state of things in a patient's lungs by looking at an x ray picture, especially where the results are more or less ambiguous to experts. One fairly common source of error is the supposition that a tubercle can be seen by means of the x ray. This is not the case. We cannot see the tubercle any more than we can see the tubercle bacilli; we only see the results of tubercular inflammation. Müller says: "The exaggerated expectations once entertained for the x ray illumination have not been fulfilled."

What the x ray does show, according to Bushnell, are the following conditions, which are not causes for rejection: The disease confined to the region of the hilus in the deep lung, extending upward or downward; confined to the base, with a fine line or two extending to the apex, with or without small foci there; clouding of the apex, without marked lines from the hilus; and lines extending toward the shoulder, if confined to the deep lung. Where well marked lines extend towards the shoulder, but are confined to the deep lung, physical examination must determine the question of rejection. Where these lines extend to the superficies and there are widely separated spots or more extensive streaked opacities, the candidates are to be rejected.

This indicates somewhat the complexity of the problem. If x ray pictures can show so many minute variations, each one of which is to be interpreted differently, the same is of course true of the physical examination, the clinical course, and so on. No candidate should be admitted to the army who by reason of developing this disease will become a burden and expense to his country, but on the other hand the country should not in these times be obliged to do without the services of any man who is capable of serving. The country puts the question squarely up to the military surgeon, and patriotism requires him to answer it accurately.

THE CAUSES OF SUDDEN DEATH IN CHILDREN.

Sudden death in children, as in adults, is due to the suppression of the functions of one of the organs essential to life. This cessation of the functions may be due to some lesion of one of the important viscera or to some phenomenon of inhibition reacting upon it arising in distant lesions seated in some other organ. The brain is not absolutely essential for life and its disturbances or lesions only result in death by a secondary action on the heart and lungs, so that there are in reality two principal classes of sudden death: cessation of function of the heart or of the lungs. Sudden death from heart trouble is a death from syncope, that from the lung is by asphyxia. Sudden death from cardiac disturbance may be due to congenital defects—persistency of Botal's foramen—or to lesions of inflammatory origin, such as fatty heart and valvular lesions, particularly of the aorta and, very rarely indeed, aneurysms of this vessel. De la Rue, in 1903, was, however, able to collect fifteen cases of this lesion in children and more recent statistics amount to twenty, eight of the patients dying suddenly. Sudden death in children has also been due to rupture of the aorta from a simple artheromatous patch, pericarditis, and myocarditis, these latter being rarely primary.

Sudden death occurs in bronchitis, capillary bronchitis, and pulmonary congestion, and pulmonary hemoptysis or rapid congestion of the lungs are the origin of rapidly fatal asphyxia. Considerable importance has been attributed by some to purulent generalized bronchitis which frequently assumes the form of latent capillary bronchitis. Besides pleurisy, which rarely results in an unforeseen death, cases of sudden death have been known to occur in pneumonia, although this is most exceptional. Asphyxia may also be produced by occlusion of the bronchial tubes due to essential or symptomatic spasm of the glottis, edema of the glottis, tracheal polypi, foreign bodies coming from without or from within as in cases of rupture of enlarged tracheobronchial lymph nodes into the bronchial tubes. Last, but not least, mention should be made of the thymic isthmus.

Syncope or asphyxia may result from functional disturbances or from lesions in other organs than the heart and respiratory apparatus. The nervous system occupies a very important place in the etiology of sudden death in children. Cerebral hemorrhage and softening and tubercles and tumors of the brain must not be overlooked; nor meningeal lesions such as meningeal hemorrhage of the newly born and acute tuberculous or cerebrospinal meningitis; the neuroses of dentition, epilepsy, chorea, hysteria (?), and certain morbid accidents whose varied nature is as yet not clearly understood, such as convulsions, tetany, and laryngospasm. Gastrointestinal disturbances are also frequently the origin of sudden death in children. Retropharyngeal abscess, cardiotuberculous cirrhoses, infantile cholera, serious forms of gastroenteritis and intestinal hemorrhage are all affections which occasionally terminate in an unforeseen way either from hemorrhage, syncope, or acute asphyxia.

Finally, sudden death may result from interference with the mechanism of the heart or lungs or both combined in general diseases, whether infections or dyscrasic states. Among the exanthemata measles, chickenpox and scarlet fever give rise to hemorrhage, thrombosis of the sinus, and pleural collections; myocarditis and bronchopneumonia following typhoid fever are causes of sudden death. Among the dyscrasias are to be mentioned uremic and diabetic coma, eczema, and hereditary syphilis, sudden death occurring from resulting interstitial pneumonia or myocarditis. Addison's disease and hemorrhage in the suprarenal bodies are important causes of sudden death in childhood.

Sudden death is frequent in young children; the statistics of West and of Richter adequately prove this. However, up to the age of twelve years, according to Huttenbrenner, children are exposed to the causes of sudden death which are peculiar to young children and babies. Sudden death occurring in a few hours or days after birth is due to meningeal or suprarenal hemorrhage; during the first months of life hypertrophy of the thymus and hereditary syphilis play the most important part, while in later childhood sudden death during convalescence from diphtheria is the most frequent cause.

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AN APPEAL IN BEHALF OF BRITISH MEDICAL OFFICERS.

A letter and an appeal from the War Emergency Fund of the Royal Medical Benevolent Fund has just come to the editors, which they acknowledge with a keen sense of the urgency and worthiness of the cause. The War Emergency Fund was "instituted last year to afford assistance to members of our profession who, in consequence of having joined the Army Medical Service, find themselves in temporary difficulties. Many medical men, when called up, had to leave on very short notice, without time to make provision for the continuance and maintenance of their practices during their absence. . . . The appeal is not, and ought not to be, restricted to the medical profession. The public, too, may be rightly called upon to bear its share, and to show by liberal contributions its appreciation of the special services so freely rendered by the medical profession." The appeal is supported by the President of the Royal College of Physicians, the President of the Royal College of Surgeons, the Director General of the Medical Department of the Navy, the Director of the Army Medical Service, Sir William Osler, T. Clifford Allbut, and John Tweedy. The JOURNAL hopes that a generous response from this country will help our brothers in the profession who have sacrificed position and goods in the great world cause. Communications should be addressed to the Honorary Secretary, War Emergency Fund, 11 Chando Street, Cavendish Square, London, W. I.

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News Items

A Quarantine Station in the Philippines.—By order of the President, the island of Cauit, province of Cebu, Philippine Islands, has been set aside for the use of the Quarantine Service and the Marine Hospital Service, and the island is now used as a United States quarantine station.

Army Needs More Surgeons.—Surgeon General Gorgas authorizes the statement that in spite of the numerous responses to the call for surgeons the Medical Corps of the U. S. Army has many vacancies, both in the reserve corps and in the regular service, and he urges the profession in the country's need to fill these vacancies in time to secure training in military surgery and sanitation. Examinations for admission to the regular service are held on the first Monday of every month. Applicants for commissions should apply directly to the Surgeon General.

American Physicians to Treat French Children.—It is reported that a commission of American physicians, headed by Dr. J. P. Sedgwick, professor of pediatrics at the University of Minnesota, will go to France to treat French children who are suffering from shell shock and diseases resulting from lack of care during the war.

Poliomyelitis in New York.—During the month of June, 1917, sixty-six cases of poliomyelitis were reported to the Department of Health in New York city, making a total of 99 cases reported since January 1, 1917. In 1916 the total number of cases reported in June was 380, with a total of 409 cases from January 1 to June 30, 1916.

General Manager of the Red Cross.—Mr. Henry P. Davison, chairman of the War Council of the American Red Cross, has announced the appointment of Mr. Harvey D. Gibson, president of the Liberty National Bank of New York city, as general manager of the Red Cross. Mr. Gibson will serve without compensation, and will devote his whole time in Washington to this work.

Colonel Kean in Command of United States Army Ambulance Sections in France.—Colonel Jefferson R. Kean, Medical Corps, United States Army, has been recalled by the War Department from service in the Red Cross and is to be placed in charge of the 160 United States Army ambulance sections in France. Colonel Kean has organized forty-three base hospital units in this country, five naval base hospitals, eighteen field hospital units, and fifty ambulance companies.

Personal.—Dr. H. Sheridan Baketel, professor of preventive medicine and hygiene in the Long Island College Hospital, Brooklyn, has been promoted to the rank of major in the Medical Officers' Reserve Corps, United States Army. Major Baketel has been stationed at the Medical Supply Depot, New York, for more than a year.

Dr. Simon Flexner, director of the laboratories of the Rockefeller Institute for Medical Research, New York, has been promoted to the rank of major in the Medical Officers' Reserve Corps of the U. S. Army. Doctor Flexner has been active in the work of the corps for the past two years.

Special Training for Medical Men of the Navy.—The Navy Department announces that special courses of instruction for young men of the Medical Corps of the United States Navy to equip them for high grade work along special lines have been instituted in the leading medical colleges of New York, Chicago, and San Francisco. It is also reported that an eight weeks' course of intensive training for naval surgeons was begun on May 20th at Jefferson Medical College, Philadelphia, by six leading physicians of Philadelphia, as follows: Dr. Hobart Amory Hare, Dr. J. Chalmers Da Costa, Dr. Judson Daland, Dr. B. A. Thomas, Dr. W. W. Hawke, and Dr. Maurice Booth Miller.

The Rockefeller Tuberculosis Commission.—Dr. Livingston Farrand, president of the University of Colorado and for ten years executive secretary of the National Association for the Study and Prevention of Tuberculosis, has been made head of a commission which is to be sent abroad by the Rockefeller Foundation's International Health Board to undertake the work of tuberculosis prevention in France. Other members of the commission are Dr. James Alexander Miller, professor of clinical medicine at Columbia University; Mr. Homer Folks, secretary of the State Charities Aid Association; Professor Selskar M. Gunn, of Boston, secretary of the American Public Health Association, and Mr. Herman G. Place, of New York.

Health of Army and Navy Reported Excellent.—According to a report issued by Rear Admiral Braisted, Surgeon General of the Navy, on July 14th, the health of the navy continues good. Reports from the fleets and various vessels operating independently are reassuring. Conditions ashore are generally very satisfactory, and at the larger training stations where the greatest number of recruits are received fresh from their home surroundings such sanitary measures and precautions are in operation as to insure actually greater safety from contagious diseases for a great many of the young men than they could have in their own homes. The Surgeon General of the Army states that the health of all the troops in the Federal service on this continent continues excellent.

Red Cross Policy in the Use of War Relief Funds.—The report which appeared recently in the newspapers that the American Red Cross was to use in Italy $10,000,000 of the $100,000,000 fund recently subscribed is without foundation, according to a statement authorized by Mr. Henry P. Davison, chairman of the Red Cross War Council. The Red Cross has appropriated $1,000,000 to provide immediate necessities in France, to be spent under the direction of the American Red Cross Commission in France headed by Major Grayson M. P. Murphy, a member of the War Council. The Red Cross has also appropriated $200,000 to purchase medical supplies and instruments whereby the Red Cross Commission to Russia may take care of more urgent needs upon arrival in that country. The sum of $200,000 has been appropriated to purchase materials to supply most urgent needs in Roumania. The sum of $100,000 has been appropriated for use in Armenia, and $6,500 has been appropriated to purchase drugs to be sent to the Russian Red Cross. Aside from the foregoing no appropriations have been made by the War Council for work in foreign countries.

California Physicians Organize a War Committee.—Dr. Harry M. Sherman, of San Francisco, is chairman of a State committee organized on July 1st under the authority of the General Medical Board of the National Council of Defense, at Washington, for the purpose of rendering aid to the government in medical and surgical matters during the period of the war. Other members of the committee are: Dr. George H. Kress, of Los Angeles; Dr. J. Henry Barbat, of San Francisco; Dr. Jarvis W. Barlow, of Los Angeles; Colonel Guy E. Edie, of Letterman General Hospital; Dr. T. W. Huntington, of San Francisco; Major William L. Kneedler, of Coronado; Dr. John J. Kyle, of Los Angeles; Dr. E. C. Moore, of Los Angeles; Dr. Henry Parker Newman, of San Diego; Dr. Charles B. Pinkham, of San Francisco; Dr. Saxton Pope, of San Francisco; Dr. Wilbur A. Sawyer, of Sacramento; Dr. Henry H. Sherk, of Pasadena; Dr. Rae E. Smith, of Los Angeles; Dr. Stanley Stillman, of San Francisco; Dr. Ray Wilbur, Stanford University; Dr. Emmet Rixford, of San Francisco. The first work of the committee will be to collect statistical data concerning the doctors of the State, classifying them according to their specialties.

Plans for Emergency Naval Hospitals.—The Secretary of the Navy has submitted a supplemental estimate to Congress of appropriation of $2,200,000 for construction of emergency hospital buildings. The original estimate for this purpose was $3,200,000, but the urgent deficiency appropriation act of June 17, 1917, carries an appropriation therefor of only $1,000,000, the reduction seemingly having been due to the erroneous impression that a portion of the sum originally estimated as being required would be used in making permanent additions to existing naval hospitals. It is true that it originally was contemplated so to employ some of the appropriation, but the idea was abandoned some time ago. Emergency hospital construction now under way and approaching completion at Portsmouth, N. H., Newport, Philadelphia, Norfolk, Charleston, S. C., Pensacola, New Orleans, and Great Lakes, Ill., will cost nearly $1,000,000, without equipment, and therefore exhaust the appropriation made available by the deficiency appropriation act. Additional funds are necessary for temporary emergency hospital buildings, plans for which are nearing completion, at New York, Annapolis, Quantico, Va., Key West, Great Lakes, Mare Island, Cal., and Bremerton, Wash., which will cost about $1,800,000, and also for constructing further additional buildings at Portsmouth, N. H., Newport, and Norfolk, which will cost several hundred thousand dollars more. All of the buildings mentioned as under way or contemplated are of an emergency type of construction and of a temporary character. Wherever recruit camps, convalescent camps, etc., are established for the navy and marine corps, temporary hospital buildings must of necessity also be established and equipped for the care of the sick and injured, and these buildings, though temporary, must be provided with heat, light, kitchens, mess halls, operating rooms, water and sewer connections, heating plants, and quarters for the medical staff, nurses, and hospital corps men.

Medical Officers Ordered on Laboratory Duty.—The following named officers of the Medical Reserve Corps are assigned to active duty and will proceed to New York, N. Y., and report in person to Major Simon Flexner, Rockefeller Institute for Medical Research, New York, for a course of instruction in laboratory work: First Lieutenants Donald J. MacPherson, Theodore W. Kemmerer, William L. Aycock, Charles H. Bailey, Homer L. Conner, Baxter L. Crawford, Ulysses G. Goodwin, George R. Moffitt, Charles B. Reitz, Stephen H. Curtis.

The following named officers of the Medical Reserve Corps are relieved from duty at Fort Benjamin Harrison, Ind., and will proceed to New York, N. Y., and report to Major Flexner: Captain Howard L. Van Winkle, First Lieutenant H. R. Wahl, and First Lieutenant G. L. Schadt.

First Lieutenant Frederic H. Thorne, Medical Reserve Corps, is relieved from duty at Fort Oglethorpe, Ga., and will proceed to New York and report to Major Flexner.

The Rockefeller War Hospital.—The hospital established by the Rockefeller Institute for Medical Research for the purpose of demonstrating the most advanced methods in war surgery was opened for inspection on Saturday, July 14th. There are fifteen long, narrow, single story, unpainted wooden buildings situated in the grounds of the institute at Sixty-fourth Street and Avenue A, and to almost the last detail they are reproductions of the buildings comprising the English base hospital at Etaples, France, except that instead of holding 500 beds, as the Etaples Hospital does, in this war demonstration hospital there are only two wards of twenty-four beds each. The buildings are arranged in the form of a square, with the receiving, operating, and double wards in the centre.

Within probably two weeks the hospital will be completely finished and equipped, the staff doctors and nurses ready, the first group of patients received, and treatment begun before the first group of army and Red Cross surgeons. Every few weeks new classes of surgeons will be admitted to the hospital and trained in the Carrel-Dakin method of sterilization.

Dr. Alexis Carrel returned from France a short time ago to take charge of the hospital, and will demonstrate to American war surgeons the Carrel-Dakin method of treatment of wound infection, along with other surgical methods worked out and successfully applied at the military hospital at Compiegne, France.

Promotions in the Navy Medical Corps.—Promotions of naval medical officers, due to expansion of the personnel, have been announced. Advancements of officers of the naval staff corps will be by seniority, with the possible exception of officers that are to attain the rank of rear admiral, of whom there are two in the Medical Corps. If seniority prevails, those to be advanced to the grade of rear admiral are Medical Directors William R. Du Bose and James D. Gatewood, who now have the rank of captain. Medical Inspectors Luther L. von Wedekind, Edward S. Bogert, and Leckinski W. Spratling, with the rank of commander, will be advanced to medical directors with the rank of captain. Surgeons Edgar Thompson, John B. Dennis, Eugene J. Grow, Joseph C. Thompson, Frederick L. Benton, Will M. Garton, Frank E. McCullough, Francis M. Furlong, Ralph T. Orvis, Granville L. Angeny, William H. Bell, Holton C. Curl, Richmond C. Holcomb, Edward G. Parker, Barton L. Wright, Henry E. Odell, James S. Taylor, and Joseph A. Murphy, with the rank of lieutenant commander, will be promoted to medical inspectors, with the rank of commander.

The following named passed assistant surgeons, now having the rank of lieutenant, will be advanced in that grade to the rank of lieutenant commander: Herbert L. Kelley, Julian T. Miller, George B. Trible, Harry A. Garrison, Henry L. Dollard, Earle P. Huff, Harry R. Hermesch, Harry L. Smith, Willard G. Steadman, Jr., Martin Donelson, Myron C. Baker, Elmer E. Curtis, Dow H. Casto, Charles W. O. Bunker, Howard F. Lawrence, Charles J. Holeman, Gordon D. Hale, Alexander B. Hayward, Montgomery E. Higgins, George W. Shepard, Ernest W. Brown, Dallas G. Sutton, Lawrence M. Schmidt, Charles L. Moran, William Chambers, Sankey Bacon, Frank P. W. Hough, Kent C. Melhorn, Lee W. McGuire, Joseph A. Biello, George C. Rhoades, Alfred J. Toulon, and Harry H. Lane.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

THE USE OF INEXPENSIVE DRUGS IN PRACTICE.

By Louis T. de M. Sajous, B. S., M. D.
Philadelphia.

Some of the relative advantages and disadvantages of suprarenal products and of ergot, respectively, as vasconstrictor agents have been compared, and the conclusion reached that it is inadvisable as a rule to substitute the latter for the former, in spite of its somewhat lower cost. There is one possible disadvantage of suprarenal products, however, which I am inclined to believe deserves to be borne in mind.

As is well known, epinephrin even in minute amounts exerts an inhibitory action on the normal movements of the intestine. When a strip of fresh intestinal muscle is excised and suspended in warm Tyrode's solution through which oxygen is kept bubbling, i. e., placed under such conditions as will maintain peristaltic contractions of the intestinal strip for an indefinite period, the addition of epinephrin to the menstruum in the ratio of one in 30,000,000 or even less causes arrest of these movements. This effect, which is one of the most salient features of the action of epinephrin in experimental studies, constitutes an example of the sympatheticomimetic tendencies of this drug, the sympathetic system, when excited, itself causing inhibition in the greater part of the intestinal muscular tissues. On the other hand, the sympathetic distributes motor fibres to certain special portions of the intestinal muscle, viz., the pylorus and the ileocolic and internal anal sphincters, and these tissues, it has been held, are caused to contract or thrown into spasm by epinephrin. From clinical observation I have gained a distinct impression that upon oral use of adrenal substance a constipating action is at times exerted. As mentioned in the last installment, many clinical observers have recently seen good reason to overthrow the view hitherto held that adrenal products have no action when taken by mouth, and there seems no reason why, even if no part of the epinephrin contained in adrenal substance orally administered should reach the lower alimentary tract, some inhibitory action on the intestine should not occur after absorption, since general effects on the circulation produced in this manner are no longer considered impossible. Again, as Sollmann states, the distal portions of the intestine are more susceptible to relaxation by epinephrin than the proximal end—a circumstance which seemingly would favor arrest of motility in the lower bowel rather than in the duodenum and jejunum. In 1912, Hoskins and McClure pointed out that extremely dilute solutions of epinephrin, instead of inhibiting the contractions of an intestinal strip, increase them. A like observation was made in regard to the blood pressure, very minute amounts of epinephrin, when injected in the femoral vein, causing a slight drop in blood pressure instead of a rise. The same experimenters found, however, that doses of epinephrin inadequate to raise blood pressure sufficed to bring intestinal peristalsis to a complete standstill. Therefore, doses of adrenal product, taken orally, which in a given case suffice to exert a decided stimulant effect on the vascular tree, should besides tend to impede intestinal motility. Comparing ergot with epinephrin, we note that the former differs strikingly from the latter in its action on the intestines. Injection of ergot or ergotoxine has been found to cause a marked increase in peristalsis throughout the alimentary tract, and histamine, another of the ergot principles, is individually known to cause an intense stimulation of the intestines (Sollmann). Cramps and diarrhea are recognized symptoms of acute ergot poisoning.

Thus in at least this one respect adrenal products and epinephrin would seem disadvantageous as vasoconstrictor agents, as compared to ergot. The tendency of the former drugs to interfere with intestinal motility might at times render their use undesirable, at least where a continuous action on the vessels is to be exerted. Were ergot substituted, the expense of the medication would, of course, be lessened. As already pointed out, however, uncertainty of blood pressure raising action is a decided drawback in the case of ergot. The same observation applies to the actions of the two drugs on the heart, epinephrin exerting a very definite stimulating action on this organ, while in the case of ergot the action seemingly parallels, as a rule, that produced on the vessels.

One other possible indication for ergot suggesting comparison with adrenal products is that of local dilatations or ruptures of vessels requiring treatment by a general rather than a local remedy. Until recently ergot has maintained a fair reputation as a therapeutic agent in gastrointestinal and certain forms of internal hemorrhage, and in such local congestive conditions as hyperemia of the cerebral or spinal meninges, some forms of insomnia, night sweats due to peripheral vascular relaxation, pulmonary hyperemia, and even acute rosacea, incipient varicose veins, etc. More critical observation has, however, resulted in the realization that these therapeutic actions are in most instances very uncertain and in many of the remainder, entirely illusory. Especially does this apply in the treatment of hemorrhage—excluding that of uterine origin. In hematuria good results are seemingly at times obtained, but in most other forms of hemorrhage the effects of local vasoconstriction, if such vasoconstriction occurs, are counterbalanced by a tendency to general rise in blood pressure. The action of ergot in local vascular dilatations is perhaps deserving of greater confidence. The constricting effect of the drug on small peripheral vessels is demonstrable experimentally; but here again, there is no especial assurance that the vessels in the affected area will be those upon which the drug will exert an action predominant over that produced on the remaining vessels of the body. Clinical and experimental observations show that ergot gangrene "always begins in those situations in which the circulation is weakest" (Sollmann). According to this, one might not expect ergot to exert its greatest local effect in an area in which hyperemia already existed, unless this hyperemia were of a distinctly passive type, with actual slowing of the circulation in the area. Apparently, then, the uncertainty attending the action of ergot on the blood pressure may be held to prevail also in relation to its action in local vascular dilatations.

In the case of adrenal products there is as yet little or no evidence that by systemic administration a preponderant local vasoconstrictor effect can be obtained. Possibly the observation of Ogawa, 1912, in perfusion experiments that there is a greater tendency to contraction under epinephrin in the case of relaxed vessels than in that of vessels with good tone will be found to have a clinical bearing upon further trial of adrenal products. On the whole, however, experiences with ergot in this direction must be said to have proved so far the more satisfactory, in spite of the general uncertainty attending the effects of this drug; and in the treatment of localized vasodilatations by the systemic rather than the local route, ergot finds another of its preferential indications over epinephrin with the added advantage of diminished expense.

(*To be continued.*)

Hypertrophic Pyloric Stenosis in Infants.—L. Emmett Holt (*Journal A. M. A.*, May 26, 1917) reviews his observations in 141 cases and points out that this condition is primarily one of anatomic, congenital hypertrophy of the musculature about the pyloric sphincter, to which spasm is subsequently added. In the very mild forms of the affection medical treatment with frequent gastric lavage with water at 112° F. and the careful feeding of frequent very small amounts of breast milk or of properly modified cow's milk may lead to recovery. In every case with marked wasting this should be combined with the daily administration by hypodermoclysis of 150 to 250 mils of four per cent. dextrose in normal saline solution. In all other cases there should be prompt surgical interference, the only operation giving satisfactory results with a maximum of safety being the external complete division of the pyloric musculature by the method first used by Rammstedt. Quite as important as the operation is the aftertreatment. This should be begun with careful feedings as soon as the child has recovered from the anesthetic. Stimulants should be given at the time of the operation, or at once thereafter, the best being one in 1,000 epinephrin solution in doses of 0.2 to 0.3 mil, hypodermoclysis with 120 to 240 mils of normal saline, and adequate external warmth. The food should be begun in very small amounts—two or three teaspoonfuls of breast milk with one or two of water—and given with a medicine dropper. A teaspoonful of castor oil should be given at the end of twenty-four hours. The mortality under surgical treatment is about twenty-three per cent. as against about fifty per cent. under medical treatment.

Treatment of Diabetes Mellitus.—R. T. Williamson (*Lancet*, April 28, 1917) recommends the following plan for cases which are not complicated and are free from marked acidosis. The first diet to be given is a rigid diabetic diet with the addition of ninety grams of white bread daily. This is called Diet I. If this does not soon control the glycosuria, Diet II should be given. This diet differs from the former only in the replacement of the white bread with some starch free diabetic bread. If in turn this fails, then Diet III should be given for one week. This includes feeding at two hour intervals from 8 a. m. to 10 p. m., the total day's food being made up of three or four eggs, sixty to ninety mils of cream, a litre of milk and tea, coffee, or beef tea. The eggs and milk may be made into unsweetened custards, if desired, and some of the cream can be given in the beef tea as well as in the tea or coffee. Finally, if this diet does not check the glycosuria, Diet IV should be tried, consisting of a glass of casein or biogene and cream with water every two hours for seven to ten days. Twice a day a cup of tea or beef tea may be given if the patient wishes it. The mixture of casein, cream, and water is prepared by mixing one tablespoonful each of casein and cream and then adding hot water carefully until the tumbler is filled. It may be sweetened with saccharin and flavored with nutmeg. Two tablespoonfuls of biogene may be used in place of the one of casein. If it is desired to avoid the use of diabetic breads, which are costly, Diet II may be omitted if Diet I fails and Diet III can be tried at once. Diet III is of great service, as it is palatable, can be taken by nearly all patients, and is not very expensive. After the urine has been freed of sugar for a week to ten days the ordinary rigid diabetic diet may be tried. In the more severe cases after a week or ten days of Diets III or IV with the urine still containing sugar, Diet II should be given. If the glycosuria has been checked, then two ponos biscuits are allowed each day, added to Diet III or IV, and later bacon, green vegetables, and custard are allowed at 1 p. m. to replace the meals at 12 and 2 p. m., and then Diet V is given. Diet V may also be used if all the diets suggested have failed to check the glycosuria, and this can thus be reduced in many cases. Diet V includes breakfast of coffee or tea, cream, eggs, or tomatoes or mushrooms, diabetic bread and butter; dinner of bacon, and one of the following vegetables: cabbage, cauliflower, Brussels sprouts, turnips, French beans, spinach, broccoli, boiled walnuts, asparagus, vegetable marrow, tomatoes, mushrooms, lettuce, cucumber, watercress, celery, radishes; custard, diabetic bread; supper of tea with cream, eggs or Welsh rarebit or cheese, one of the salads, lettuce, cucumber, mushroom, tomatoes, spinach, and suitable diabetic bread and butter. If all of these diets fail to check the glycosuria, sodium salicylate or aspirine should be tried in addition, giving about three grams of either daily. In some cases quinine salicylate in doses of about 0.2 gram three times a day is helpful. Fast days are also of some service, only tea, coffee, beef tea or whisky and soda being allowed. Even if these diets will not check the glycosuria, they are helpful in reducing its severity and holding it at a reduced level.

Polyvalent Staphylococcus Vaccine in Follicular Dermatitis—P. F. Arullani (*Gazzetta degli Ospedali e delle cliniche,* March 4, 1917) describes two cases of the somewhat rare condition of general pustular folliculitis variously named after Colles, Graves, and Jaccoud as due to the staphylococcus and the lowered resistance of the individual thereto. In both cases remarkable and continued improvement followed the administration of polyvalent staphylococcus vaccine in progressively increasing doses, the site of injection being by preference the lateral abdominal and gluteal regions.

Tuberculous Adenitis.—John B. Hawes (*Interstate Medical Journal,* March, 1917) describes his treatment as carried out at the Massachusetts General Hospital. It consists of four factors: 1, the removal of all sources of infection, with x ray examination of the teeth if necessary and removal of diseased tonsils and adenoids; 2, the surgical treatment, operative or otherwise; 3, general hygienic measures such as outdoor sleeping, heliotheray, nourishing food, and cool sponge baths down to the waist every morning; and in Hawes's opinion the least important, 4, the use of tuberculin, which should not be administered by the general practitioner, but by those skilled in its administration.

Mixed and Secondary Infections in Pulmonary Tuberculosis.—Roswell T. Pettit (*Interstate Medical Journal,* March, 1917) divides the treatment in symptomatic and direct methods. As to the first, fever is best treated by rest in bed without medication unless the temperature reaches 102° F.; sweats are controlled by rest in bed and atropine, and profuse expectoration is best left alone. Direct methods are those of chemical therapy and of immunization. Chemical treatment includes the use of antiseptics and of drugs which produce leucocytosis. Of the antiseptics creosote or creosotal in doses of three to five minims three times daily may be tried for several weeks, while nuclein and cinnamic acid are used by some to increase leucocytosis, although very unreliable in their action. Indirect immunization by serums is unsatisfactory, and even the active method by vaccines—autogenous or stock—shows varied results.

Medical Treatment of Chronic Intestinal Stasis.—William Van V. Hayes (*Interstate Medical Journal,* March, 1917) advises a proper abdominal support to maintain in position the digestive viscera; and the regulation of the bowels by nonirritating methods such as massage, special exercises, a glass of water before each meal and at bedtime, and liquid petrolatum half to one ounce morning and night or before each meal. Agar-agar, cascara, and phenolphthalein may be given and in suitable cases salines before breakfast. Large amounts of medicine are undesirable, and should be administered only after studying the secretory and motor functions by test meals. Proteins, fats, and sweets should be restricted, the urine kept free from indican, and the stools free from bad odors. Outdoor life, systematic exercise, general massage, and hydrotherapy should be encouraged, as well as all other measures which will improve the nerve tone and muscular vigor of the patient.

New Treatment of Bronchial Asthma.—A. G. Auld (*British Medical Journal,* May 5, 1917) holds that bronchial asthma is due to an anaphylactic condition arising from autosensitization. Since a more or less general antianaphylaxis can be produced by the injection of peptone, this was tried in cases of asthma with surprisingly favorable results. The treatment recommended is to use an aqueous solution of peptone and inject it subcutaneously. The initial dose should be 0.33 gram in five mils of distilled water. This is repeated in three or four days. During the second and third weeks the dose is doubled and later two doses of one gram each in seven to ten mils of distilled water are given. Severe cases may require a gram once or twice weekly for several weeks.

Ether Hypnosis in Psychotherapy.—Frank R. Starkey (*Medical Record,* April 14, 1917) has used ether hypnosis for several years in selected cases as a therapeutic measure and is impressed by its value. The gastrointestinal tract is prepared by a gentle purge and a light, easily digested diet for twenty-four hours in advance, with a mild sedative such as sodium bromide to calm any nervousness present. The ether is administered in a darkened, quiet room, and as soon as the patient has relaxed, and while the mental condition is hazy and dazed the operator begins his psychotherapy by impressing on the subject's mind the idea that his agitation, fear, rigidity, or other symptom has passed away, and he should be encouraged to repeat the principal statement, such as "quiet," "relaxed," several times over. The whole procedure does not occupy more than ten minutes and may be repeated daily or as often as necessary. Afterward the patient should be removed without noise or agitation to a quiet, darkened room and isolated there on soft or liquid diet in liberal quantities and protected from noise or disturbance of any kind.

Treatment of Pelvic Varicocele.—Carlos A. Castaño (*Revista de la Associacion medica Argentina,* March, 1917) divides the treatment into medical and surgical. As to medical treatment he advises the prolonged trial of thyroid extract in doses of from thirty to sixty centigrams daily with the addition of iodine, sulphur, calcium, and phosphorus which are found in the normal thyroid. The diet should receive careful attention, with the exclusion of meats, condiments, alcohol, jams, sea food, and coffee. Green vegetables should be freely given together with cereals of all kinds and fruits to prevent intestinal stasis. Rest, mental, physical, and sexual, should be taken and the skin should be stimulated by warm baths and friction with alcohol or aromatic vinegar. Saline laxatives or castor oil in small doses should be given to encourage gentle purgation without causing pelvic congestion. Hamamelis, viburnum, and cannabis indica may be profitably administered as may also be hydrastis. Hemorrhages may be controlled by enemas of plain hot water to which may be added gelatin or laudanum; by vaginal packing, or by rectal suppositories containing belladonna and cannabis indica. Surgical measures are ligature of the veins by laparotomy after the methods of Sencert or Reed or by oophorosalpingectomy or hysterectomy.

Cerebrospinal Fever. — Robert Donaldson (*Practitioner,* May, 1917) is of the opinion that early and repeated lumbar puncture in the absence of a serum of known curative value, is of more importance than any other method of treatment. The beneficial effects of simple lumbar puncture, apart from mere relief pressure, are, he thinks, due to the mechanical flushing action which must occur in the cerebrospinal system when a large quantity of cerebrospinal fluid is suddenly removed. The flushing must bring fresh bactericidal substances and fresh leucocytes to replace the exhausted contents of the thecal sheath.

Nonsurgical Treatment of Urethral Strictures. —Saul Steiner (*Medical Record,* April 21, 1917) states that cutting of strictures is practised very little at present as it is very rare to meet a stricture which is not dilatable except when due to traumatism. In strictures of small calibre a filiform bougie is passed into the bladder and allowed to remain there for twenty-four hours, when a soft bougie can be introduced. Bougies are passed up to 24 French every three or four days and then the metal sounds are resorted to. Other methods to be considered are electrolysis and the hypodermic or intramuscular use of fibrolysin.

Intravenous Administration of Cyanide of Mercury in Dysentery.—D. Varsi (*Revista de la Associacion medica Argentina,* March, 1917) has used the intravenous method of giving cyanide of mercury for two years in the treatment of both amebic and bacillary types of dysentery. This treatment was used alone in some cases, while in others the usual measures were resorted to in order to relieve pain. The initial dose is one centigram and if this is well tolerated one centigram and a half is given on the following day and repeated on the third day. If there is not a marked improvement on the fourth day two centigrams are given, but it is rare to find this fourth dose to be necessary. It is important that an accurate diagnosis be made, as there are a great number of cases of enterocolitis which are not benefited by the treatment, although many other conditions are greatly helped, such as tuberculous colitis, chronic ulcerative processes, and relapsing proctitis due to prolapse and tumors.

Intramuscular Versus Intrathecal Injections of Tetanus Antitoxin.—David Bruce (*Lancet,* May 5, 1917) criticizes the recent advocacy of the intramuscular route for administration of tetanus antitoxin on the ground that its advantages over the intrathecal route are not borne out by the results in human cases and that all theoretical considerations support the latter as the best mode of administration. In support of this criticism he cites the results of a series of animal experiments, conducted to answer the question in hand, by Professor Sherrington. These experiments were made to reproduce the conditions encountered in the human disease as nearly as possible and proved conclusively the much greater therapeutical value of intrathecal injections as compared with intramuscular. The former route not only gave far more effective protection against fatal progress of the induced tetanus, but also gave protection with much smaller doses of the antitoxin.

The Surgical Treatment of Cancer of the Stomach.—J. H. Jacobson (*Ohio State Journal of Medicine,* June, 1917) summarizes the treatment as follows: Successful treatment or cure is dependent upon early diagnosis. Not all cases of cancer show the same degree of malignancy; some are more suitable for operation than others. Most of the patients who come to the surgeon now have palliative or exploratory operations performed. Following resections, lasting cures over five years are obtained in 5.42 per cent. of cases. This will increase when the patients are operated on earlier.

Phenol Injections in the Treatment of Hemorrhoids.—Edmundo Escomel (*Revista de la Associacion medica Argentina,* March, 1917) advocates this method in cases where loss of time is impossible to the patient. It may be applied to external hemorrhoids, but it is painful and is adapted more especially to internal varicosities. After a preliminary purgative and enema the patient is given one centigram of extract of opium every two hours for several doses before the time of operation. The preparation used is twenty per cent. phenol in a mixture of equal parts of water and glycerin, and of this two to six drops are injected according to the size of the hemorrhoid. The position of the patient during the injection is by choice the knee chest one, as in this way the weight of the abdominal viscera is removed from the lower bowel.

Treatment of Acne.—R. A. McDonnell (*Journal of Cutaneous Diseases,* February, 1917) states that acne vulgaris is caused principally by two factors: eating fermentable foods, and inability to prevent such foods from fermenting. Menstruation, cigarette smoking, anemia, etc., are factors in acne through their influence on digestion. The treatment consists in thorough mastication of the food, putting the teeth in good order, and excluding starches and sugar from the diet. Antifermentive drugs, such as aloin 0.1 gram, ichthyol 10 grams, liquorice powder q. s., to be mixed and divided into thirty capsules and one taken after meal, are of value. Sunlight and fresh air as well as exercise help a great deal. X ray works in much the same way. Drying and peeling lotions help locally. Vaccination often controls the formation of pus in the lesions, but cannot, in the opinion of the author, cure acne vulgaris.

Local Analgesia in the Cure of Abdominal Hernia.—J. H. Jacobson (*Interstate Medical Journal,* March, 1917) having operated in 215 cases of hernia under local anesthesia without a death considers that all forms of hernia can be safely and painlessly operated by this method. Novocaine has become the standard drug for this work and it is used in solutions of 0.5, one, and 1.5 per cent., always in combination with adrenalin in the proportion of three drops of the one to 1,000 solution to each ounce of the anesthetic solution. No cases of poisoning or death from novocaine are on record, and it can be used in large quantities, Jacobson having used as much as twelve ounces of the 0.5 per cent. solution in bilateral hernia. A most important rule in the technic is the observance of a wait of at least fifteen minutes after the injection before beginning the operation.

Miscellany from Home and Foreign Journals

Orthostatic Symptoms in Gastric Pathology.—G. Leven (*Paris médical,* April 28, 1917) lays stress, with x ray studies as basis, on certain orthostatic symptoms noticed in men in active military service and apparently always related to gastric dilatation and gastroptosis. These symptoms include tachycardia, diminution of blood pressure, hyperesthesia of the solar plexus, albuminuria, facial pallor and lassitude, mydriasis, etc., all of which disappear when the subject lies down or is provided with a supporting belt so designed and placed as to hold up the dependent portion of the stomach. Prével is quoted in connection with this on the relationship of a prominence of the abdomen below the umbilicus with an unusually marked abdominocardiac reflex. As a matter of fact, this abdominal conformation is regularly met with in cases of visceroptosis. The symptoms mentioned appear due simply to the irritation of the solar plexus which results from the dragging of the dilated and ptotic stomach. The mere presence of such orthostatic symptoms warrants in some degree an *a priori* diagnosis of gastric ptosis and dilatation. The frequency of unexplained and untreated tachycardia in the army is accounted for in this way, as is also a special variety of albuminuria. Relief following application of the appropriate remedial measure is often little short of disconcerting in its promptness and permanence.

Reactivation of the Wassermann Reaction by Injections of Mercury and Sulphur.—A. Bergeron and C. Jouffray (*Presse médicale,* April 26, 1917) point out that, for "reactivating" a negative or doubtful Wassermann reaction in the presence of syphilis, the antisyphilitic measures applied must be neither too powerful nor too weak. Injections of mercury constitute the best procedure for this purpose. The authors employ intramuscular injections of colloidal mercury, in conjunction with sulphur—the latter used because of its tendency, noticed at sulphur springs, to cause reactivation of syphilitic lesions where these have become resistant to mercury, and in long standing, apparently cured, cases of syphilis. Thus, in previously untreated cases of suspected syphilis with negative or weak Wassermann reaction, 0.25 milligram of sulphur and one milligram of colloidal mercury, combined in one c. c. of fluid, are injected intramuscularly, and the injection repeated three days later. After this three double doses of each agent are injected, again at three day intervals, and two weeks later, a Wassermann test is made. In case reactivation has not yet taken place, subsequent tests are made two weeks and three weeks after the first, respectively. If these are still negative, syphilis presumably does not exist in the subject under examination. In five cases with manifestly syphilitic chancre, secondary eruptions, tibial gummata, iritis, and even general paralysis, but with weakly positive Wassermann, the reactivation treatment resulted uniformly in a strongly positive Wassermann. The same result was noted in fifteen feebly positive cases of liver enlargement, nephritis, hemiplegia, nontuberculous lung lesions, cardiac or vascular affections, or chronic rheumatism—thus all shown to have been syphilitic in origin—and in sixteen additional cases with a negative or merely suspicious Wassermann, sometimes both in the blood and cerebrospinal fluid, including instances of bronchiectasis, uterine neoplasm, inveterate headache, rhinitis, glaucoma, etc. If there is delay in the reactivation, the treatment should not be continued beyond the limits already indicated, lest it be sufficient in itself to cause abolition of an otherwise positive Wassermann. In a few cases the reactivation procedure seemed to fail, doubtless either because of actual absence of syphilis, preceding cure of the disease, or unexpected therapeutic activity of the agents given.

Diagnosis of Tuberculosis and Concealed Pulmonary Lesions.—F. S. Bissell (*St. Paul Medical Journal,* April, 1917) states his conviction, after examination of about two thousand lung cases, that the x rays offer more conclusive diagnostic evidence in early tuberculosis than any other procedure. He places the tuberculin test second, the physical signs third, and the history, especially as regards exposure to infection, fourth. The disease presents many clinical and several x ray types. In the numerous cases of latent or concealed tuberculosis, usually classed as neurasthenia or malnutrition, with slow progression and "healing out" in one lung area as the disease passes on to attack another, a solidly based diagnosis is possible only with the x rays. Pathognomonic x ray indications of tuberculosis are a soft, indistinct mottling at the periphery of the upper lobe, with pinpoint to pinhead sized shadows, and a fine network of linear shadows, especially characteristic when it occurs in that part of the lung where all markings are normally absent. Usually these shadows connect with similar ones at the hilus, and often there is a chain extending along the vertebral bronchus into the apex; these shadows, however, seem to occur in other infectious processes. In the differential diagnosis such conditions as anthracosis, streptococcosis, chronic passive congestion, lung syphilis, and bronchiectasis require consideration. Extension to the periphery and apex, when marked, favors tuberculosis. In chronic passive congestion the history and other clinical evidences are of assistance, as also in diffuse bronchiectasis. Especially within the province of the x rays is the negative diagnosis of lung tuberculosis, through which haunting fears of the disease can be definitely allayed. In prognosis the rays are likewise of unique value. Often a single examination will determine whether the disease is of the latent or concealed type, of the slow, infiltrative type with many old calcified foci, or of the more rapid caseating type with early cavity formation. By such a determination the important question of an appropriate mode of treatment is immediately settled; many patients can be permitted to continue their vocation, with proper diet, exercise, rest, and tuberculous therapy, while others must at once be placed in a sanitarium.

Hemeralopia in the Trenches.—Aubaret (*Bulletin de l'Académie de médicine,* April 24, 1917) establishes a distinction between the numerous cases of false hemeralopia, in which poor vision at night results from defects of the cornea, lesions of the humors, or errors of refraction, and the less numerous instances of true hemeralopia, which may be due to insufficient adaptation to obscurity of either the pupil, the retina, or the brain centres. Instances of simulated hemeralopia have also been met with. In the pupillary form of true hemeralopia, the pupils remain contracted in the dark and the retina fails to receive sufficient light. The diagnosis of the retinal and cerebral forms is made by exclusion, no anatomic or other physiological disturbance existing. There are occasional mixed cases in which the pupillary, retinal, and cerebral factors are simultaneously operative. Among the general causes of the nocturnal amblyopia are physical and mental overexertion and the nervous depression resulting from prolonged life in the trenches. Some perfectly well individuals, however, also exhibit the condition. In all instances the first thought should be of a possible refractive error; complete correction of such a condition usually removes the hemeralopia. In true hemeralopia due to myosis, a course of atropine should be given; in the retinal or cerebral cases, strongly smoked glasses should be worn in the daytime. An effort should always be made to improve the subject's general condition, as by rest, tonics, and a diet which favors elimination of toxic wastes from the system.

Physiology and Pathology of the Stomach after Gastroenterostomy.—Abraham O. Wilensky and Burrill B. Crohn (*American Journal of the Medical Sciences,* June, 1917) deduce from elaborate studies that views as to the events that take place after operative procedures on the stomach must be revised. The general impression that gastrojejunostomy does not impair the functional efficiency of the stomach is erroneous; the organ is left definitely impaired in a large percentage of the cases. The creation of a new opening in a situation not intended by nature disturbs the peristaltic tone of the stomach, the secretory function, and the nervous mechanism controlling both. In only a minority of the cases does the stomach return to an approximately normal state of functional activity. How important a factor artificial pyloric exclusion is in this disturbance is uncertain. The best results after operation have been obtained in cases in which some pathological process has gradually caused a stenosis at the pylorus, where conditions have been prepared over a period of time for the proper functioning of an artificial stoma, and when made it acts immediately as a long sought for and much needed outlet. The sudden, artificial attempt to imitate this causes an incoordinate muscular activity and is perhaps responsible for at least part of the disturbances after such operations. Cases in which no definite organic lesion is demonstrable in the stomach at operation, as well as all doubtful cases, should be treated by the physician, who may by diligence preserve the patient from some of the unpleasant sequelæ which can readily follow even a well justified operation.

Yaws.—J. de Aguiar Pupo (*Annaes Paulistas de medicina e cirurgia,* January, 1917), from a study of the literature and from personal observations in Brazil, concludes that yaws is clinically and microbiologically identical with Frambœsia tropica, and that it disappears in a community as the hygienic conditions therein improve. Treatment with salvarsan and neosalvarsan has given admirable results in Brazil.

Clinical Significance of Hematuria.—H. W. E. Walther (*Medical Record,* May 19, 1917) has personally collected a series of seventy-eight cases of hematuria in which there was a new growth in the genitourinary tract in fifty-one per cent., and of these new growths seventy-two per cent. were malignant. The next most frequent causes were urinary calculi and renal tuberculosis. The frequent occurrence of painless hematuria in new growths of the urinary tract emphasizes the importance of subjecting such cases to a careful cystoscopic examination to exclude this possibility.

Diagnosis of Atypical Forms of Cerebrospinal Meningitis.—Andruetto (*Gazzetta degli ospedale e delle cliniche,* April 5, 1917), in reporting several atypical cases seen in the Italian military service in which the diagnosis was made only after lumbar puncture, advises that watch be kept for such cases which frequently begin with symptoms referred to the gastrointestinal tract. It is most important in the diagnosis of meningitis that the cerebrospinal fluid be obtained by lumbar puncture and examined for physical and chemical alterations from the normal, the presence and nature of cellular elements and of pathogenic bacteria and for biological reactions. Such examinations should be combined with an intelligent interpretation of symptoms.

Bacteriology and Probable Means of Spread of Poliomyelitis.—Horace Greeley (*Long Island Medical Journal,* April, 1917) calls attention to the divergencies in the described characteristics of the several organisms which have been isolated by various workers from poliomyelitic material and presents the results of a series of bacteriological studies which tend to show that these divergencies can be reconciled by the fact that the organism is pleomorphic and differs in form and staining properties with the use of various culture media. He was further able to demonstrate that the organism probably belonged to the group causing distemper in dogs, if it was not identical with that organism in certain cases. The organism was also observed to grow well at summer temperature in milk and not to produce any demonstrable change in that fluid. It was also found that pasteurization of milk cultures of the organism did not check its growth and further multiplication. The facts seemed to suggest that this food product was probably the most important means of transmitting the disease, while cats and dogs and even human contacts might be subsidiary methods of its spread. The ability of the organism to multiply readily in milk at summer heat, to resist destruction by pasteurization, and the greater incidence of the disease during the summer and among those age groups in which milk is most used, justify suspicion of that food.

Proceedings of Local and National Societies

THE AMERICAN CONGRESS ON INTERNAL MEDICINE.

Stated Meeting, Held December 28 and 29, 1916.

The President, Dr. Reynold Webb Wilcox, in the Chair.

(Concluded from Vol. CV, page 1006.)

Ductless Glands in Dementia Præcox (*Continued*).—Dr. Francis X. Dercum, of Philadelphia, in a further discussion of the subject, said that various writers, among them Tsisch, Lomer, and Kraepelin, had assigned an importance to the sex glands. Lomer, particularly, indicated a disturbance of the internal secretion of the latter, but it remained for Fauser to throw an especially illuminating light on the subject. Fauser found in the serum of dementia præcox patients defensive ferments against the sex glands and against the cortex. It would appear from Fauser's investigations that in dementia præcox a primary dysfunction of the sex glands led to the entrance into the blood of unchanged sex gland protein, and that in the subsequent breaking up of this protein, substances were formed which were injurious to the cortex and which brought about the destruction, the lysis of the latter. The substance which entered the circulation was the internal secretion, the hormone of the sex gland, not of course the germinal product. The blood of male dementia præcox patients digested testicle but not ovary; that of female patients, ovary and not testicle. Fauser's results had been confirmed by a large number of investigators, among them Roemer, Bundschuh, Kafka, Ahrens, W. Mayer, Neue, and F. Fischer. Only in dementia præcox cases could Fauser demonstrate defensive ferments against the sex glands. In cases in which a digestion of the sex glands was unexpectedly found and in which a diagnosis had previously been made of manic depressive insanity or of other functional psychoses, the further clinical course of the cases proved that they were really cases of dementia præcox and that the serological diagnosis had been the correct one. In a number of less definite cases of dementia præcox in which defensive ferments against the sex glands were found only at times, it seemed as though this dysfunction ran parallel with fluctuations in the clinical course. In some cases, again, in a terminal and stationary condition, that is, in cases in which the pathological process had run its course, no defensive ferments were found against either the sex glands or cortex. Not infrequently defensive ferments were also found against the thyroid and against the adrenals. Ludlum, of Philadelphia, had also obtained positive results in the thymus. In the cases which reacted to thymus, the patients were small and light of build, and presented morphological features of arrest and other abnormalities. He regarded them as cases of underactivity of the thymus. Whatever the future might reveal, there appeared to be no escape from the conclusion that in dementia præcox there was a deranged metabolism, an autotoxic state, in which abnormalities of the internal secretions play a leading rôle.

It was very probable further that in dementia præcox toxic action was not limited to the cortex. Many of the symptoms suggested the action of toxins upon the sympathetic and autonomic nervous systems as well. How the latter reacted to poisons, e. g., the various alkaloids, atropine, pilocarpine, morphine, etc., is more or less definitely known. Knowledge likewise covered, though less completely, the action of the internal secretions. Adrenalin, for instance, induced contraction of the bloodvessels, acceleration of the heart's action, dilatation of the pupils, drying of the mucous membranes, lessening of the secretion of the salivary glands, and lessening of the motility and secretions of the stomach and intestines. Similarly the action of the thyroid and pituitary secretions were attended by phenomena that could only be explained by their action upon the autonomic or sympathetic systems. For instance, how full doses of thyroid preparations accelerated the heart's action, increased the secretion from the skin and of the intestinal tract and increased peristalsis, and how markedly pituitary preparations influenced the rate of the heart, blood pressure, and other processes were also well known. That some of the phenomena observed in cases of dementia præcox were referable to mere quantitative increase or decrease of the various internal secretions, and that still others were due to perversions of these secretions were extremely probable. That phenomena pointing to the action of toxins on the sympathetic and autonomic nervous systems were present in dementia præcox could not be denied. There were the phenomena presented by the circulatory apparatus, the digestive tract, and such other very special forms of apparatus as the iris. In the recognition of the facts lay the explanation of many of the symptoms. Among the latter were atonic indigestion, constipation, and dryness of the digestive tract, phenomena presented by the circulation, alteration of cardiac rhythm, fall of blood pressure, pallor, lividity, dryness, moisture, or other conditions of the body surface, dilatation or other anomalies of the pupils, and other symptoms. The point which should be emphasized was that these phenomena must be referred to a toxic action, an action which expressed itself through the autonomic or sympathetic nervous systems. The last mentioned fact acquired additional significance in studies in mental diseases when it was recalled that it was through this system that the emotions, the affects, mainly found physical expression.

It would appear that the various glands of internal secretion had suffered in the course of the development of the organism, so that their respective functions were subsequently imperfectly and aberrantly performed. It was not at all unlikely that while a number of glands—perhaps the entire chain—were involved in most cases, certain glands by their action, e. g., the sex glands, might dominate the picture; in others again it was the thymus; in still others it was the system of the pituitary, thyroid, and adrenals. In favor of the special rôle played by the thymus was perhaps the fact that dementia præcox patients frequently betrayed in childhood the forerunners of the affection. Kraepelin stated that very frequently, especially in the case of male patients, it was brought to light that as children the patients had been markedly quiet, shy, retiring, had formed no friendships, had lived only for themselves. Again, especially in girls, accounts were received of irritability, sensitiveness, excitability, nervousness, stubbornness, and obstinacy. Then again, a smaller group was noteworthy, mostly boys, in which the children were lazy, disliked work, were unsteady, prone to misdemeanors, held to nothing, and finally became tramps and vagabonds. In contrast to these were others, likewise more frequently met with in boys, who as children were characterized by docility, good nature, great conscientiousness and diligence, were unusually good, and who held themselves aloof from all improper conduct. It was not difficult to correlate the reserve and obstinacy with the later appearing symptom of negativism; the oddities and eccentricities with the subsequent symptom of impulsivity, and the docility, on on the other hand, with the subsequent symptom of automatism at command. It would appear, indeed, that frequently the character, demeanor, and conduct of the child foreshadowed the later appearing symptoms of the dementia præcox and that the affection really had its inception in childhood.

It could be inferred from Kojima's studies that the changes found in the glands of internal secretion, e. g., the abnormalities in their weights, were characteristic of any form of mental disease. However, it must be remembered that Kojima did not study the thymus.

Dr. Harlow Brooks, of New York, said that he had been working recently on the problem of the rôle which he believed the ductless glands played in the picture of collapse which developed so frequently in the infections. Since the group of patients who had formed the basis for this study had come into his service, he had experimentally reproduced the condition in animals, but he considered this of very much less importance than the clinical observation and clinical study. His deductions were that in many of the infections, particularly influenza, aggressive types of tuberculosis, especially those characterized by a high toxic temperature, and many other similar diseases, as pneumonia, the collapse which took place so unexpectedly, suddenly, and oftentimes fatally, was due, not to a degenerative process in the heart muscle, but to a degenerative change in the adrenal tissue. Those who had worked on the histology of this gland knew how difficult it was to form a just idea of the changes that took place because of the great facility with which lesions occurred, especially in the cytoplasm of the adrenal cell. The speaker had tried to bear that well in mind, but in certain instances there could be no question as to the lesion and therefore no question whatever as to the clinical signs which appeared as a result of this lesion. A very brief exposition of the clinical signs was a circulatory collapse manifested mostly by a vary marked hypertension; and where it occurred in hypotensive cases, it was marked by a fall of pulse pressure rather than a fall in pressure as a whole; that is, a drop in the systolic pressure, while the diastolic pressure remained stationary. Another evidence of circulatory collapse was very great tachycardia or bradycardia. Instances in which tachycardia developed one had been taught to think were associated with defect in the secretion of the thyroid, and it was believed that observation of this apparent effect had substantiated this theory. The mental and psychic depression and the changed clinical picture were very striking features of these cases of sudden circulatory collapse which appeared in these complications of the infections. These symptoms had been relieved notably by the artificial administration of the gland which was believed to be at fault.

Another clinical fact was that when one substituted the artificial secretion for the apparently defective secretion of these glands the action of drugs, such as digitalis, camphor, caffeine, and strychnine, in the heart muscle was much more evident. For example, in cases in which large doses of digitalis were given without much effect, when the adrenalin secretion was added a good reaction from the digitalis set in as soon as the adrenalin began to take effect. Such was also true of caffeine and strychnine, although it must be recognized that strychnine was not in itself a true cardiac stimulant, but was at most a muscle excitant, and as such, when added to nature's way of stimulating circulation, could certainly cause a much better effect than when used alone.

Dr. Smith Ely Jelliffe's contribution to the discussion of Doctor Sajous's paper is given in full in the May 26th issue of the Journal.

Doctor Babcock, of Chicago, said that in a number of instances he had been able to satisfy himself certainly that infectious, frequently focal infections, were very important factors in the production of arterial hypertension. Another point which seemed worthy of consideration was in regard to the excessive consumption of protein as a factor in the production of arterial disease. In the digestion of proteins, one of the aminoacids produced, namely, tyrosin, when acted upon by the colon bacillus was changed into tyramine, which increased the blood pressure and stimulated the nervous and muscular fibres.

Doctor Zeublin, of Baltimore, said that hypertension sometimes persisted for years and years before there were any further vascular disturbances. If better attention were paid to the metabolism of proteins in these patients, a better circulation could be gradually produced and a normal efficiency. Every prophylactic means should be taken to help the heart to accomplish its functions.

Dr. Tom Williams, of Washington, said that he agreed with Doctor Jelliffe's statement that one should regard the whole man. Every internist had found failure of psychical adaptation, known as delirium, as the result of infections and intoxications, which was immediately removed when the physical agent which was disturbing the chemical process was removed. It was not known what the disturbance of equilibrium in dementia præcox was, whether chemical, vegetative or psychical, or a condition of reactivity due to Mendelian heredity. It had yet to be explained. How could one reconcile the fact of failure of psychical adaptation with the recovery from that failure by purely physicochemical measures, such as those quoted by Doctor Sajous? Only by thinking of the whole man as a series of links can one realize that wherever the break was there was failure of adaptation. In certain individuals it might take the form of dementia præcox. If the break were in some failure of chemicovegetative capacity leading to interference with cerebral metabolism, there might still be dementia præcox, in which case the patient's disturbance of symbolism would not be psychical at all. So one came back to the relation of the balance of the endocrine function and the several parts of the metabolism and then regarded the pure psychogenetic disturbances of the individual. One was justified in inferring that dementia præcox was a disorder of physical origin having nothing to do with the psyche proper.

Diagnosis of Duodenal Ulcer.—Dr. John B. Deaver, of Philadelphia, said that the diagnosis of typical duodenal ulcer should not present any difficulties in view of the fact that the symptoms usually appeared in well defined sequence; so well defined indeed that he would not hesitate to diagnose a typical case from a history given by correspondence or over the telephone. The typical case history of duodenal ulcer revealed attacks for years of epigastric discomfort after meals, a fullness and a gnawing, burning sensation rather than pain, with acid eructations coming on from two to six, commonly three or four, hours after meals. This distress rarely appeared after the morning meal, but came on with constant regularity after the heavier meals taken at noon or in the evening, the so called hunger pain at night being one of the distinguishing features of the complaint. No satisfactory explanation had yet been forthcoming as to the rationale of these hunger pains. Subsidence of pain upon eating or taking an alkali, such as soda, was another characteristic symptom. The periodicity of these attacks with intervals of complete well being was emphasized by all authorities. Moynihan stated that they usually occurred in winter and were the direct result of cold. In the speaker's experience, however, the spring and fall seasons were the ones generally mentioned. The patients were usually middle aged males. The physical signs consisted of more or less tenderness and rigidity in the epigastrium and upper right rectus regions. These, however, were of secondary importance as it was the history mainly that counted in the diagnosis of a typical case. Hemorrhage from the bowel or by mouth as evidenced by tarry stools or by occult blood in the vomitus was usually noted in about one third of the cases, and it was a feature in about one seventh of the histories. These patients also showed a low hemoglobin percentage. An excess of hydrochloric acid, generally conceded to be pathognomonic of the disease, was noted in more than one half of the cases; subacidity and normal acidity being about equally divided in the remainder. Hypermotility was an important item in the symptom complex of duodenal ulcer. In a series of fifty-three patients operated on at the German Hospital in Philadelphia a correct preoperative diagnosis was made in all but eight cases. In one instance stone in the common duct was diagnosed in addition to duodenal ulcer and both conditions were found at operation.

But the diagnosis of duodenal ulcer was not always smooth sailing. The atypical variety led into troubled waters. These atypical cases more often simulated appendicitis, especially where the appendix was high, than other conditions from which they could with more or less ease be differentiated, such as gastric ulcer, cholelithiasis, cholecystitis, chronic pancreatitis, and pancreatic lymphangitis. Chronic appendicitis cases frequently presented the same hunger pains as duodenal ulcer, hyperacidity was not unusual, and many showed the same chronicity as in duodenal ulcer. The main difference between the two was in the freedom from discomfort in the duodenal cases between attacks, while in appendicitis the flatulency and discomfort were apt to be constantly present. The patients with appendicular indigestion usually suffered more pain after certain kinds of food, especially starchy foods and red meats. The pain was usually not so severe and radiated downward, the latter being one of the main points in the differential diagnosis. In fact, the appendix was found diseased in so many cases of duodenal as well as gastric ulcer that the latter might be considered secondary conditions. The speaker therefore made it a practice to remove the appendix in practically all cases of gastric and duodenal ulcer. In distinguishing between gastric and duodenal ulcer one might be guided by the time relation of the ingestion of food and the onset of symptoms. It was quite generally conceded that the longer the interval between the meals and the appearance of the pain and the more prompt the food relief, the lower down would the ulcer eventually be found.

The radiation of pain, if any, if duodenal ulcer was usually to the right, while in gastric ulcer the pain radiated to the left as a rule. The pain also was apt to be more constant than in duodenal ulcer. Einhorn's bucket had been found useful in some instances in approximating the location of the ulcer with more or less precision, but the writer had not introduced it as a routine procedure in his service at the German Hospital. Vomiting was also more frequently a symptom of gastric ulcer, as was also hemorrhage, the latter being usually in the form of hematemesis, while in duodenal ulcer it was usually melenic.

Cholelithiasis presented more difficulty, but care in taking the history would usually enable the experienced clinician to forecast the true state of affairs. Cholelithiasis was marked by such severe colicky pain with sudden and unaccountable onset and as sudden and mysterious cessation that recognition should as a rule be easy. Lavage would usually cut short an attack of biliary colic, but had no influence on the pain of duodenal ulcer. Chronic cholecystitis very frequently clouded the diagnosis of ulcer; it presented the same chronicity though the attack did not last so long. The pain, hyperacidity, and flatulency were also present, while not infrequently the absence of typical jaundice in cholecystitis and its presence in duodenal ulcer made confusion worse confounded. Symptoms similar to those of chronic pancreatitis or some pancreatic involvement were not rarely met with in duodenal ulcer. The character of the pain in the former condition was moderate, as it was in the majority of duodenal ulcer cases, and there was the same epigastric oppression. A valuable distinguishing feature in the pancreatic disease was in relation to eating or drinking or to the kind of food taken.

Malignant neoplasms in their early stages sometimes simulated the symptoms of gastric ulcer. In atypical cases of this nature nothing short of incision and inspection would enable one to determine the nature of the lesion. A large number of cases of malignant disease of the gastrointestinal tract were due to attempted medical treatment of these gastric and duodenal conditions for prolonged periods of time. In one series of cases three specimens of duodenal ulcer were returned from the pathological laboratory bearing the legend "incipient malignancy."

A serious and more frequent menace presented by duodenal ulcer was perforation and hemorrhage. The operative mortality in these cases was very low, and therefore it seemed unjust to subject a patient with duodenal ulcer to the discomfort and risks of the serious dangers alluded to by avoiding operation, which was incision and drainage of subdiaphragmatic abscess in perforated ulcer cases and in all others posterior gastroenterostomy. In some instances this was the only procedure; in some it was combined with pylorectomy; in some the ulcer was invaginated and in some excised; plication of the duodenum had been done and in cases complicated with cholecystitis a cholecystectomy was performed, combined wth choledochostomy where there was stone in the common duct.

Prognosis of Duodenal Ulcer.—Dr. Max Einhorn, of New York, said that the prognosis of disease ran parallel with its therapeusis; progress in the cure of a malady improved its prognosis. In duodenal ulcer great advances had recently been made in diagnosis as well as in treatment. The outlook, therefore, for patients suffering from a duodenal ulcer was today much brighter and more favorable than in former years. With regard to prognosis, it would be well to divide duodenal ulcers into the following groups: 1, simple duodenal ulcers; 2, duodenal ulcers accompanied by pylorospasm and usually also hypersecretion, alimentary or continuous; 3, duodenal ulcers accompanied by pyloric or movement stenosis, and, 4, duodenal ulcers with recurrent hemorrhages.

In the first group the usual symptoms were epigastric distress two or three hours after meals; sometimes hunger pains; long periods of euphoria alternating with comparatively short periods of suffering. Gastric hemorrhage may have occurred once. This group gave a comparatively good prognosis with the following treatment: some form of rest cure, rectal alimentation, and von Leube-Ziemssen milk diet; or duodenal alimentation; or simply a milk and egg diet and rest in bed for about two or three weeks. Later on, no overexertion should be allowed, either physical or mental, and a general hygienic mode of life should be followed. The oftener the attacks recurred the more doubtful the prognosis became as to a complete cure by medical measures. Operative intervention, gastroenterostomy preferably with pyloric occlusion, offered a rather good prognosis.

In the second group severe pains and frequent vomiting were the chief symptoms. Hypersecretion, either alimentary or continuous, was here constantly encountered. The gastric juice was usually hyperacid. When the pylorospasm reached a higher degree, ischochymia appeared at intervals. The prognosis of this group was quite severe under ordinary methods of treatment, alcoholic, or even the milk diet. Duodenal alimentation gave a better prognosis, but in case it did not produce the desired effect in from two to three weeks, gastroenterostomy with pyloric occlusion should be performed, which usually improved the prognosis.

In the third group ischochymia was constantly present. In cases of beginning pyloric stenosis, duodenal alimentation and then stretching of the pylorus might be tried. The prognosis under this mode of treatment varied in different patients. The condition should be watched and the prognosis made accordingly. If there was no improvement, or if the stenosis was further advanced so that the duodenal bucket failed to pass through the pylorus, gastroenterostomy should be performed. Barring the dangers resulting from surgical intervention, the result was usually very good and the prognosis favorable. In duodenal stenosis situated below the papilla of Vater, bile was constantly found in the stomach or in the vomitus. The treatment required surgical intervention and the progress then became good.

In the fourth group, the predominating symptom was a profuse hemorrhage, hematemesis, melena, or both, which returned periodically and endangered the life of the patient. An interval gastroenterostomy, eventually with pyloric occlusion, gave the best results and rendered the prognosis more favorable. The latter, however, should be done cautiously, as there might be a new hemorrhage even after apparently perfect recovery from the operation, in which event the prognosis became doubtful, more so with each repeated hemorrhage.

In groups two, three, and four the prognosis, when no surgical intervention was undertaken, should not be made too favorable, as there was a possibility of perforation. With the gravity of symptoms the liability of this event increased. Continuous hypersecretion and severe pains frequently preceded perforation, and approximate measures should then be taken in order to make the outlook brighter.

Possible Dependence of Gastric and Duodenal Ulcer on Disturbance of Internal Secretions.—Dr. G. A. Friedman, of New York, said that it had been shown that the experimenter and the clinician had been the real investigators in regard to the origin of gastric and duodenal ulcer and had rendered possible an explanation of the common cause of peptic ulcer in man by a study of internal secretions based on experimental work which seemed to harmonize with clinical experience. Not one of the theories that had been advanced to explain the pathogenesis of ulcer had been accepted as the common cause of ulcer. Briefly mentioned, they were the vascular, the neurogenous, the toxic, and the microbic. A functional disturbance in one structure might produce pathological changes in another. In seeking the origin of the initial lesion in peptic ulcer there were many strong proofs that led to the conclusion that the lesion was due to a functional disturbance of the nerves supplying the parts involved. This functional disturbance of the nerves might very probably arise from anomalies in secretions of certain ductless glands.

The organs which were supplied with smooth musculature, as the stomach or duodenum, were under control of the vegetative nervous system, the regulation of which was partly independent of the central nervous system. Langley divided this vegetative system into the cranial sacral autonomous group, extended vagus, or the parasympathetic group and the sympatheticus proper. He also showed that the antagonistic physiological relation of both groups existed not only in the heart, where this antagonism was most evident, but was present in the stomach and intestines, where, however, the vagus fibres caused stimulation of the smooth musculature and the sympatheticus inhibition of peristalsis and secretion. Langley's teachings were strengthened by the researches of H. H. Meyer, who showed that certain drugs had a selective action upon the autonomous nervous system and also upon the sweat glands. Atropin paralyzed ths system. Adrenalin, however, had been shown to have a stimulating effect on the sympathetic nerves.

The vegetative nerve system supplied the glands of internal secretion as well as the viscera. The stomach was supplied by the terminal branches of the vagus. The duodenum was largely supplied by the sympathetic fibres and by some of the vagus fibres. The adrenals obtained their nerve supply almost entirely from the sympathetic through the splanchnic nerve. The thyroid, however, had a double innervation, the sympathetic and the vagus. The pituitary body might be excluded from consideration here since the secretion of this gland exerted its influence upon tissues innervated by the pelvic nerve. Vegetative stigmata were actually present in the majority of individuals suffering from gastric and duodenal ulcer. Clinical experience showed that patients suffering from chronic peptic ulcer might be divided into two groups: 1, those in whom the organic element without apparent nervous manifestations was evident; at operation ulcer was usually found; 2, those in whom the nervous element was so predominant that it was often difficult to eliminate the organic element as the chief cause of trouble. At operation, ulcer was found, but usually the result of the operation was not beneficial.

The younger the individual afflicted with peptic ulcer the more numerous were the vegetative stigmata. The complete absence of symptoms and signs pointing to a disturbed equilibrium of the vegetative nervous system might be mainly noted in the fifth or sixth decade of life. But even in old people in whom the first symptom of ulcer dated back twenty or twenty-five years, one would elicit the history of previous nervous symptoms which might be interpreted as evidence or vegetative disturbance.

When one of the glands, for instance, the thyroid or adrenal, had been stimulated by the vegetative nerves and kept under its influence abnormally, there might be a reaction, and the nerve itself might become influenced through the disturbed activity of the gland. Since, therefore, a disturbance in the vegetative nerve, vagus, or sympatheticus, may lead to disturbances in the function of the thyroid or adrenal, and since there was a reciprocal reaction between them, a minor degree of disturbance in these glands might show its influence upon the nerves, and the result of such influence might become evident clinically by pathological changes in the structures supplied by the nerves affected and by the production of the symptoms and signs of vagotonia or sympatheticotonia. The mode by which the ductless glandular system might influence the excitability of the vegetative nerves was not known, but it was probably produced through the agency of hormones. This had been established with certainty in regard to adrenalin and it was possibly true of the other internal secretions.

That an excess of thyroid secretion might affect the mucous membrane of the stomach by producing erosions or acute ulcers was proved in two dogs and four rabbits by subcutaneous and intravenous injections of dessicated thyroid gland for about a week. It was also found that injections of adrenalin administered to dogs intravenously, subcutaneously, or intramuscularly for about one to two weeks in doses not exceeding three milligrams of the usual commercial solution—1:1000—were liable to cause lesions, erosions, or superficial ulcerations in the duodenum. This experiment also showed that adrenalin might have a preferential action upon the duodenum, probably because of its rich sympathetic nerve supply, which was the secretory nerve of the adrenals. After one sided thyroidectomy in dogs and in rabbits, lesions or ulcers were found in the duodenum more frequently than in the stomach. Occasionally ulcers were found in both and sometimes in the jejunum. In the duodenum of rabbits and guineapigs and in one dog, lesions were found also after onesided adrenalectomy, the unextirpated adrenal becoming hypertrophied.

Adrenal insufficiency caused in various species of animals lesions or ulcers in the stomach. An excess of thyroid gland was probably responsible for the gastric lesions in three animals out of the four experimented upon. Thyroid hypofunction caused the appearance of duodenal and gastric lesions. An excess of adrenalin produced by repeated injections of the drug led to the appearance of lesions in the duodenum of dogs and rabbits. The simultaneous production of adrenal and thyroid hypofunction did not lead to any lesion in the stomach or the duodenum of rabbits. When after removal of one adrenal the other became hypertrophied, lesions were seen in both viscera of rabbits.

From these experiments it would seem probable that gastric lesions might be dependent upon adrenal insufficiency as well as upon excess of adrenalin. Gastric and duodenal lesions might be dependent upon the alternating effect of hypofunction and hyperfunction of the adrenals. From all these considerations a correlation of secretions of the thyroid and adrenals seemed to be plausible in the causation of gastric and duodenal lesions in these animals.

Venous Stasis and Colloidal Diffusion as Etiological Factors of Gastroduodenal Ulcer.—Dr. Fenton B. Turck, of New York, said that the peptic ulcer bearing area located within a few inches of the pylorus, cephalic, and caudal, had excited the most intense curiosity and interest since the earliest discovery of ulcer. The prevailing conception that the gastric secretion determined this location faded away under experimental observation. In experimental ulcers increased gastric secretion was never found. A greatly diminished secretion of hydrochloric acid and the ferments was the rule.

The speaker's own experiments recently had shown that there was a diffusion of bacteria from the intestinal lumen into the wall at different levels of the alimentary tract. The laws that governed the passage of the bacteria were those of a colloidal suspension passing through a filter. The microorganisms did not enter the bloodvessels or lymph channels, but made their way between cells of the mucosa, crossing the muscularis mucosa, passing into the interstitial tissues of the submucosa. Meeting antibodies in this zone, the bacteria were either destroyed, or their multiplication prevented by the antibodies formed in this area. Bacteria that were not destroyed in this submucous tissue, diffused along the walls between the muscular coat and the mucous membrane, passing in the cephalic direction. The laws that governed the direction that the bacteria took could not always be understood. While passing upward in the direction of the venous and lymphatic channels, bacteria were never found in the lymph or venous streams, but migrated or filtered between the connective tissue cells. When the bacteria finally reached the region of the pyloric orifice the stream was stopped here.

The conditions that allowed the bacteria to filter into the walls of the intestinal tube were many. The most important and determining factor was the alteration in the venous circulation of the intestinal tract. Atony of the intestinal walls associated with venous stasis was one of the important causes which permitted filtration of bacteria. Obliteration of the lumen of the intestines by ligation at different points was effective in causing filtration of bacteria, but this filtration depended upon the degree of the disturbance of the circulation more than upon the mere obstruction. Trauma, catarrhal states of the mucosa, and inflammation did not necessarily favor the filtration of intestinal bacteria. If vessels were tied off to produce a stagnation of the blood supply, the other changes which took place, leucocytosis, marked edema, round cell infiltration, etc., were not so effective in determining the passage of the bacteria in the walls as splanchnic venous stasis induced by shock, anaphylaxis, and other less violent conditions that induced venous stasis.

The penetration of the bacteria was not diffuse, but occurred at selective points along the tube. The laws that governed the selection of the exact point where bacteria would filter through were analogous to the relation of a colloidal suspension to a colloidal substratum, or, in other words, as an adjustment of the filtered substance to the pores of the filter. The ileum is the most favorable area for bacterial migration of any segment of the alimentary tract. The bacteria that passed into this submucous zone often showed immediate bacteriolysis on crossing the muscularis mucosa. Specific antibodies were evidently formed in the submucous zones because of the destruction of the filtered microorganisms. Certain intestinal microorganisms, such as the colon bacilli group, coming in contact with the intestinal secretions acquired a relative immunity against the destructive effect of the lymph or serum in the submucous tissue, and therefore escaped bacteriolysis. These continued their journey cephalad to the region of the pyloric orifice; here, meeting much more powerful antibodies, they were destroyed. Their destruction in any accumulated numbers resulted in the destruction of the tissues and necrosis and ulcer formation was inaugurated. It was shown by titration of the blood serum with the suspension of cell substance that, using anaphylaxis as the index, the cell substance was two hundred to a thousand times more powerful in antibodies than the blood serum of the same animal.

The fact that ligation of the pyloric area caused death in the animal, while ligations in the lower tract were not fatal until starvation supervened, was undoubtedly due to the fact of this greater increase in the proteolytic antibodies in the duodenal wall as compared with the lower intestine. Because of the antibodies formed in this submucous zone, the speaker had named it the "zona transformans." Other colloidal suspensions than bacteria would cause reactions and even death. Bateman found that raw egg white would cause intense diarrhea in dogs, cats, rabbits, and men; but if the dose was properly adjusted to the animal, certain antibodies were formed until finally a tolerance occurred.

Letters to the Editors

CREATINE AND CREATININE AS INHIBITORS OF MUSCULAR CONTRACTION

Philadelphia, Pa., *June 5, 1917.*

To the Editors:

I have been greatly interested in Dr. Arthur L. Fisk's article on The Effects of Fatigue Upon the Aged, published in your issue of the 30th ultimo, in which he takes the ground that certain organic products like lactic acid, carbon dioxide, creatine, creatinine, etc., which are the products of chemical changes accompanying muscular contraction which, in turn, become intoxicants to the latter process, and so give rise to fatigue and exhaustion in the animal body. I am clearly of the opinion that Doctor Fisk's conclusion is in the main correct, and nothing is said here in a spirit of criticism, but I desire to draw attention to certain facts which may induce him to modify his decision somewhat in respect to the toxicity of creatine and creatinine in relation to muscular contractility.

In 1887 I took up an experimental study (*Practitioner*, xxxix, No. iv) of the physiological action of creatine, creatinine, sarcine, xanthin, inosite, etc., by transfusing them in solution through the frog's heart, attached to a Kronecker-Bowditch apparatus, and so was able to compare their graphic results with those obtained from a two per cent. saline blood solution on the same organ. The products were as follows: creatine and creatinine in the proportion of one to 1,000 and one to 2,000 saline solution practically supported the amplitude of the heart's contraction as powerfully as was done by a two per cent. blood solution; while the action of sarcine, xanthin, and the other extractives demonstrated themselves as negligible factors in this respect.

Viewed from this fundamental standpoint, it seems reasonable to believe that these two agents do not inhibit muscular movements, but rather belong to that class of substances which give nutritive value and support to the function of muscular contractility, at least in so far as the frog's ventricle is concerned.

Thomas J. Mays, M. D.

COMPULSORY HEALTH INSURANCE GETS THE WHOLE HOG.

117 West Seventy-sixth Street,
New York, N. Y., *July 7, 1917*.

To the Editors:

The New York Medical Journal is entitled to the thanks of its readers for the honesty and fairness of its report of what took place in the section in Preventive Medicine and Public Health, during the meeting of the American Medical Association in this city in regard to the subject of compulsory health insurance. Although the Journal was not opposed to this measure and did not bear any of the burdens of the struggle which led to its defeat, it has not taken part in the general suppression of the result of this conflict that its lay medical advocates have done since it was defeated, all of whom had previously donated unlimited space to its advocacy. In one respect only is your otherwise admirable editorial on this subject open to criticism; it is in the following statement: "There is also in this section a group of men employed on salaries in public and other service, some of whom were found aligned against the resolution." Not one of these men were known to have favored the resolution against compulsory health insurance. The one whose strongest efforts were directed toward repeating the straddle on compulsory health insurance that was successfully worked at the meeting of the State Medical Society at Utica was declared to be no representative of the private practitioners who would have to bear the burden of this imposition. He urged in reply to this accusation that he was only a "half time" man. The opposition that had been previously balked in the manner above alluded to, however, wanted no halfway measures in this instance, even if these were favored by half time men. In the stronghold of compulsory health insurance itself they wanted victory or defeat, or in common parlance "the whole hog or none." They got the whole hog.

John P. Davin, M. D.

A STATE LICENSE STOLEN.

Meridian, Miss., *June 30, 1917*.

To the Editors:

On the night of June 25th my office was entered and my State license stolen. Feeling that this was probably done by some one who contemplates going to some State that reciprocates with Mississippi and under my name secure a license for himself, I deem it my duty, through the Journal to notify the secretaries of the different State boards that they may be on the lookout for such a person.

W. R. Grady, M. D.

A PHARMACEUTICAL CORPS.

Minneapolis, Minn., *July 6, 1917*.

To the Editors:

As you may know, the American Pharmaceutical Association has now for some time actively advocated the more adequate and consistent recognition of pharmacy by the Government and has sought representation in the national defence. The American Pharmaceutical Association, as well as other pharmaceutical associations and interests, feels that the army and the navy are entitled to the best pharmaceutical service that the country affords and to that end is advocating the establishment of a pharmaceutical corps. The fact that the American Medical Association is supporting the idea (*Journal American Medical Association*, p. 1822, editorial, and p. 1864, Mr. J. W. England's letter) suggests this line to you to say that the American Pharmaceutical Association and indeed all pharmacists would greatly appreciate it if you saw your way open similarly to indorse the movement by giving publicity among your readers of the merits of the cause which the pharmacists have at heart, not so much in their own interests as in those of the army and the country. I am certain that I am right when I say that it is the patriotism of the pharmacists that prompts their desire to be put into line to give the maximum professional pharmaceutical service. Mr. England's letter is so explanatory that I will not add to it.

I hope you will feel inclined to help this cause, which is intrinsically a medical one.

Frederick J. Wulling,
President American Pharmaceutical Association.

FOCAL INFECTION AND CARDIORENAL DISEASE.

3671 Broadway, New York, *July 9, 1917*.

To the Editors:

One of my patients expressed the desire to consult a specialist. I forthwith gave him the addresses of three or four men, leaving the choice unreservedly to him. Briefly stated, my patient is a prosperous business man of sedentary habits who formerly indulged freely in alcoholic stimulants, but who is at present a total abstainer and rather a heavy eater. He is moderately cyanotic, and is dispneic especially on exertion of any kind. His heart is appreciably dilated, especially the right side; its beat is diffuse, irregular, and hardly distinguishable. At times I am able to make out a mitral regurgitant murmur which I am inclined to consider as purely compensatory in nature. His blood pressure is exceedingly erratic, varying between 140 to 180 systolic and 80 to 110 diastolic. The arteries show considerable hardness but no tortuosities as yet. The urine is excessive in quantity, of low specific gravity, and contains a large amount of albumin in addition to casts and other elements denoting renal degeneration. This man is sixty-two years old, is about twenty-five pounds overweight, and I may add that he went through an attack of genuine influenza recently which aggravated his illness very much.

Here is a case which, even after this cursory description, will be easily recognized as a typical cardiorenal one, and has been recognized as such by my consultant. But there comes the point to which I beg to call your attention: My consultant attributes the condition to an oral infection pure and simple, with such an amazing assurance that could leave no room for any doubt. I examined my patient's mouth several times, and even made inquiries of his dentist, a clever and conscientious man, who asserted to me that his teeth are as good as could be expected in a man of his age. I should like to ask if it is necessary to jump at conclusions like the above without a moment's hesitation and with such apodeictical certainty? Did we not lay all ills that human flesh is heir to at the door of flat feet, spurs in the nose, kinks in the intestines, etc.? Were they all fads and is oral sepsis the real culprit? Is this the last word? I doubt it. This truism of today may be dropped by tomorrow, and who knows but that some other ephemeral theory may be bred in some master mind that will condemn oral sepsis to an eternal slumber alongside of its forerunners—aye, even while I am jotting down these lines? There is no reason in the world why we cannot tell our patients to keep their dentists busy and be proof against all diseases, notably against cardiorenal disease and rheumatism—so called. I am apprehenive of being accused of gross ignorance had I omitted the "so called." At times I do not blame some of our most intelligent patients when they turn their backs on our fads and take up others presented to them perhaps in a more pleasing form. I have had cardiorenal cases in toothless people; I have had them in people with bad teeth, and I have had them in people whose teeth were exceedingly well preserved. I lost the best friend I had in this world through this disease, though his teeth were perfectly intact, as white as ivory, and as strong as iron. It was the excessive wear and tear of life in addition to an enormous intake of food that caused his untimely death.

I am well aware that bad teeth, spurs in the nose, kinks in the intestines, and flat feet are not inducive to good health, but I would hesitate to risk the statement that any of these conditions alone or all combined are solely responsible for this disease to which some of our best men fall victims almost as soon as they pass the meridian of life.

Charles H. Weissberger, M. D.

After Office Hours

As an example of the interest which the laity is taking nowadays in medical matters we cull from the pages of the New York *Times* for July 8th the following items: Number of Insane at Large Now Less; War Surgery's Aid in Cold Figures; Plea to Mothers to Save Baby Eyes; Says Doctors Fail in Tetanus; Confessing Crime to Doctor, Lawyer, or Cleric; Germans Still Able to Control Drugs Here; Watching the Healthy to Ward Off Sickness; Rigid Physical Tests for Prospective Aviators; Drafting Physicians. This is a total of nearly fourteen columns, which would seem to indicate that the general public take at least a mild interest in our doings.

* * *

Since our country has entered the war the *Masses* has been devoting most of its space to a somewhat hysterical anticonscription, antiWilson, antiwar, antieverything propaganda. The July issue is no exception. Among its gems is a cartoon of a man coming out of the office of a military surgeon and expressing gratitude that he has been found to have heart disease and may drop dead any minute. The inference is of course a sufficiently severe arraignment, of war, but fortunately no such conditions exist. There may be perhaps somewhere in the length and breadth of our land imbeciles who would rather be in danger of dropping dead than serve their country, but the army surgeons will tell you they are rarities. Far more common is it to find a candidate trying to hide some physical defect so that he will be accepted.

* * *

We have commented before in this column on the present day tendency toward occultism. The *Metropolitan* for August features Adventures in Spiritualism, a collection of somewhat banal letters from subscribers, telling what they have seen, heard, or read about Ouija boards and the like. Another instance is before us in the *Century* for July. The leading story has to do with a cheap medium, full of the tricks of his trade, who unexpectedly goes into a real trance and, animated by the soul of her dead brother, tells a fascinated client some marvelous things which, of course, turn out to be true. To make the narrative more real, the magazine's frontispiece shows the medium with his head and shoulders enveloped in something resembling a luminous spider web, supposedly the aura of the dear departed.

* * *

The August *Smart Set* is at hand, full of good things as usual. The editors suggest the following plot for a modern novel: "Herman is in love with Violet, who is married to Armand, an elderly diabetic. Herman and Violet, who are Christians, await with laudable patience the termination of Armand's distressing malady. One day Dr. Frederick M. Allen discovers his cure for diabetes. . . ." We suggest this one: Betty loves Jack, twenty-one, but through family pressure is forced to marry Arthur, aged forty, a solid business man who has won over the family by his talk of tremendous schemes of his which are about to materialize. Arthur proves to have general paresis and is removed to an asylum where he dies. Betty marries Jack. Jack turns out to have an Œdipus complex which renders him incapable of really loving any woman but his mother. Betty runs away with the iceman and has twelve children and goes to the movies every night to see Lou-Tellegen and Wallace Reid and is very happy.

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Official News

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending July 11, 1917:

Bolten, Joseph, Assistant Surgeon. Relieved from duty at Ellis Island, N. Y., and directed to proceed to Washington, D. C., for duty in the Hygienic Laboratory.

De Saussure, R. L., Assistant Surgeon. Directed to rejoin station at St. Louis, Mo., for duty in studies of rural sanitation.

Draper, W. F., Passed Assistant Surgeon. Directed to proceed to Petersburg, Va., on special temporary duty.

Freeman, A. W., Epidemiologist. Directed to proceed to Columbia, S. C., and Atlanta, Ga., on special temporary duty.

Fricks, L. D., Surgeon. Directed to proceed to Jefferson County, Ky., for special temporary duty.

Galloway, T. C., Assistant Surgeon. Directed to proceed to Reedy Island Quarantine Station for special temporary duty.

Grimm, R. M., Passed Assistant Surgeon. Granted one day's leave of absence, July 4, 1917.

McCoy, G. W., Surgeon. Directed to proceed to such towns in Connecticut as may be necessary on special temporary duty.

Ridlon, J. R., Passed Assistant Surgeon. Directed to proceed to Blytheville, Ark, on special temporary duty.

Safford, M. V., Assistant Surgeon. Granted two days' leave of absence from July 5, 1917.

Sayers, R. R., Assistant Surgeon. Relieved from plague duty in New Orleans and assigned to duty on mine rescue car No. 5, with station at Butte, Mont.

Schereschewsky, J. W., Surgeon. Directed to proceed to New York, N. Y., to supervise laboratory studies of industrial fatigue; also directed to proceed to industrial establishments in the northern and middle western States on the same duty.

Wrightson, W. D., Sanitary Engineer. Relieved from duty at Chicago, Ill.; directed to proceed to Louisville, Ky., on special temporary duty; on completion of this duty, directed to proceed to such places in the States south of the Potomac and east of the Mississippi rivers as may be necessary in connection with malaria studies, with station at New Orleans, La.

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Births, Marriages, and Deaths

Born.

Schott.—In Cohasset Mass., on Tuesday, July 3d, to Dr. Edward H. Schott and Mrs. Schott, a daughter.

Married.

Gillum-Pearson.—In Northampton, Mass., on Saturday, July 7th, Dr. John Randolph Gillum, of Terre Haute, Ind., and Miss Elizabeth Pearson.

Preble-Phelps.—In Brookline, Mass., on Saturday, July 7th, Dr. William E. Preble, of Boston, and Mrs. Helen Smiley Phelps, of Vicksburg, Miss.

Spitzley-Robinson.—In Detroit, Mich., on Tuesday, July 3d, Dr. William A. Spitzley and Miss Jane Robinson.

Died.

Armendt.—In Owensboro, Ky., on Saturday, July 7th, Dr. Louis G. Armendt, aged sixty-six years.

French.—In Milwaukee, Wis., on Saturday, June 30th, Dr. Samuel W. French, aged sixty-seven years.

Graves.—In Austin, Tex., on Sunday, June 24th, Dr. Richard S. Graves, aged seventy-five years.

Jones.—In Utica. N. Y., on Wednesday, July 4th, Dr. Herbert G. Jones, aged sixty years.

Kane.—In St. Louis, Mo., on Tuesday, July 3d, Dr. John J. Kane, aged seventy-one years.

Kells.—In Columbus, Ohio, on Tuesday, July 3d, Dr. Joseph M. Kells, aged fifty-eight years.

McWhorter.—In Riverton, Ala., on Friday, June 29th, Dr George T. McWhorter, aged sixty-seven years.

Provines.—In Magdalena, N. M., on Monday, June 25th, Dr. William E. Provines.

Rastall.—In Chicago, Ill., on Monday, July 2d, Dr. Frank W. Rastall.

Reagor.—In Shelbyville, Tenn., on Friday, June 29th, Dr. Frank B. Reagor, aged fifty-seven years.

Ridley.—In LaGrange, Ga., on Saturday, July 7th, Dr. Frank M. Ridley, aged sixty-three years.

Schiltz.—In Des Moines, Ia., on Sunday, July 1st, Dr. Nicholas C. Schiltz, aged fifty-one years.

Skinner.—In Suffolk, N. Y., on Friday, June 22d, Dr. Barton Dwight Skinner, aged seventy-three years.

Spelman.—In Anaconda, Mont., on Sunday, July 1st, Dr. James Francis Spelman, aged forty-nine years.

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Original Communications

THE CONTROL OF UTERINE HEMORRHAGE.*

BY ASA B. DAVIS, M. D.,
New York.

Uterine hemorrhage may occur at any time from the birth of the female child to the end of the life of the woman. It most commonly occurs during what is known as the child bearing period in a woman's life—from the onset of menstruation until its cessation at the menopause. Pathological conditions may be present or may develop in the uterus or systemic conditions may arise at a time prior to, during, or after the cessation of menstruation, which either allow or cause a flow of blood from the uterus. This flow has a wide range as to cause, amount, duration, and severity. It varies in degree from slight transitory blood staining, moderate bleeding of short duration or continued over a considerable period, to a short severe hemorrhage which quickly threatens or actually destroys life. Thus, we occasionally see bleeding from the vagina in the hemophiliac infant within the first four days of life. This is usually accompanied by more pronounced bleeding or actual hemorrhage in other parts of the body, especially from the umbilical stump, the intestinal tract, or the mouth, or into the subcutaneous tissue and brain. This loss of blood is due to a systemic condition which is as yet little understood.

Treatment of hemophilia neonatorum.—Even where the bleeding surfaces may be reached, local treatment is of little value. In nineteen years prior to 1909, there occurred in the service of the Lying In Hospital eighteen cases of this disease. These patients were treated with calcium lactate, gelatin, adrenalin locally applied, and various other drugs which appeared from time to time and held forth great promises as hemostats. Compresses were bound or sutured tightly over bleeding umbilical stumps and such other bleeding surfaces as could be reached. In the cases where sutures were used, blood would soon begin to flow through the needle holes. Adrenalin applied locally would blanch the tissues and stop the bleeding for a short time, but soon its influence was spent and bleeding recurred with greatly increased flow through the now more or less paralyzed vessels. We do not recall that calcium lactate or gelatin produced any result whatever, although it is still taught that they are valuable remedies in this condition. The result of conscientious use of all these remedies was that one hemophilic baby out of eighteen lived. We must believe that this result was in spite of rather than because of the treatment administered.

Then, as an example of a considerable number of cases of a given kind appearing in a short time in a hospital service, there occurred within one year twelve cases of hemophilia neonatorum, although in nineteen previous years only eighteen cases were seen. In 1909, Dr. J. E. Welch, at that time pathologist to the hospital, conceived the idea of treating these patients with injections of twenty to thirty c.c. of fresh human blood serum three times every twenty-four hours. This treatment was carried out so successfully that all of the twelve moribund bleeding babies recovered. Six of these infants were in our own service and under at least daily personal observation. We saw what were believed to be hopelessly moribund babies quickly improve after the first injection and go on to complete recovery within forty-eight hours. Although we are unable to continue to report one hundred per cent. recoveries by this treatment, it is still the most successful method known to us for such cases. We are unable to state what can be accomplished now with the much better understood means of direct transfusion of human blood in the treatment of hemophilia neonatorum. Doctor Welch's report of the first twelve cases (1) is interesting. He cites authorities stating that serum from one species injected into a different species of animals cause "serum sickness" in many instances. This manifests itself by local or general irritation, evidences of pronounced poisoning, and not infrequently by sudden death soon after the injection of serum. He also brings forth evidence to show that when whole blood is injected the blood cells are foreign bodies and are harmful.

Disturbances in menstruation due to anemia or to an overtaxed and rundown condition express themselves at times in almost directly opposite ways although due to common causes. Thus in one group of cases the menstrual flow is small in amount, occurring at longer than usual intervals, or it may be entirely absent for many months, as though nature were attempting to conserve the lowered energies of the patient by avoiding the

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*Read before the Medical Association of the Greater City of New York, March 19, 1917.

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drain incident to periodical loss of blood. In another group of cases a vicious circle is evident; the intermenstrual interval is shortened and the flow becomes profuse, amounting in some cases to hemorrhage. The anemia, lack of tone, and rundown condition allow this excessive and frequent loss, and this loss in turn exaggerates the anemia. To illustrate by concrete examples: The reports of the blood examination of two schoolgirls came to us recently. These reports are very much alike; they show moderate diminution of red cells, with a decided lowering of hemoglobin, white cells, and polynuclears. One girl is seventeen years old, tall, active, and excels in rather violent sports, such as basketball and tennis. She is also an ambitious and capable student. Menstruation has always been moderately irregular and never profuse. For the past six months it has been entirely absent, and she has not the usual ambition and zest of life. The other patient is twelve years of age. She began to menstruate regularly one year ago every twenty-six days with a fairly free flow of blood and without much pain. Now, profuse menstruation occurs every two weeks. This patient is rather stout, rather lethargic, and is growing rapidly. The demands of school are difficult for her to meet. Regulation of the mode of life, less work, more sleep, adjusted diet, and tonic treatment will make menstruation recur in the first patient; and in the second, that which amounts almost to a hemorrhage every two weeks, will be diminished and the usual interval of twenty-six days will be restored.

Hemorrhage occurring during pregnancy, labor, and the puerperium.—It is possible for a woman having a breaking down neoplasm of the cervix to become pregnant and to be subject to hemorrhages from this site during pregnancy and labor and after. In our experience such cases are extremely rare. There is evidence that the habitual periodical menstrual congestion of the pelvic viscera—though the flow of blood is held in abeyance—is continued throughout pregnancy. In a considerable number of women it appears normal for menstruation to recur within a few weeks after delivery and to reappear at regular intervals throughout lactation. We are not satisfied that we have ever met with a case of true menstruation during pregnancy. We do have unmistakable evidence occasionally that the capacity of the uterine cavity is not nearly fully occupied by the contained ovum in the early months of pregnancy. It is conceivable that a flow of blood from the uterus may appear coincident with the periodical congestion just mentioned, without causing decidual detachment. We know that spontaneous abortion is much more liable to occur at or near what would have been a menstrual period, partly at least because of this habitual congestion. At such times the pregnant woman should remain quiet and free from nervous and physical exertions. By far the greater number of instances of uterine hemorrhage during pregnancy have their origin at the site of some degree of detachment of the placenta. The placenta may be normally located in the upper part of the uterine cavity, or it may be found in the lower zone of the uterus, constituting some degrees of placenta prævia. During labor, this cause may continue to be active. Hemorrhage may come during the second stage from a cervix which is lacerating. After the delivery of the child, uterine hemorrhage can come from but two sources, the placental site or from lacerations.

The appearance of so called "spotting" in the early weeks or months of pregnancy is a danger signal; it is a threat to abort. We meet threatened abortion, inevitable abortion, incomplete abortion, and very rarely complete abortion. In threatened abortion, we see slight blood stains without pain or any evidence of uterine contractions; in other cases, a considerable flow without pain; there may be a scanty flow with considerable pain or much flow and decided pain in the back. Vaginal examination does not reveal dilatation of the cervix nor protrusion of any part of the ovum. In many of these cases abortion can be averted. Absolute rest in bed and the recumbent position constantly maintained are imperative. Where uterine contractions are going on as evidenced by pain and where there is considerable flow even without pain, uterine rest must be assumed. This can best be accomplished by placing a light icebag over the lower part of the abdomen and using some form of opium freely up to the physiological limit or enough to stop the pain. Inevitable abortion is indicated by more or less uterine hemorrhage, persistent intermittent pain, uterine contractions, and dilatation of the cervix, with protrusion or rupture of the sac of membranes. This condition may be present when the patient is first seen, or even under treatment the threatened abortion may merge into an inevitable abortion. Incomplete abortion is practically the progression of inevitable abortion, with expulsion of part of the products of conception. Hemorrhage may be profuse during the process of expulsion. After this has taken place, uterine contraction tends to diminish the size of the uterus and reduce the bleeding to about that which is seen after normal delivery. In the treatment of inevitable and incomplete abortion the indications are the same. In inevitable abortion of more than three months' duration, in which there is orofuse hemorrhage, it is best to pack the uterine cavity and vagina tightly with gauze. This will stop the hemorrhage, increase uterine contraction, and hasten the separation of the placenta. It will also soften and dilate the cervix. In the earlier months, packing the cervix and vagina will control the hemorrhage. Within twenty-four hours after the packing the uterus should be emptied and sufficiently curetted with a dull instrument. The patient is anesthetized and as carefully prepared as for any other vaginal operation. It is our routine practice to curette all these cases, swab out the uterus with half strength tincture of iodine, and pack with five per cent. iodoform gauze. This gauze is removed within twenty-four hours. In this way we know that the interior of the uterus is clean. The gauze packing checks further bleeding; it is a foreign body which the uterus attempts to expel by uterine contractions. In this way, particles of membrane and placenta are squeezed off against the gauze and involution of the uterus is well started. In some of these patients very little material is brought away by the curette; we at least know beyond question that the uterus is entirely empty. In many cases we have a report that "everything has come away," but we are often surprised at the amount of material that we find in the majority of such cases. It is doubtful if any one can say before exploration that any abortion is complete.

Later in pregnancy, in the fourth or fifth month and before there is hope of a viable fetus where there is profuse hemorrhage, as in an early recognized placenta prævia, or in cases where the membranes have ruptured and abortion or early miscarriage is inevitable, we secure better results by emptying the uterus in two sittings, in which case full aseptic precautions are observed and the patient is anesthetized, preferably with gas and oxygen. The uterus and vagina are tightly packed with gauze. Twenty-four hours later, the gauze is removed and the cervix is found to be soft, dilated, or readily dilatable, and the placenta detached so that it can be removed with the fetus with little difficulty, and without the loss of much blood or much mutilation of the cervix; whereas if the one stage method is followed there is apt to be considerable injury to the cervix and the total loss of blood is usually large before the operation is completed. If we perform the so called vaginal Cæsarean operation, there is still a mutilated cervix left.

Placenta prævia.—This is one of the most dangerous complications that the obstetric surgeon is called upon to face. It is of rather frequent occurrence. The dangers to mother and child are very great because of the loss of blood before, during, and often after delivery. Because of this loss and the shock and traumatism during forcible delivery, the mother's powers of resistance are very much lowered, and if she survives delivery she is especially susceptible to septic infection, even though great caution has been observed to avoid this. He is a very wise man who is able in advance to formulate plans which can be successfully applied to the treatment of all cases of placenta prævia. Conditions vary so widely in different cases that there is no class of cases in which individualizing is so important. Space does not permit a full discussion of this subject. Several salient points may be mentioned. Several hemorrhages are usual if pregnancy is not terminated soon after the first. Continuous profuse hemorrhage is not the rule, although it may occur. The interval between the attacks may be a few hours to ten or more days. These patients rarely die undelivered. If they are to remain at home, a trained obstetric surgeon should be in constant attendance and delivery should not be long delayed. Where it can be avoided, the vagina should not be packed. It has been repeatedly noted that in packed cases septicemia is particularly liable to develop. All placenta prævia patients have a better chance if treated in a hospital. In case the bleeding is moderate or in case there has been one considerable hemorrhage which has entirely ceased and it is desirable to continue the pregnancy as long as possible in the interest of the child, it is imperative that the patient shall be in the hospital and ready for surgical intervention at any moment.

The number of successful plans advocated for the delivery of placenta prævia patients bespeaks too often their lack of reliability. The writer has recently delivered three multiparous women with partial placenta prævia very near term by manual dilatation and version. All of the mothers and two children are recovering well. The third child had moderately delayed respiration, was apparently normal for four or five hours, then had several attacks of cyanosis at short intervals, and died although every effort was made to save it. In these cases, there was very little laceration of the cervix. Extensive laceration of the cervix, even to rupture of the uterus, is a very common danger in this method of delivery. Excellent results are reported by slower dilatation with bags; yet within a year one of my staff colleagues tried this method. His patient recovered from delivery, but died of septic infection within a week or ten days. I know him to be particular almost to a fault in his asepsis. Some are much in favor of drawing one leg of the child down through the cervix and allowing the mother to complete the delivery. The child rarely survives. Cæsarean section has its advocates. There appears to be a growing tendency to frown upon this method of treating placenta prævia. In primiparous women bleeding dangerously in whom the cervix is dense and undilated, this method should be given first place. The writer has performed 348 abdominal Cæsarean sections. Speaking from memory, twelve of these have been for placenta prævia. In the past fourteen months he has performed fifty-eight Cæsarean sections without maternal death; two have been for placenta prævia. We conscientiously believe that several other mothers in our service who have been lost during the past year by other methods of delivery for placenta prævia, would be alive today had Cæsarean section been employed. In some cases no treatment is required after the delivery of the placenta. In others, the hemorrhage may be very dangerous; while the upper part of the uterus contracts firmly, the lower part is atonic, especially the placental site which bleeds profusely. Lacerations of the cervix should be sutured rapidly, the uterus and vagina firmly packed, pituitrin injected, and the fundus held until it shows no tendency to considerable relaxation. The shock and acute anemia may require prompt treatment. Transfusion of carefully tested blood has undoubtedly saved a number of these women.

Accidental hemorrhage.—This is hemorrhage usually occurring late in pregnancy and having its origin at the site of a partially detached normally located placenta. Such cases are of rather common occurrence. A history of accident is usually obtainable, such as a fall or a blow over the uterus, or it may be that the umbilical cord is wrapped about the body of the child so that the cord is rendered short, and active movement of the fetus may exert enough pull upon the placenta to detach a portion of it. Usually for a few hours after the injury this is in truth a concealed hemorrhage. During this time symptoms are not usually very evident. Soon the blood forces a passage down between the membranes and the uterine wall and out through the cervix. Thereafter the loss of blood is rapid, and the lives of the mother and fetus are quickly placed in great jeopardy. In case the cervix is dense and undilated it is very difficult to distinguish between accidental hemorrhage and placenta prævia. In either case, immediate abdominal Cæsarean section is indicated.

Post partum hemorrhage.—This form of hemorrhage must come from the placental site, from the lacerations of the cervix or uterus, or from all of these points. Usually hemorrhages from lacerations of the vagina are also classified under this heading. Hemorrhage from the placental site after the delivery of the child may come from a partly detached placenta, sometimes adherent or having areas of varied size which are adherent and holding open placental sinuses. If the hemorrhage is at all profuse, indications for immediate removal of the placenta are present either by expression or by manual separation of the placenta with the hand inside the uterus. Care should be taken that the placental site is cleared of all placenta. A small tab of placenta, probably so located as to hold open the mouth of a large sinus, has been seen as the cause of a rather alarming hemorrhage. After the placenta has been removed, the usual cause of hemorrhage from the placental site is atony of the uterus or an irregularly contracting uterus. Blood clots in the sinuses are only a part of the physiological means of preventing hemorrhage. Retraction and contraction of the uterine muscles must take place. Injection of ergot or pituitrin will help force these muscles to do their required work. Pituitrin acts more quickly and probably more forcibly than ergot; its action is probably not so long sustained. Before either of these drugs become effective, a dangerous or even fatal loss of blood may occur. Every other means must be brought into use—massage of the fundus; forced anteflexion of the uterus against the symphysis or compressing the fundus with one hand externally against the other hand in the uterus; a very hot intrauterine douche, 118 to 120° F., of normal salt solution, bichloride of mercury, one to 10,000, tincture of iodine or, best of all solutions of acetic acid, two ounces to four quarts of hot water. In case the douche is not quickly at hand, a large wad of gauze or cotton saturated with acetic acid and carried in the hand well up in the uterus and applied freely all over the interior of the uterus has proved successful many times by us in outpatient practice. The acetic acid will irritate and stimulate the uterus to contract quickly. It overcomes hemorrhage due to irregular uterine contraction.

It is now rare that we employ anything but packing the uterus and vagina with gauze and maintain uterine contraction upon this by the use of ergot or pituitrin and manual compression of the fundus. Hemorrhage due to laceration of the cervix cannot be controlled by packing. If large arteries have been torn across, packing is a most dangerous procedure It is effective for about one hour; it gives a sense of security which is false and valuable time and blood are lost; it is responsible for the loss of many lives. It is not possible to adjust packing so that it will continue to maintain a complete check on hemorrhage from deep lacerations in the cervix; nothing short of actually ligating these vessels or including them in sutures which bring the edges of the lacerations together can be depended upon. If lacerations of the cervix have extended up into the uterus and into the broad ligament, better results will be obtained if these are considered as rupture of the uterus and immediate abdominal hysterectomy is performed. Hemorrhage from laceration of vagina and perineum may be great enough to be dangerous. They are accessible and should be controlled by ligatures and sutures which repair the lacerations.

Undoubtedly transfusion has saved many lives that would otherwise have been lost because of the pronounced acute anemia following post partum hemorrhage. There is a form of post partum hemorrhage which appears in a few cases soon after leaving the bed at about the tenth or twelfth day. While in bed, these patients have been normal; the involution of the uterus has apparently been progressive; the lochial discharge has diminished and is serosanguineous or serous. Such patients at once, upon standing on their feet, begin to flow steadily, rarely profusely, bright fresh blood, not from lacerations, but from a relaxed uterus. They should return to bed with an icebag over the lower abdomen and a dram of ergot three times a day. We have seen a few cases in which ergot seemed to have no influence whatever upon this form of bleeding; but given one c. c. of pituitrin three times a day, the bleeding stops within the first thirty-six hours.

Late post partum hemorrhage.—There is a form of post partum hemorrhage which appears two or three weeks after delivery after the mother is up and about her usual duties. There is usually one large hemorrhage followed by slow bleeding. These cases are rather rare. The uterus is large and subinvoluted; it may be displaced. Our best results are obtained by treating such cases after the same plan advised for incomplete abortion—curettage, swabbing the uterine cavity with iodine, packing with iodoform gauze, and rest in bed for eight to ten days.

Space does not permit the consideration here of the uterine flow in ectopic pregnancy, that incident to the menopause, hemorrhage in connection with neoplasms of the uterus, or the sometimes dangerous hemorrhages which occur in small fibrous uteri of nulliparous women.

REFERENCE.

1. WELCH: *Bulletin of the Lying In Hospital,* March, 1910, iv.

42 EAST THIRTY-FIFTH STREET.

Acinitis.—Frank C. Knowles (*Journal of Cutaneous Diseases,* February, 1917) reports a case of acinitis in a negro. The patient was twenty-six years of age and the eruption was on his face for six months previous to the consultation. The lesions, which were numerous, consisted of papules and nodules of dark red color with a little tinge of yellow, some showing minute crusts. Although every effort was made to find tubercle bacilli in the sections studied, it was in this as in other cases, futile. Treatment had no effect on the course of the disease.

RACE BETTERMENT BASED UPON PRINCIPLES OF PHYSICAL AND MENTAL PROPHYLAXIS.*

By Alfred Gordon, M. D.,
Philadelphia.

The problem of prevention is one of the most important chapters in medical science and presents the greatest field of usefulness. Prophylaxis is intimately associated with numerous branches of medical science and the opportunities for achievement for the benefit of the community and for mankind in general are limitless. I shall review briefly some of the problems concerning two great scourges of humanity in which the scientific man may be of greatest service in applying the principles of prevention—syphilitic infection and alcoholic intoxication.

There is no tissue or organ that is more frequently and more profoundly affected by the syphilitic poison than the nervous system. It may become affected at any phase of syphilitic infection, the primary, secondary, or tertiary periods. The peripheral as well as the central nervous system suffers from the spirochetes or their toxins. The brain and spinal cord in some cases are very early affected. Fournier, the Nestor of syphilology, long ago called attention to the fact that sometimes from the very beginning of the infection the toxin seems directed toward the central nervous system. What occurs in the tertiary period of syphilis is too well known to dwell upon. Tabes and paresis are the common outcome of an old syphilitic infection. Obstinate and persistent headache, cerebral hemorrhages and softening, epilepsy, and myelitic and meningeal processes are all not infrequent potential consequences of syphilis. In all these conditions the usefulness of even early intervention is limited and sometimes futile. In fact the opinion of many highly competent men, syphilologists as well as neurologists, is that reliance should not be placed too confidently on the curative effects of the most modern methods of treatment of syphilis of the nervous system. It is sufficient to see even once under the microscope the innumerable wriggling spirochetes in an infinitesimal speck of brain tissue taken from a paretic to form an idea of the difficulty of overcoming them with remedies. While favorable results are obtained in some cases by the intraspinal and the intracerebral injections of salvarsanized serum, these results cannot be regarded as a cure. Once the individual is syphilitic, it is difficult, if not impossible, to establish eventual complete recovery. The primary and even secondary manifestations may be removed but there is no guarantee whatsoever that years after the initial infection the potential syphilitic will not manifest some grave organic disorder in the central nervous system against which science is powerless.

If therefore the physician's usefulness is limited in arresting completely a syphilogenic process once established, the greatest service will be found in prevention of and protection against further dissemination of the infection. In this particular field, efforts may be crowned with enormous success. First, of all, the physician should advise against the transmission of the disease to others by taking all sorts of precautions, such as avoiding actual contact, intimate and otherwise. The patient should be told to continue his treatment uninterruptedly for years by methods deemed most advisable. This counsel should be given to syphilitic individuals at any period of disease.

A highly important chapter in the history of syphilis is found in its hereditary features. The study of heredity has been for the last fifteen or twenty years most encouraging. More or less definite principles of genetic transmission have been disclosed and elaborated not only in plants but in animals in general. The welfare of mankind is closely associated with and dependent on these principles. The study of inheritance in man on the Mendelian plan with regard to normal characteristics is still in its incipiency. The studies of Hurst on eye color, of Bell and Rizzoli on hair, of Mudge on mulattoes, of Galton on stature represent advances along these lines. The study of abnormalities and of pathological conditions has been more fruitful. Skin and hair affections, such as keratosis palmaris and plantaris, hypotrichosis by Gossage (1); cataract by Nettleship (2); polydactylism by Fotherby and Lewis, A. Gordon (3) and others; brachydactyly by Farabee and Drinkwater (4)—are studies of a few examples of abnormalities which were found transmitted through several generations. Some diseases such as pseudohypertrophic muscular paralysis, retinitis pigmentosa, diabetes, hemophilia have been also studied from this standpoint. More elaborate studies have been made on transmission of morbid hereditary features in mental deficiency and psychoses. It has been shown that normal and abnormal parents bring into the world respectively normal and abnormal offspring and that the numerical and qualitative distribution of the abnormalities follow certain definite laws. This is due to the existence in the original parent germ cells of definite factors or determiners which possess the power of transmitting certain characteristic units. No individual can transmit to the offspring a character unit which he has not possessed. Variability of plants and animals is the result of special crossing and mating in which addition or loss of special characteristic units plays the most essential rôle. Once the special units of character exist they are permanent and cannot be obliterated.

When the germ cell is diseased, the offspring will be defective. Among the many causes of this condition one of the most potent is syphilis. Hereditary lues originates in children in this manner: either the male or female generative cell or both contain the infection of syphilis and the new growing organism will be in a pathological state. The modifications of nutrition produced by the infection in the organisms of the generators are found in the offspring because cellular reactions are essentially transmissible through heredity. This will result in general dystrophies or in an arrest of development of such intensity that extensive deformities or actual malformations of the central nervous system and other organs will follow. Asymmetries, microcephaly, hydrocephalus, spina bifida, cerebral and medullary dystrophies, and finally monstrosities are a few examples of the influence of hereditary syphilis. Pathological manifestations in hereditary syphilis may make their appearance at all ages. Fournier places wide limits, between the third year up to the twenty-eighth, with the maximum of frequency around the twelfth year, but with newer methods of biological investigations cases of brain syphilis are observed even in advanced age. With the advent of the blood and spinal fluid tests syphilis can be detected in cases never suspected before. A very wide variety of nervous and mental disorders are observed in children with hereditary lues. As an illustration, in a recent investigation by me of seventy-eight children whom I studied from the standpoint of hereditary syphilis, there were twelve imbeciles of middle grade; four idiots; ten imbeciles with gross organic changes—seven hemiplegics and five monoplegics; seven feebleminded with functional nervous disorders such as tremor, restlessness, insomnia, enuresis, and choreiform movements; sixteen feebleminded with major attacks of epilepsy; twelve feebleminded with attacks of petit mal; three feebleminded suffering from continuous headache; three feebleminded with colobomata in the eyes; and eleven feebleminded without functional or organic nervous disorder. These figures show strikingly the disastrous influence of syphilitic poison on the parental germ cells. This influence may be exerted even many years after the parent's initial infection, a fact of an enormous sociological import. It would require considerable time to indicate the various morbid manifestations observed in cases with syphilitic infection. Suffice it to merely mention that an individual who is potentially syphilitic is always in a state of a special susceptibility to serious nervous or mental disturbances and he is apt also through his diseased germ cells to procreate children with serious physical and mental abnormalities. The latter will continue the pathological chain and, if not interrupted, bring in their turn defective offspring and fill the community with undesirable elements.

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*Address delivered at the commencement exercises of the College of Physicians and Surgeons, Boston, June 12, 1917.

Next to syphilis the most injurious poison of the nervous system is alcohol. I cannot enter into a detailed dissertation of the physiological action of alcohol and of its pernicious effect on the most delicate structure of the human organism, the nervous system. I will content myself with presenting a few of the very many facts accummulated, as the literature is quite extensive on this important subject. From the standpoint of prophylaxis I will call attention to a special study of fourteen cases of alcoholism in children who are apparently free from any morbid heredity (5). Nine of this series of children became orphans at a very tender age. Distant relatives took charge of them, but soon abandoned them and those children were placed indiscriminately with various families for menial services. These families happen to be of a low moral and intellectual level. The children grew up without any supervision or direction and became early the victims of the bad habits which they witnessed daily. Drink was the most conspicuous vice that they saw being cultivated. As children are great imitators, and as they were deprived of any wholesome outside influence, they acquired at first the habit and later a craving for drink. The other five members of my series lived under the supervision of their parents in early infancy. Since that time the parents suffered various financial shocks of the gravest nature. Other unfortunate circumstances which soon occurred added considerably to the material disaster. Thus was created an open avenue for the reception of the ever present vice—alcoholism. The homes were broken up, the children drifted away, and as they were of a tender age, they became involuntary witnesses of the physical and psychical misery. Deprived of necessary food but always supplied with beer, they presented a picture identical with that of the children of the first group. Briefly the following conditions were observed: Mental arrest, mental dullness, lack of moral conception, perversion of moral sense, no knowledge of the most ordinary normal relationship between man and man, no conception of conventional laws, brutal tendencies and impulses of the most primitive character, abnormal sexual proclivities, and excessive use of tobacco. Not infrequently were they found in a stuporous or confusional state following drink. It is needless to enumerate the number of escapades and various unlawful acts committed by these juvenile degenerates. Their medical histories are equally interesting. Epileptic convulsions, various neurotic phenomena, and insomnia were all present. This brief account of the effect of acquired alcoholism shows almost with mathematical precision the direct nefarious influence of alcohol on an individual during his physiological development.

Alcohol occupies a very conspicuous place among various agents which are capable of deteriorating the germ cells and thus produce a lasting alteration in the hereditary energies of these cells which will be manifested in anomalies and defects involving the embryonal development of varions organs. This problem seems to be placed now on a very firm basis through the experimental work of C. R. Stockard and G. Papanicolau. These experiments suggest that the chief bearer of the herditary qualities which they call chromatin is pathologically affected in alcoholized parents. Among the descendants of alcoholized males are a large proportion of degenerates, deformities, abortions, and early death of the young, and sterility begins to manifest itself in those who survive. The structural defects affect mainly the central nervous system and the special sense organs. As one of many examples of this truth I present a brief account of three series of pedigrees of families in the histories of which alcohol was the sole agent that created abnormalities in several successive generations (6).

In three generations of the first family I found individuals with various degrees of mental deficiency, epilepsy, choreiform movements, tremors, eccentricities, and violent temper; I found also miscarriages and stillbirths. In the second pedigree alcoholism was present in the grandfather and son. The latter had three children of whom one died at six months from meningitis, one is epileptic, and the third is a masturbator. The other children of the grandfather were not alcoholic but were abnormal, and two of them were married and gave birth to several defective children. In the third pedigree one of the grandparents was profoundly alcoholic. Out of six children only one was normal, but he never married. Of the others two married and were the parents of several defective children. It is therefore evident that alcoholized individuals procreate defective children. One family is capable of throwing into the community dozens of useless or dangerous individuals who, if capable of multiplying, will produce their like.

Summing up the facts just stated, it may be said that syphilis and alcoholism are two great agents par excellence which are capable of producing ravages not only in the individuals affected with these diseases, but also in the progeniture created by the individuals. To enumerate the direct influence of alcohol, for example, on the addict would entail considerable time. I have not touched upon the effect on individual organs; I have not mentioned its direct damage to the nervous system, I have not dwelt on the frequently irremediable mental disorders that it is capable of producing. I called attention to but a very few most salient facts which point the way to one of the most important functions in medical work—prophylaxis.

If the problem of mental deficiency only is considered, which is an inherent state and is very frequently the result of a pathological state of the germ cells of the syphilitic or alcoholic parent, it will at once be realized in which direction efforts will bring desired results. In a study made by Thomas H. Haines, clinical director of the Bureau of Juvenile Research, Columbus, Ohio, entitled Feeble Mindedness Among Delinquents, it was found that many delinquents are defective in mental endowment. He calculates that nineteen per cent. of admissions to the Ohio Penitentiary and State Reformatory may be classed as sexual offenders; forty-eight per cent. committed offences against property rights; thirty-three per cent. committed offences against rights to life. Haines's complete table is very eloquent and speaks for itself (7).

TABLE I.

Classification of Offences of Which 100 Prisoners Stand Convicted.

Sex.		*Life.*	
Rape	4	Robbery attempt	8
Incest	1	Carrying concealed weapons	4
Bigamy	3	Cutting to wound	8
Sodomy	1	Attempt to kill	1
Exposure	1	Cutting to kill	1
Liquor to a girl	1	Shooting to wound	2
Nonsupport	6	Shooting to kill	1
Abandonment	2	Manslaughter	7
Property.			
False pretenses	2	Burglary	5
Embezzlement	2	Burglary and larceny	11
Forgery	7	Housebreaking	2
Pickpocket	3	Interference with railroad property	2
Larceny	5		
Grand larceny	7	Receiving stolen property	2

Fifty-eight of the hundred delinquents are repeaters. They have previous records either in the correctional institutions of Ohio or other States or in workhouses. Another author, William J. Hickson, director of the Psychopathic Laboratory, Municipal Court, Chicago, taking at random 245 boys committed to court for various offenses, finds ninety-three per cent. defective. The same writer speaking of his experience with the Domestic Relations Court says: "A large percentage of marital unhappiness and shipwreck has feeblemindedness at the bottom." Paul E. Bowers, physician in charge of Indiana State Prison, in examining 100 recidivists finds among them: twelve insane; twenty-three feebleminded; thirty-eight constitutionally inferior; seventeen psychopaths, and ten epileptics. The 100 habitual criminals are therefore defective.

The relation between alcoholism and criminality is of considerable sociological importance. Crimes have been committed not only during the abuse of alcoholic drink, but also during chronic alcoholic intoxication. During the acute intoxication there is great emotionalism and motor overexcitability. In the chronic form there is a lowering of capacity for physical and mental work. The individual is intrinsically incapable of satisfying the exigencies of life, hence he succumbs to temptation. Assault, murder, and incendiarism are crimes common to both acute and chronic intoxications. In estimating the direct relationship between chronic alcoholism and criminality one must bear in mind the inner causes of alcoholism. We have now sufficient proof that in the largest proportion of these cases there is a preexisting psychical defect so that criminal chronic alcoholics are originally inferior individuals and their mental decay progresses uninterruptedly under the pernicious influence of alcohol.

The subjects of syphilis and alcoholism are inexhaustible. It would necessitate many hours and many volumes to describe the ravages they produce on individuals and communities. I had merely reviewed a very minor part of the subject but endeavored to present a few of the facts in order to indicate the necessary rôle of the physician in working out the problems of prophylaxis. He should bear in mind first the direct effect of the pernicious agents and next their influence on the offspring through a hereditary mechanism. The latter is the most important. Consider for a moment that we are constantly building asylums, sanitariums and prisons to shelter the constantly growing number of unfit. Are we not deluged by a progressively accumulating flood of defectives in every sense of the term? If it is so, are we not breeding defectives? Since we know that human harvest is based essentially on inheritance, are we not criminally negligent in permitting the production of such crops? Let us not waste our energies in devising various methods for curing deficiencies but let us rather devote our work toward preventing them. Any assumption that an improvement of external conditions will remove human deficiencies and reform chronic offenders who are constitutionally below normal is an illusion of mistaken philanthropy. The student of heredity must realize that intrinsic qualities of human species are to be found almost exclusively in suitable matings of individuals. The solution of the problem of betterment of the race lies in two essential principles: 1, a selection of the fittest for union; 2, prevention of reproduction among the unfit. Success in this double endeavor requires recourse to methods of education. The seriousness of the entire situation must be brought to light, the knowledge of facts of heredity must be disseminated and each individual in choosing a marriage mate must know that he is choosing a future parent for his children. Heredity is the great force that governs the world; it controls all the acts of life, physiological as well as pathological. Morbid heredity is of major interest. Is it not of the gravest importance to know what type of individual will be the son of an alcoholic, a syphilitic, or an insane parent? How many unfortunate marital unions, miserable existences, and domestic tragedies could be avoided through an exact knowledge of the value of the principles of heredity! Heredity is a biological law according to which the parents transmit to their offspring peculiarities of organization and normal or morbid aptitudes. *"Is pater est quem nuptiæ demonstrant"* was the axiom of Roman law. Biologically we may say: *"Is pater est quem morbi filiorum demonstrant."* A syphilitic or alcoholic individual is capable of poisoning the blood of a whole family for generations. If I make the statement that according to the latest authoritative census there are now about eight million syphilitics in United States, you will agree that the situation is truly alarming. Does not the society owe it to itself as a matter of selfpreservation to prevent, with force if necessary, perpetuation of the defects created by the syphilitic or alcoholic poisons? The duty of physicians is plain regarding the application of these facts. By enlightening the public and by intelligent agitation of these vital problems a fair degree of cooperation of the people will be eventually obtained. Physicians possess the scientific facts demonstrating the right of every child of the future to be well born and that the sacred duty and obligation of every individual toward mankind is to see that his own germ plasm is not impaired by preventable poisons. At this juncture it is interesting to recall Régis's definition of degeneracy: "It is a decadence of the species which goes progressively to extinction of its descendants who by virtue of physical, intellectual, and moral defects are less and less capable of adapting themselves to surroundings."

Study this problem, keep pace with new facts, and develop an enlightened interest in ideals of eugenics in every one with whom you come in contact. The task is a difficult one but if at least some people can be convinced that the social evils can be prevented, that the defective intellect, the criminal tendencies, and the degeneracy of the child all originate from a pathological parentage, your contribution to mankind will be of the highest order. The rôle of the physician does not lie exclusively in removing suffering. His mission must be a higher one. Who, if not the physician, can serve as the best guide to an honest man who undertakes to lay the foundation of a family? The physician alone can avert danger by emphasizing to the candidates for marriage the laws of heredity and the consequences of morbid heredity; he alone can make it clear to any man or woman, that to read daily on the face of their child the stamp and the reproach of a morbid taint which they tried to conceal is more torturing than the stain of blood of Macbeth. To combat social misery and all its consequences is to combat physical and moral deterioration. Preventing them means to prepare generations better equipped to resist depressive influences in life and therefore more apt to receive an intellectual and moral foundation which will transform them. *Fortes fortibus generantur* is the logical conclusion drawn from the application of biological knowledge to social evolution.

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1812 Spruce Street.

A SIMPLE ASPIRATING DEVICE.

By A. L. Benedict, A. M., M. D., F. A. C. P.,
Buffalo.

About twenty years ago, I described an apparatus called the tube stripper, intended to take the place of bulbs in extracting stomach contents. This consists of crossed bars, like scissors or forceps, the short ends of the bars bearing rollers which compress the stomach tube and can rapidly run along it, producing suction behind and expulsion before. The crossed bars have the ordinary device for setting, except that it is threaded and provided with two milled nuts, so that the rollers can be set for any degree of compression and held there.

Without having had much opportunity for using the instrument for other purposes, I believe it can be used for any kind of aspiration, by using rubber tubes of various sizes, thickness, and connections for hypodermic and cannula needles, catheters, etc., and enough experience has accumulated to show its practicability. The assemblage for any given purpose is simple, the only difficulty being to have a stock of rubber tubing, glass connections, etc., so as to secure tight fitting for the terminals and to build up to a tube of sufficient size and resilience to provide suction after it has been compressed and released by the passage of the rollers. With such a stock, almost any aspirating problem can be solved quickly in an emergency, the material is inexpensive, sterilization is easy. The tube stripper can be made by any fairly skillful instrument maker for about two dollars. Anyone is welcome to use the general principle described and specifications will be sent to anyone desiring them.

For continuous drainage or aspiration, when it is not necessary to save the contents unmixed with water and in their total bulk, the tube stripper can be eliminated altogether, by using the proper length of tube previously filled with sterile water or salt solution. This would, however, involve elevating the bed or seat of the patient to a considerable distance and might require the use of a stairway or elevator shaft, or boring a hole from one story to another. One point in connection with this is important: I have found it impossible to obtain notes of practical experience, except as to particular cases or very vaguely stated, as to the head necessary for aspirating under different conditions and especially the maximum that may be regarded as safe and the minimum necessary to prevent reflux, especially for the pleural cavity. For the bladder, lower bowel, an ordinary abscess, etc., the usual distance from bed to floor would undoubtedly suffice unless under unusual circumstances. Undoubtedly most surgeons have had experience as to the maximum and minimum head that would apply to the pleural and other body cavities. If these observations could be collected, with reports of untoward results, the material would be very valuable.

228 Sumner Street.

A DISCUSSION OF THE CAUSE AND MANAGEMENT OF PUERPERAL ECLAMPSIA.*

By R. S. Hill, M. D.,
Montgomery, Ala.

Many theories have been advanced to explain the cause of eclampsia, which indicates that no one of these theories has proved entirely satisfactory. It seems clear that the light of present day, advanced medicine reveals distinctly that the general underlying cause of this condition is defective reserve force in the woman, a subnormality of the potential energy that is required in the pregnant state. Every system and every cell has a reserve force, has a potential energy that is called to meet the frequently and intermittingly increased demands made upon it. The muscles of the legs have a reserve force; they have a power to meet an emergency that requires unusual speed, such as to catch a moving street car or to run away from a man with a pistol. If muscles did not possess a reserve force they could do no more than a certain, specific, accurately regulated amount of work each day, and that amount of work would be measured exactly by what they are accustomed to do daily. So with the function of the organs concerned in digestion. If our digestive forces could take care of only a specific amount of food which must be exactly the same each day, then our digestive organs would not be able to take care of an extra large meal that we might eat, and consequently we would probably suffer severely as a result of taking this increased quantity of food. As a matter of practical experience, it is known that even with a good digestive reserve force, if digestion is taxed too far, we suffer, which means that the digestive reserve force has failed to meet the demands made upon it. Many other experiences in life show the necessity of every part of the organism having a reserve power, or emergency force.

In the pregnant state the woman is called upon not only to take care of the metabolism of her own body, but to safeguard the metabolism of the developing child. In the process of metabolism many toxins are formed, some of these toxins are converted into inert substances through the activity of certain organs, and others are eliminated by the kidney, by the skin, etc. The mother's organs must dispose of not only the toxins of her own metabolism, but many of those of the developing child, and there is no tissue more active, there is no tissue in which there are greater physicochemical changes than embryonic tissue. In short, the developing child requires of its mother not only an abundant but an increasing amount of properly prepared food to sustain the increasing physicochemical changes that are taking place in its tissue, and also makes an increasing demand upon the organs of her body to dispose of the resulting, increasing toxins generated by the changes in its growing tissues. The vital functions of the mother's organs are taxed by pregnancy more than by any other condition.

The increased appetite of pregnant women is a provision of nature whereby the mother takes more food than her own tissues require to meet the increasing demands for nourishment of the growing child. If the mother's digestion is incapable of taking care of increased amount of foodstuff, if she has not the digestive reserve force to meet the demands that are made upon her to nourish herself and her developing child, she may become reduced in flesh and strength, and have born to her a child of subnormal vitality, or worse, she may be made sick by the absorption of poisonous products, overpowering her agents of protection from the intestinal tract resulting from chemical changes in the imperfectly digested food.

What is true of the organs of digestion is true of other organs. The mother's organs must take care of not only the increased toxins resulting from the increase of the chemical changes of the tissues of her own body, but toxins coming into her circulation from tissues of the developing child. The thyroid, the adrenals, and other structures are possibly gravely concerned in the protection of the mother, but the organs that stand out prominently in our minds as chiefly concerned in this work are the liver and kidneys. This is probably because the pathological changes are most markedly manifested in their structure. The liver changes certain toxic materials into inert products and prepares others for elimination by the excretory organs, chiefly the kidneys. If the liver is unable to meet the increased demand, if it lacks sufficient reserve force, these toxins pass on to the excretory organs, chiefly the kidneys, in increased and perhaps overpowering quantity. They accumulate in the system and produce pathological changes in the tissues of the body, in the structures of the very organs, liver and kidneys, which are chiefly charged with their destruction and elimination. The pathological changes in the liver are not the primary condition, the cause of the eclampsia; the pathological changes in the kidney are not the primary condition, the cause of the eclampsia. The primary cause is simply a defective reserve force, a lack of potential energy in the mother to meet the increasing physicochemical demands of pregnancy.

Clinical observations support this theory. Puerperal eclampsia is more common in the primiparæ, the woman whose reserve forces have never been put to the test. After a woman's reserve power has been tested and has proved equal to the demands of pregnancy we are warranted in looking with increased assurance to her passing safely through future pregnancies. A primipara who has had eclampsia is less liable to have it in subsequent pregnancies than she was in the first, because the reserve force has been built up by the first pregnancy. Generally speaking, the capacity to do a thing is increased by repetition, and, therefore, when the first pregnancy takes place the woman's reserve force is built up and is better able to meet and overcome the demands made upon her in subsequent like experiences. The probability is that better care will be taken of a woman after one experience with eclampsia, and this will contribute toward lessening the risk of another such experience. If the child dies in the uterus, the chances of the mother's recovery are increased, because the toxins that are formed by the metabolism of the child's tissues cease with the death of the child, and then the mother only has to take care of her own toxins and those accumulated before the death of the child. It is most desirable, however, to have the child delivered.

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*Read before Alabama State Medical Association, April, 1917.

Puerperal eclampsia is decidedly more common in a twin pregnancy than in a single pregnancy, because the toxins of two children entering into the circulation of the mother are greater and therefore more liable to overcome the reserve forces of the mother. It is quite plain to my mind that the primary cause of eclampsia is not to be found in the placenta; it is not a diseased condition of the kidney, although if a kidney is diseased it more readily breaks down under the strain; it is not a diseased condition of the liver, but is in general terms a lack of reserve force in the woman to meet the increased demands of pregnancy. If this contention as to the cause of eclampsia is correct, then the management of the condition is quite clear.

In the first place, the physician should take charge of the woman at as early a date as possible and watch her throughout her pregnancy. I do not mean to criticise the profession for not doing this. The people are in a large measure responsible for failure in this regard. They do not think they need a doctor to prevent disease, but only to cure disease. If they would only realize that they need a doctor more to prevent disease than to cure disease, the physician's work would be more satisfactory, their health better, and deaths fewer. If the pregnant woman could be watched from the beginning, the great majority of cases of eclampsia could and would be prevented. In pregnancy the woman's digestion should be safeguarded as far as possible, not by starvation, but by giving her the kind of food that can be easily assimilated, that kind of food from which she can get the greatest amount of nutriment at the least expense to or tax on her digestive forces. Chief among the articles of diet is milk. Milk is the only diet we know of that will sustain life almost indefinitely. In passing I cannot stress too much the importance of drinking water freely and of keeping the bowels active.

In considering the curative treatment of eclampsia there have been a thousand and one preparations to control the convulsions. Discussion of these is not necessary. The woman's system is saturated, as it were, with toxins, and the indication is clearly to bring about their elimination as speedily as possible. If convulsions begin or continue, notwithstanding the use of sedatives and the elimination treatment, pregnancy should be interrupted. In multiparæ, particularly where the cervix is dilated, delivery with forceps is beyond question the best thing. Eclampsia is more frequent, however, in primiparæ. In a case that recently came under my observation as a consultant there was no dilatation, no uterine pains, no beginning labor. The question of Cæsarean section was raised. I do not advocate the reckless resort to Cæsarean section. I recognize that in the home where most of these cases will be managed Cæsarean section is out of place. However, let me stress the importance of taking advantage of the facilities of a well regulated hospital, if available. I believe that in the home the interests of a primipara with an unobliterated and even undilated cervix are best served by bleeding and the use of medicinal agents.

To deliver a primipara before the cervix is dilated is difficult and dangerous and should be undertaken cautiously. Vaginal Cæsarean section does not appeal to me. In my hands, before a vaginal examination was made, I have found abdominal Cæsarean section very satisfactory. It is an easy operation. Hemorrhage ordinarily need give no concern; indeed, more than usual loss of blood may prove beneficial in getting toxins out of the woman. This seemingly was true in two of my cases. Abdominal Cæsarean section, however, will have a high mortality if repeated vaginal examinations have preceded the operation. These examinations carry germs of infection to or into the opening of the cervix from where they readily find their way to the fertile field furnished by the operation. The germs may be picked up even by a gloved examining finger as it enters the vagina, for the difficulty of sterilizing the vulva and vaginal outlet is very great. Abdominal Cæsarean section, therefore, must not be an operation of last resort but an operation of election.

My experience has not been sufficiently long to answer to my own satisfaction the question as to the scar in the womb giving trouble in subsequent pregnancies. Years ago much trouble was experienced in the union of our abdominal incisions. Hernia after hernia followed abdominal operations. We do not have them now because we know better how to close our abdominal incisions. But do we know how to sew up the uterine incision so as to insure against rupture in subsequent pregnancies, and if sewed up properly, is the condition of the uterine tissue such as to make a perfect union? In other words, the woman's tissues are, as it were, water soaked and unhealthy from the effects of the accumulated toxins. Does the uterine structure share in the unhealthy state? If so, what effect will it have on the healing of the uterine incision?

In answer to the question as to whether the diseased condition of the wall of the womb, which corresponds to the diseased condition of the other tissues of the body, will form a fertile field for infection after a Cæsarean section by germs that are in the vagina and vulva. I venture to assert that a woman is less liable to resist infection after Cæsarean section for puerperal eclampsia than after Cæsarean section for obstruction to the passage of the child. To my mind this is another element of danger attending Cæsarean section in eclampsia.

As to treatment in future pregnancies of women who have had Cæsarean section I do not believe that one Cæsarean section spells Cæsarean section for each subsequent pregnancy. I would be inclined to rely on the forces of nature, unless the personal history of the patient was such following her first Cæsarean section as to cause a suspicion that there was an infection which probably interfered with the proper union of the wound through the uterine wall. This infection may be so mild as not to threaten the life of the woman. If a slow fever with a retarded recovery that could not otherwise be explained followed Cæsarean section on an eclamptic patient, I would feel that something had gone wrong in the healing of the uterus and that a good, firm, and positive union had not been secured. Therefore, in subsequent pregnancies I would be inclined more readily to subject her to a Cæsarean section than I would had her convalescence after the first Cæsarean section been smooth and unsuspicious.

P. O. Box 703.

ACROPARESTHESIA.*

Clinical Studies.

By Hyman Climenko, M.D.,
New York,
Chief of the Neurological Clinic, Mt. Sinai Hospital, O. P. D.; Adjunct Neurologist, Montefiore Home; Attending Neurologist, Central Neurological Hospital,

and Robert Bogan, M.D.,
New York,
Assistant at the Neurological Clinic, Mt. Sinai Hospital, O. P. D.
(*From the Neurological Division of Mt. Sinai Hospital Dispensary.*)

In 1880, Putnam, of Boston (1), first called attention to a form of paresthesia affecting mainly the hands and feet; he considered it a vasomotor disturbance. Soon after a number of writers described similar cases. To mention but a few, Laquer (2), Omerod, (3), Collins (4), Savill (5), and others have reported cases with their observations. However, it was left to Schultze (6) to use the term "acroparesthesia," when referring to this syndrome, and to differentiate this disease, if such it can be called, from a number of allied conditions.

Acroparesthesia, as the name implies, is a form of subjective sensory disturbance which affects mainly the hands and feet, and occurs chiefly in women. In some cases the tip of the nose and tongue and the back may be involved, as Collins (4) first pointed out. It is noteworthy, however, that only one of our patients complained of the tongue being affected. True acroparesthesia, as described by Schultze (6), is not a very common disease. Among the 3,000 patients whom we examined in dispensary, hospital, and private practice, only forty-two manifested this syndrome. The pathognomonic complaints are the feeling of numbness and stiffness; burning, pricking sensations; sensations of cold in both hands or both feet, or in any one or all of the extremities. As a rule the symptoms become worse at night; the patient is awakened from sleep by them and at times actual pain may develop. Attention should be drawn to the fact that objectively no local change can be detected during an attack; the pulse, the local temperature, and the color of the involved extremities are not altered. The objective sensory examinations are normal. Here and there, writers report hyperesthesias and hyperalgesias, or hypesthesias and hypalgesias, but we have found them all within normal limits, bearing carefully in mind the ordinary individual variations. As mentioned before, the paresthesias are often so severe that they may become actual pain; Schultze (6), however, believes that those suffering from pain should not be classed in this group of acroparesthesia.

While there are no objective motor disturbances, many patients cannot execute fine movements during their seizures. Cassirer (7) believes this clumsiness has rather a sensory than a motor origin. Various writers state that these symptoms are at their worst when the patient happens to have his extremities elevated, an observation we have not been able to confirm. The hands are more frequently involved than the feet. The affection, according to our study, does not follow the distribution of a single nerve, but rather affects the distal parts of the extremities; in the upper extremity it may extend as high as the elbow and in the lower to the ankles. The syndrome is not constant; it may occur at regular or at irregular intervals. Those affected appear otherwise to enjoy good health. As already stated, acroparesthesia, in the strict sense, is a rather infrequent disease. Frankel-Hochwart reports fifty-six cases, according to Cassirer (7) who himself reports forty. The largest number of cases was reported by Collins (4) and his assistant, W. W. Lessem (8). Considering that they included among their cases paresthesias resulting from arteriosclerosis, syphilis, etc., it is doubtful whether all their cases can be considered as true examples of this syndrome. Among our 3,000 cases, examined during the last two years, we had only forty-two of the true type of acroparesthesia.

The influence of age is obvious when we mention that women at the menopause contribute the largest percentage of all cases. Savill (5) gives eighty-three per cent., Cassirer (7) ninety-three per cent. of women and after further observation, somewhat more. He draws attention to the fact that cases among men are atypical; this observation we were able to confirm, having found three men among our series and all three proved to be atypical. Rarely has a case been reported among children. The large majority are found between the ages of forty and fifty-five years, as the following figures show:

Cases between the ages of 40 and 55..........	25
Cases between the ages of 50 and 60..........	6
Cases between the ages of 35 and 40..........	5
Cases at the age of 70........................	1
Cases at the age of 33........................	1
Cases at the age of 28........................	2
Cases at the age of 24........................	1
Cases at the age of 21........................	1

The relation of this syndrome to irregular menstruation is evident from the following facts: Thirty of our patients gave a history of such irregularities. Cassirer (7) reports six cases of acroparesthesia following artificial climacterium. We also had two cases of this type, and in two other cases the symptoms appeared after abortion which was followed by infrequent menstruation. One of our cases was a lactational amenorrhea. Acroparesthesia in pregnant women is reported by almost all the authorities on the subject; this occurred in two of our cases. A girl twenty-one years of age in our series was suffering from severe dysmenorrhea and had distinct symptoms of hypothyroidism. Putting the hands in cold water and the handling of chemicals have been given as provocative causes by some writers. Our patients came mainly from a dispensary for the poor who are obliged constantly to use cold water for household purposes. Consideration of all these factors shows that these causes form only a relationhip in a limited number of cases.

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The so called general neuropathic state might be read into this condition, as in so many other obscure nervous diseases, but with Frankel-Hochwart we are disinclined to believe in this very vague etiology. In two of our cases there was an occasional hysteria. The blood pressure does not reveal any abnormalities, systolic or diastolic. One solitary case of arteriosclerosis had a systolic pressure of 180 and a diastolic of 88; this not being a pure case, however, proves the rule.

In attempting to clear up the pathogenesis of this disease as given by the various authorities, we met with a diversity of opinion characteristic of the literature on other functional nervous disorders. Sinclair (9) believes a hyperemia of the cervical cord, occurring during the climacterium, to be the causal factor. Schultze (7) believes that connective tissue changes, in the form of Renaud bodies in the brachial and other plexes, are responsible. Friedman (10) believes that the peripheral sensory nerves are at fault and thinks that the syndrome complex indicates a typical disturbance of the peripheral nervous system. Frankel-Hochwart and Putnam speak of a vasomotor disturbance as the cause. Putnam (11) in his last communication, drags in the Freudian conception, interpreting the disturbance as a psychoneurosis and attempts to translate an attack of acroparesthesia into a dream concept. Solis-Cohen, according to Putnam, believes that a vasomotor paresis produced by some poison is responsible for the disease, but he is not sure as to the nature of the toxemia. Collins expressed a similar view many years ago.

Diagnosis.—Paresthesia is a symptom of a very large number of organic and functional disturbances of the nervous system. It is, therefore, of extreme importance to differentiate acroparesthesia from these by the established methods of examination. In our cases, we have excluded those in which we could find syphilis, plumbism, arteriosclerosis, and all those conditions that lead to definite organic changes in the nervous system. It is important to differentiate this affection from the early symptoms of those vasomotor changes which result in trophic retrogression of the extremities. Raynaud's disease, erythromelalgia, and intermittent claudication should be carefully excluded, which should be easy when we bear in mind the symptomatology of these diseases.

Etiology and treatment.—It appeared from our study of the etiological factors of the disease that ovarian and gonadal disturbances were at fault. For this reason, organotherapeutic measures were given a trial, with striking success. Our procedure was as follows: After establishing normal intestinal elimination and ascertaining that the urine was normal, we administered organic extract, mainly the ovarian and corpus luteum. Those of the hypothyroidal type received thyroid extract, from 0.5 to two grain doses; each of our patients in whom thyroid was used was carefully examined and the effects on the heart observed. Locally, we used faradism, but abandoned it after Patrick (12) recommended the use of Bier's hyperemia at the meeting of the American Neurological Association in 1916. We have learned that pressure must be applied carefully. When too tight or too loose, there was observed rather an increase of, than a relief from, the symptoms. The best manner of applying it is to use pressure up to the point where one gets a diastolic pulse with a stethoscope. In some cases even this was too high and not more than fifty milligrams could be used. The bandage is left for about fifteen minutes to one half hour. In some cases we were also able to secure disappearance of symptoms by superheated air in Turner's apparatus up to about 200° F. for ten to fifteen minutes. The disappearance of symptoms can also be obtained by pressure on a peripheral nerve, such as the ulnar. In all cases where only local treatment was used, the symptoms reappeared in a few hours. This mode of treatment was followed up in twenty-two of our patients between the ages of twenty-three and fifty-seven years. In sixteen, as far as we could ascertain, definite improvement with abolition of symptoms was observed; these patients were between the ages of thirty-five and forty-five years. In two cases following artificial climacterium, the improvement was very striking and rapid and kept up as long as therapy was used. Generally when improvement began it was noticed within two or three days after the administration of the drugs. In one case with high tension, potassium iodide was given, followed by distinct relief; but in this case we knew some organic lesion to be the cause of the symptoms.

It is our belief that the symptoms in this condition are provoked by an abnormal stimulation of the peripheral afferent neurons. The fact that it is provoked by exposure to cold water or chemicals; that it occurs mainly at night when the peripheral circulation is at its lowest; that it is relieved by pressure on a peripheral nerve, superheated air, and Bier's hyperemia, and its tendency to be symmetrical, all would indicate peripheral afferent neurons as being the seat of affection. It has been observed by all writers on the subject that a large number of cases occur in women during menopause, pregnancy, or lactation. Some writers, including ourselves, have met cases during artificial climacterium and with other pronounced pathological changes in the menstrual functions. This etiological factor furnishes us with a therapeutic hint of some value, especially now that we have found by actual experience the value of organic extracts in the treatment of menstrual irregularities and their accompanying symptoms. In fact, a trial at once convinced us that some of these cases are amenable to opotherapy. From therapeutic sources, it is permissible to infer that acroparesthesia is produced by an irritation of the peripheral afferent neurons, and that this irritant is a result of a faulty metabolism brought about by a change in the internal secretions of the endocrinous, particularly the sexual, glands. The effect of this faulty metabolism is an irritation of the peripheral neurons similar to that which has been shown to exist in tetany. Horsley, Lang, and Mustead (13) showed conclusively that the peripheral afferent neurons are responsible for the attack of tetany, while Vasale, Generali, and later MacCullum (13) and his associates demonstrated with equal certainty that the parathyroids are actually responsible for this irritation.

For evident reasons, animal experimentation will not avail in acroparesthesia. We, therefore, must draw our conclusions from clinical evidences which show clearly that this definite symptom complex occurs mainly in women at a time when unquestionable changes in the sexual glands take place. In conclusion, the value of opotherapy must be accentuated. We are indebted to Dr. I. Abrahamson for his valuable suggestions.

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252 EAST BROADWAY.
862 KELLY STREET.

THE CLINICAL SIGNIFICANCE OF GASTROINTESTINAL TOXEMIAS.*

BY ERNEST ELLSWORTH SMITH, PH. D., M. D.,
New York.

Whom and when shall we examine for toxic conditions? While it is unquestionably true that at all times we should be mindful of the possible existence of toxemias in every patient, there are certain symptom complexes which particularly suggest the importance and necessity of attention to possible more or less hidden toxic conditions that are contributing materially to the disease processes which we desire to correct. It is impossible even to enumerate at this time all of the pathological manifestations that would answer this question, but it will serve our purpose to consider certain groups of symptoms that will direct attention to particular forms of toxemia.

I shall first consider certain skin manifestations. It has long been believed that urticaria, psoriasis, certain symptomatic erythemas, some forms of eczema, particularly the more or less acute types, and possibly other skin lesions are the expression of an underlying toxic condition and as uric acid, leucomaines, intestinal putrefaction, or what not has been the vogue these toxemias have successively been charged with being the cause of the skin manifestation.

We are now in the era of protein sensitization and accordingly there is a tendency to dismiss other forms of toxemia and look to this condition as the true underlying cause. There is good reason for directing attention to this cause, as it appears to have been shown conclusively in some instances that there is a close relation between hypersensitiveness of the system to a particular protein, whether of food or bacterial origin, and the cutaneous manifestation, a relationship of such a nature that it seems justifible to conclude that the presence of the protein poison in the circulation of the hypersensitive patient is the cause of the skin lesion. In arriving at this conclusion, consideration should first be given to the history of such attacks, especially with reference to particular forms of food ingested. Occasionally the origin of the hypersensitiveness can be traced to a particular cause, as an occasion when there was an inordinate ingestion of a particular food after which the anaphylactic symptoms appeared, that is, the earlier peripheral irritation being sometimes manifested by the sudden appearance of the rash, followed where the reaction is more severe by a sense of impending danger, interference with breathing, and finally even collapse. Less frequently there are gastrointestinal symptoms, particularly retching and even vomiting. When the onset is acute and unexpected, it may appear as though poisons were present in the food, but when it becomes known that the individual is susceptible to a particular food protein, as in the case of those sensitized to eggs, it must be concluded that this is the cause of the attack. The problem is more difficult in subacute or chronic conditions. Here a long and careful study of the eating habits, with exclusion of suspected foods, preferably one at a time, may reveal the particular protein to which the individual is sensitized.

Recently, the method has been introduced of testing protein sensitization by skin tests with particular proteins. This may be done by inoculation of a skin abrasion with a one per cent. solution of the protein or by injection of a minute quantity of the solution between the cutaneous layers, but not subcutaneously. The latter method, except in very skillful hands, is not without danger, since the introduction may inadvertently be under the skin, when rapid absorption and a general reaction with marked shock and even death in hypersensitive cases may result. When inoculated as described, a positive reaction consists of the production of a localized lesion more or less resembling an urticarial wheal surrounded by a zone of erythema which appears in from a few minutes to an hour. When this reaction is obtained and is not given by a blank control it is the best indication at our command of the fact that the individual is hypersensitive to the protein tested.

It is fair to believe at the present time that urticaria is often, if not always, a symptom of this con-

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dition. It is very probable that angioneurotic edema is likewise such a manifestation. Other conditions already indicated and disturbances unaccompanied by cutaneous lesions call for a thorough investigation, particularly where there is the least suspicion of food susceptibility.

Nor should it be forgotten that bacterial proteins may be the substance at fault. In these cases there is not the same high degree of hypersensitiveness, so that subcutaneous vaccine inoculation may be practised for treatment without danger, if it is begun with a low count and direct introduction into the bloodstream is avoided. With this latter, however, I have known reactions quite as acute and alarming as are given by individuals hypersensitive to food proteins. The problem presented in investigating sensitivity to bacterial proteins is to locate the nidus of infection and isolate and identify the organism. Where there is a frank lesion, this is relatively a simple matter. Where the infection is in a hidden abscess or sinus or in an unsuspected bowel kink, its recognition may call for most patient search and utmost sagacity, with utilization of complete x ray and clinical laboratory equipment.

A group of symptoms suggested by this last consideration is that associated with arthritic and myositic conditions. It is not my purpose to consider this phase of the subject now, as in the near future in cooperation with others observations upon these conditions will be reported in detail. For completeness, however, I would emphasize now the desirability of investigating actual bacterial invasions from possible foci, remembering that the bones, particularly the marrow, act as filters removing bacteria from the bloodstream and probably affording them opportunity to grow with production of exudate, which may be the actual lesion which the patient exhibits.

Another possible factor in these same conditions is to be found in an entirely different direction. I refer to the failure on the part of the kidneys to eliminate properly the urinary constituents. Passing at this time the extreme manifestations that constitute the uremic pictures, I wish to emphasize the conditions of toxemia that are associated with a failure to eliminate the nonprotein nitrogen compounds, particularly the uric acid. The overemphasis that for years was given to the possible accumulation in the blood of this substance and of the purins in general of which it is the most familiar representative was followed by an almost complete abandonment of the consideration of this factor. With the development of recent technic, however, which now enables us to make accurate determinations of these substances in the blood in a way that is thoroughly practicable for clinical diagnosis, very definite and accurate information has become available which throws a flood of light on certain of our cases. It may now be stated on the authority of exact observation that in certain conditions there is an actual accumulation of the purins, notably uric acid, in the bloodstream. Moreover, it is probable that this is always an early manifestation of a defective renal condition, even though we may have no other evidence of this impending danger. In its most familiar clinical picture, this purinemia is known to us in the gouty manifestations, but its range of symptomatology is far greater than this. Among the conditions in which the increase is to be sought are the chronic arthritic diseases which we have been considering. Indeed, there are few chronic states that present the possibility of an obscure underlying toxemia where, in a thorough investigation of possible underlying causes, it is not wise in completing our survey to include an accurate determination of the nonprotein nitrogen and uric acid of the blood.

With this brief presentation of various toxemias in mind, let us now pass to the consideration of certain toxemias that are particularly apt to evidence themselves in the neurotic and psychopathic patients, namely, those that arise from the absorption of fermentive and putrefactive products formed in the gastrointestinal tract. It is generally conceded that putrid matter is toxic. Indeed, it would seem as though it were a provision of nature that ordinarily putrescence carries with it a foul odor, thereby warning both animal and man that processes of decomposition have supervened, rendering the material unfit for food.

Decomposition of carbohydrate food ordinarily carries with it no such indication of danger, though even in this instance the smell gives notice that fermentation is taking place. However, changes of this kind are in many instances not only tolerated but are even induced to produce foods that are gracious to the palate and acceptable to the system. As examples, note the fermentation of milk and of grain for the production of beverages. However, in other associations, fermentation has come to be associated with undesirable food changes, as in the souring of many cereal foods. In these instances, it is probably not the actual fermentation that is deleterious but the possibility that changes may have proceeded further and that actual protein decomposition has supervened. Likewise, the decomposition of fat does not ordinarily yield deleterious products. Here, too, changes of this kind are in some instances acceptable to the palate, as in the eating of certain ripened cheeses. In other instances, however, the palate rebels, as in the eating of stale eggs, probably not because the early egg changes are themselves harmful, since they are identical with the changes that take place in the fat of ripened cheese, but because in eggs the fat is associated with labile albuminous matter which experience warns us is prone to putrid decomposition.

Putrescence, however, that is, the putrid decomposition of protein matter, is almost if not universally repugnant to the taste, and substances that are undergoing this change are unequivocally pronounced unfit. Moreover, experience teaches that this instinct is well founded; that putrid food many times, if not always, is capable of producing and does produce a poisoning of the system. It, therefore, is in line with general experience that putrid decomposition in the gastrointestinal tract is capable of, and when present does, produce poisonous products. Experimental studies of the products that may be thus formed give credence to this view. The normal process of protein digestion consists of the breakdown of the huge protein molecule into its constituent parts, namely, into the upward of twenty aminoacids of which it is composed. These may be either wholly free or possibly combined into relatively simple groups of aminoacids, the polypeptids. We no longer hold to the view that protein is ordinarily absorbed as such, or as peptones, but that these latter are stages in the complete breakdown of the protein molecule. The aminoacids themselves are nontoxic. Indeed, they are physiological products of digestion that in the bloodstream either are carried to the tissues, where they are reconstructed into protein; or, if in excess of what is utilized by the body for tissue growth or repair, are deamidized, that is, the nitrogenous portion is split off and converted into urea for elimination, leaving the carbohydrate portion of the protein to enter into carbohydrate metabolism. However, the nontoxic aminoacids under the influence of bacterial growth are capable of yielding basic products, the amines, that are decidedly poisonous. It is to these products, formed by the growth of certain bacteria, particularly the bacteria of putrid decomposition, that intestinal toxemia is largely due. Especially is this true of certain ethylamine derivatives, notably of the aromatic aminoacids of protein breakdown. Thus, the well known tyrosine is changed into the highly poisonous parahydoxyphenylethylamine known as tyramine; histidine is changed into histamine; tryptophane into indolethylamine; arginine into agmatine; leucin into isoamylamine; and phenylalanine into phenylethylamine. In each of these instances the transformation of the aminoacids into the corresponding amine is accompanied by a change in physiological action, a nontoxic substance being transformed into a toxic one. Other changes may occur, but as far as we are at present acquainted with the chemistry of protein decomposition, under the conditions of alimentation, it is the formation of amines or amino bases that makes the material toxic.

Since the effect of intestinal toxemia is at first purely functional and becomes organic only after a more or less prolonged period, and since, too, the presence of these toxic substances in a given instance is determined with extreme difficulty, it is not easy to prove directly the relation of cause and effect. Nevertheless, the evidence that justifies the conclusion is in a measure both experimental and clinical.

In the first place, it is to be noted that the putrefactive amines are pressor substances and as such are capable of raising blood pressure considerably when introduced into the circulation. Again, it has been demonstrated that any drug which has this effect is capable of bringing about degeneration of the middle coat of the arteries. Finally, in a few instances, it has been experimentally demonstrated on animals that the introduction, both by injection and orally, of particular amines has produced typical arteriosclerotic changes of the cardiovascular system, including in Harvey's experiments the remarkable condition of a chronic nephritis resembling in many respects the large white kidney of man. The experimental production in this way of chronic lesions, particularly of the kidney, by a nonirritant substance is of very definite significance as bearing on the question whether this may be brought about by the absorption from the alimentary tract of the amines of putrefaction.

Clinically, there is on the one hand the symptomatic evidence of toxemia such as headache, muscular and mental fatigue, irritability in the ordinary individual and in the particularly sensitive the exacerbation of their individual susceptibilities, be it migraine, epileptic seizures, or some psychical state or other manifestation. On the other hand, there is the morphological evidence or results of the toxemia, first of which are the changes of the cardiovascular system, including the sclerotic kidney.

The effort of Lane to classify cancer as a final stage of intoxication in all probability is justified to the extent that intestinal toxemia exacerbates any such tendency, but it is far too probable that there are associated with cancer growth other factors that are more determining to justify at this time the claim of any specific relation. It is highly probable that it does no more than many other disease conditions, that is, lowers general resistance and renders the subject more susceptible. However, the association of excessive intestinal putrefaction with the various symptom manifestations and pathological changes cited constitutes probably the strongest evidence that the relation to such process is a causal one, at least to the extent indicated.

Just how is intestinal toxemia brought about and how may we know that it is impending or actually exists?

First, as to surgical causes: The proposition that it is due to stasis from kinks due especially to bands advocated by Lane for so many years has not been wholly substantiated. To be sure, an acute condition arises from obstruction that shortly leads to death, but here we are evidently dealing with an acute condition in which other factors play an all important part. The question is, does the slow passage of the intestinal contents which constitute stasis, without the loss of water to the system and without the shock of obstruction, does, in other words, the stasis of Lane's kinks cause a toxemia? Space does not permit me to discuss this question adequately, but I wish to propound two propositions. 1. In so far as the anatomical abnormalities of the intestines delay passage but do not increase the extension upward of bacterial growth, they do not promote intestinal toxemia, though they may, particularly if high up, promote the absorption of unchanged or only partially changed protein, thus in patients with protein sensitization determining an anaphylactic reaction. If lower down, they may promote the passage of bacteria into the system, the low grade infections of Adami, as in the arthritic conditions already mentioned. 2. In so far as the anatomical abnormalities of the intestines delay passage and do increase the extension upward of bacterial growth, they tend to promote both systemic invasions of intestinal bacteria and an intestinal toxemia, the extent of the condition actually established being determined by the character of the intestinal flora and the extent to which it flourishes.

The anatomical abnormalities referred to include not alone kinks producing ileal stasis but stasis from spasm or inhibition of the normal relaxation of the ileocecal valve, if, as has been claimed, such condition actually exists; and it includes as well the conditions of ileocecal incompetence to which attention has of late been so acutely directed. The extension upward of the colonic contents is particularly apt to establish conditions permitting more extended growth of bacteria and the increase and greater absorption of products of putrefaction. It is less apt to be associated with stasis, promoting low grade infections from the intestinal tract. Finally, the observation of Mutch is not to be forgotten, that the ileal kink may—Mutch says does—act as a protective barrier against ascending infection from the colon. So far as it does this it is a factor in the protection from increased bacterial activity.

A factor to which emphasis is frequently given in the discussion of our subject is the detoxication of the portal blood by the liver. I shall not attempt to repeat or add anything to the well known facts concerning this provision of the economy. It is merely a partial statement of the general proposition that the production of toxic products in alimentation is not alone sufficient to constitute toxemia, but that the defenses of absorption must be overcome. Why and how this is accomplished is another phase of the subject which we shall not now consider.

In the present presentation, it has been my purpose at a time when we are particularly enthusiastic about another form of toxemia, namely, protein sensitization, to call attention to the condition of intestinal autointoxication, which we are apt to forget. The technical difficulty of obtaining adequate data in these cases, the careful study of individual cases necessary to exclude other conditions, and the extravagant and erroneous claims of the Metchnikoff school which overpopularized this subject at the expense of accurate information, should not cause us to overlook this condition as a real factor in many of our cases. It is suggested by the clinical symptoms and is to be further recognized by the intestinal flora and by the products absorbed and eliminated in the urine.

50 East Forty-first Street.

OPERATIVE TREATMENT OF GUNSHOT FRACTURES.

By Joseph Rilus Eastman, M. D.,
Indianapolis,
Chief Surgeon, Reserve Military Hospital No. 8, Vienna, Austria,
And Ralph Boerne Bettman, M. D.,
Chicago,
Assistant Surgeon, Reserve Military Hospital No. 8, Vienna, Austria.

It need hardly be said that infected gunshot fractures do not tolerate open operative interference. Practically all gunshot fractures are infected, therefore the field of operative surgery in war fractures is relatively small. In the stage of acute infection no such operative step as the laying on of a Lane plate could be considered except perhaps in the extremely rare instances in which the application of the plate or other metal support, is made through large lacerations of the soft tissues, with the idea of holding fragments temporarily and with the understanding that it must be removed later on. An occasional success with this plan by no means discredits the general statement that the practice is foolhardy. Even in the case of gunshot fracture of the lower jaw, the experience of this war has proved that primary bone suture or wiring is to no good purpose (1). It has been shown in these cases that primary bone suture is rarely effective, that primary healing never occurs, and that suppuration and sequestrum formation always follow. In other words, the primary bone suture in jaw fractures does only harm and no good.

The experience of the present war has demonstrated that for weeks after apparently complete healing of gunshot fracture wounds, the infection lurks in bone and soft tissues about the site of fracture, making any open operative procedure a dangerous undertaking. Fractures plated two months after the disappearance of every discoverable vestige of infection or inflammation have reacted with what bore every evidence of a recrudescence of the old infection. The x ray in these cases revealed no signs of inflammation and none were found during the operation itself. Instances of this kind have been so numerous that some Austrian surgeons have advised against bone grafting or plating in practically all healed gunshot fractures with deformity, suggesting instead, simple osteotomy and subsequent intelligent and persistent employment of extension.

Osteotomy and extension are not only less likely to provoke the recrudescence of dormant infections, but very often this simple method meets every requirement in the way of providing accurate coaptation with good position. An illustrative case was one of our own in which a Lane plating was undertaken for the correction of the deformity of a healed femur shaft fracture with extensive dislocation of the two fragments *ad axin ad latus et ad longitudinem*. There had been no sign of infection for several weeks, the callus had hardened, and the case seemed suitable for a bone plastic operation and one not easily to be corrected by simple osteotomy with subsequent extension. During the course of the operation after the bone fragments had been dissected free, the condition of the patient suddenly became such that he had to be returned to bed without applying the Lane plate as intended. Extension was employed and at the end of six weeks the fragments had reunited in good position. (See Figs. 1 and 2 before and after operation.) Other similar instances have drawn attention to the somewhat unappreciated value of osteotomy and extension in healed fractures with bad position, suggesting that perhaps as the result of American teaching we had come to rely too much upon plates, grafts, etc., using open methods when quite unnecessary, and to some extent positively dangerous.

A gunshot fracture healed but harboring a dormant infection, could hardly be subjected justly to open operation, especially a plastic operation, except upon the erroneous assumption that the infection had entirely disappeared. As it is almost impossible to learn before or even during operation, of the presence of infection in healed cases and in so much as the infection often persists for months with no manifestations whatever, it follows that

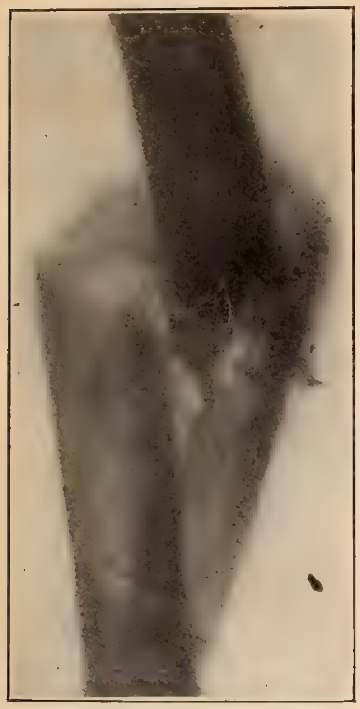

FIG. 1.—Comminuted femur fractures treated by extension.

open operation in heeled gunshot fractures should not be undertaken without due sense of the dangers of lurking infection. The extra manipulation required to complete a bone plastic operation with a plate and the presence of the foreign body, without much doubt stirred up latent infections in several of our cases. Fortunately, removal ot the plate with subsequent continuous irrigation with Dakin's solution and extension sufficed to control the infection, which was from the very beginning of its flare up in an attenuated form, the discharge being made up largely of lymph and containing relatively few pyogenic bacteria and pus cells, and to obtain good approximation of the fragments. Such experiences teach a lesson which although in a sense generally understood, is perhaps not sufficiently appreciated, i. e., that open operation in gunshot fractures of the long bones is not indicated before two months at the very least have elapsed after the disappearance of every sign of infection, and then should take the simplest form possible under the circumstances which means osteotomy and extension in a large percentage of cases. In so far as efficient extension, even when begun many weeks after the receipt of gunshot fracture, results in a gratifying proportion of cases in complete cure without deformity as shown by the reports of Finsterer in Austria and by others in practically every country engaged in the war, it is clear that open operation cannot be undertaken with good reason except when extension has failed after intelligent trial and after signs of infection have been absent for months. If simple osteotomy with extension suffices to bring and hold the bone fragments in good position, no one with any experience in treating war fractures would inflict upon the parts the extra manipulation or trauma by instruments which the use of a plate entails. So that even in cases which before incision have been prepared for a graft or a plate, if after osteotomy is done, extension corrects the deformity, then prudence and common sense demand that the operation end there. Nothing has been brought out more clearly by the experiences of Austrian surgeons than that the simplest methods of treating gunshot fractures are the best, by which it is not implied that Austrian surgeons do not use plates or bone grafts when necessary. One of the best evidences that loyalty to surgical art rises above international prejudice, is the fact that the Lane plate is popular in Austria. In the von Eiselsberg Clinic it is preferred in bone plastic operations. Austrian surgeons use the plate when necessary and safe, but only then.

In the service of the writers in Reserve Hospital No. 8, the Lane plate was used in cases of healed gunshot fractures when simple osteotomy with traction left much to be desired in the correction of the deformity and when owing to dislocation *ad axin* or angulation, it was feared that a dowel graft or intramedullary splint or bone peg might break or become displaced. The plate was used, for example, to unite the pointed ends of fragments in cases in which considerable bone tissue had been shot away or splintered, and in which it would have been difficult or impossible to unite the principal fragments by bone grafting. Wiring was employed in a few long oblique fractures and intramedullary bone grafts were used in all cases in which the shape and position of the fragments were such as to admit of their use, that is, where the medullary canal was fairly well preserved in the ends of both fragments. (See Figs. 3 and 4.) They were also used to bridge extensive defects of the tibia, the graft being of the fractured fibula of the same leg. Cases believed to be entirely free of infection were selected for the intramedullary graft since it is of more serious moment if an intramedullary graft becomes infected than a Lane plate case. It is certainly an important advantage of the Lane plate as applied in gunshot fractures, that if it should become involved in an infection it can be removed under local anesthesia with very little difficulty, whereas the removal of an infected intramedullary graft may require general anesthesia and some time and art for its removal. To a great extent the same objection applies to wire and ferrules.

FIG. 2.—Femur shown in Fig. 1, after extension treatment.

The staplelike bridge of Kroenlein (see Fig. 5), like the Lane plate, may be removed easily in case infection arises or its presence in the tissues is for other reasons undesirable. It was used in one of our cases, being so placed that the long bar connecting the two tines was left outside the wound, the margin of the wound being closed about the tines. It makes a fair substitute for the Parkhill clamp and other devices in which two pins, each penetrating a bone fragment, are connected outside the wound by wing clamps or otherwise and is open to the same objections that apply to such pins, i. e., a single pin or screw, in each fragment, no matter how long, is not always competent to hold the fragment in alignment. This is especially true where there is a powerful tendency to angulation. In simple cases the staple can be driven through the intact skin after the manner of the Parkhill pins or in suitable cases can be buried like the Lane plate. In our one case the staple was not competent to hold the fragments and it became necessary to apply extension shortly after the operation. Any metal bridge or plate, unless fixed at more than one point in each fragment, may be expected occasionally to allow rotation of the fragment about that point and thus admit of recurrence of the deformity.

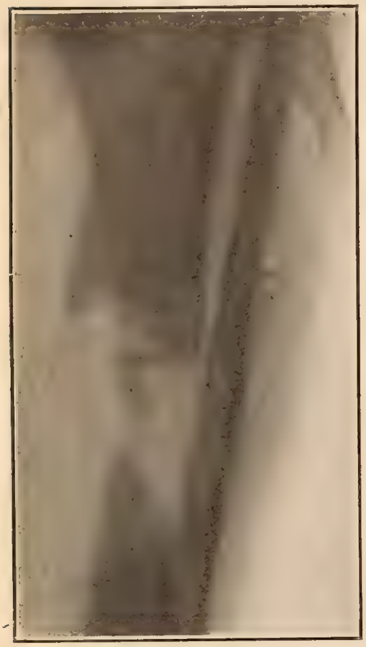

Fig. 3.—Gunshot fracture of tibia with eight centimetres defect.

In completely healed infection free gunshot fractures, the autogenous bone graft represents the ideal method of holding fragments in alignment and coaptation. If an autogenous graft cannot be obtained the slender bones of a dog's extremities or those of a calf may of course be utilized and this has been the practice of several Viennese surgeons, but by far greater convenience and greater safety consist in using bone pencils cut from the edge of the tibia or the diaphysis of the fibula or from some other bone easily accessible. Judging from a limited experience in the use of autogenous grafts for the retention of fragments in good position it has appeared that such grafts cause less irritation and have less tendency to provoke recurrence of infection than do plates or other metal devices.

Whether the transplanted bone heals in as a foreign body and later disappears by resorption as held by Ollier, Gebhardt, and Ullmann, or whether a part continues to live as stated by Marchand and Axhausen, is an old question of no great importance in this connection, in view of the clinical fact that if laid in correctly the graft unites in some manner with the surrounding bone and serves as a support. As advised by Shaffer (2) no more bone should be transplanted than is absolutely necessary, and care of course should be taken that the osteoblastic periosteum is intact along one side or margin of the peg or intramedullary graft. Moreover the grafts should be so cut as to contain as little compact bone as possible for the generally admitted reason that compact bone after transplantation requires a longer time for resorption than does spongy bone, the porosity of which allows the ingrowth of vascular connective tissue and lime bearing osseous trabeculæ. Care should also be taken that no blood or devitalized tissue is interposed between the intramedullary pencil and the endostium of the fragments since the resorption of such foreign matter must of course precede the ingrowth of vascular connective tissue into the graft.

It is probable that in our cases, the intramedullary pencil served merely as a support quite in the sense that a nail or plate does. The dowel graft, however, if inlaid so that the periosteum of the graft lies in contact with the periosteum of the fracture fragment and with the other bone layers in normal relation actually grows into the surrounding bone. In the case of the intramedullary pencil it is practically impossible to bring the periosteum of the graft into contact with that of the fracture fragment. However, as above stated, the matter of chief importance is that the autogenous intramedullary splint provides good support during the process of union of the fragments, and this it seems to do much better than a dowel graft in so far as our cases were able to illustrate. Though the dowel graft with proper apposition of histological layers grows in, and the intramedullary autogenous bone splint remains in most instances as a foreign body, nevertheless, in fractures with obstinate tendency to

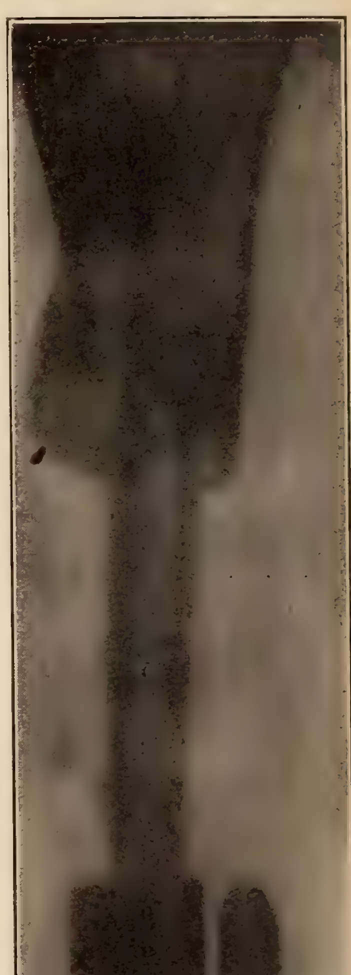

Fig. 4.—Same as Fig. 5 after bridging with intramedullary pencil taken from fractured fibula. Pencil twenty-two centimetres in length.

angulation, the bone peg in the medulla gives the best possible support, the thing most desired. We have not found the dowel graft suitable as a support in any case of fracture with tendency to displacement of the fragments that could not be corrected by extensions. In such cases, the Lane plate or the intramedullary peg have been of great service.

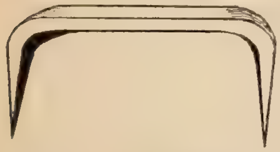
FIG. 5.—Kroenlein staple.

In view of the danger of arousing latent infections in healed gunshot fractures with shortening, Finsterer, of Vienna, has advised that all open operations made during the first year after healing of the wound, should be made not at the site of the fracture but remote from it. He suggests that in cases of fracture of the upper end of the femur with shortening, a plastic operation for lengthening the bone be made in the lower third of the diaphysis. Finsterer lengthened the femur in such cases by employing a method similar to the one in common use for elongating tendons. That is, the shaft is split lengthwise with a circular motor saw and the continuity of the shaft then severed by sawing out the periphery at the ends of the longitudinal cut above to the right below to the left (Fig. 6). He also referred to the method of equalizing differences in length by shortening the healthy leg by means of bone resection where it was impossible to lengthen the injured extremity.

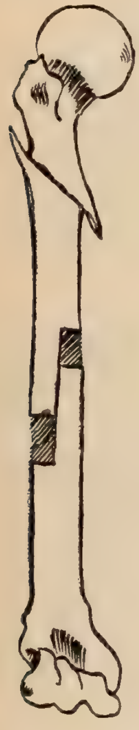
FIG. 6.—Finsterer's method of restoring length of shortened bone advocated by him because of the danger of reawakening infection by operation at site of fracture.

Gunshot fractures which according to the character and force of the vulnerating projectile vary from simple chipping or lodging of the missile in the bone to extensive comminution of entire bones will of course occasionally require amputation of the extremity. Virulently infected gunshot fractures as from artillery projectiles, explosive grenades, and shrapnel, may often be cleared up by intelligent conservative treatment with through and through irrigation of some antiseptic nontoxic solution—we used Dakin's solution—and be saved from amputation. However, in the presence of active phlegmon, especially gas phlegmon, the Austrian surgeons have been prompt in amputating. The flapless amputation which Van Buren Knott in America and Fitzmaurice Kelley in England suggested for such cases has found rather general adoption in Austria-Hungary. The flapless or guillotine amputation has without doubt, saved many lives in this war and the objections to its use are not serious. Drainage from the flapless stump is unimpeded and the time required for amputation is at the irreducible minimum. However, we have not often succeeded in pulling the skin down over the raw stump by such simple means as mastesol glue straps, but have usually had to resort to plastic operative procedures to provide cutaneous covering for the stump and frequently have had to reamputate. The operation of reamputation is usually, however, fairly simple, involving as a rule chiefly the bone. In view of the difficulty experienced by the surgeon in covering the defect and the loss of time suffered by the patient, we have in our fractures associated with dangerously virulent infections, amputated by a modified flapless method. A short anterior flap was cut in thigh amputations but no flap made posteriorly so that drainage was quite as free as in the guillotine amputation and the covering of the raw stump was made much easier. Another modification of the flapless amputation consists in cutting quite short lateral flaps or more accurately speaking, short anteriolateral flaps (Fig. 7). Here

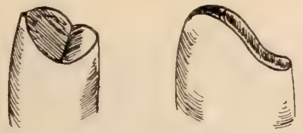
FIG. 7.—Short anteroposterior and lateral flap methods of amputation provide ample drainage in phlegmon and provide shorter convalescence than the guillotine stump.

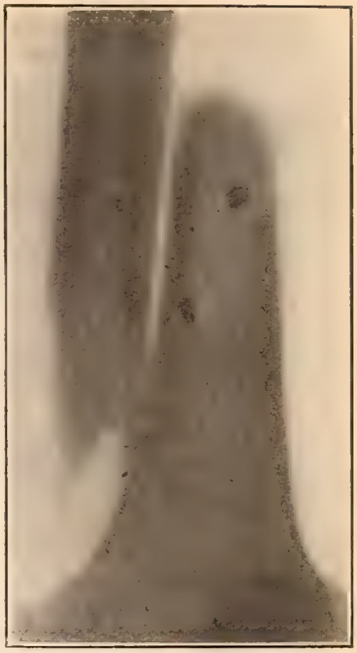
FIG. 8.—Fracture of femur caused by falling boulder on Italian front.

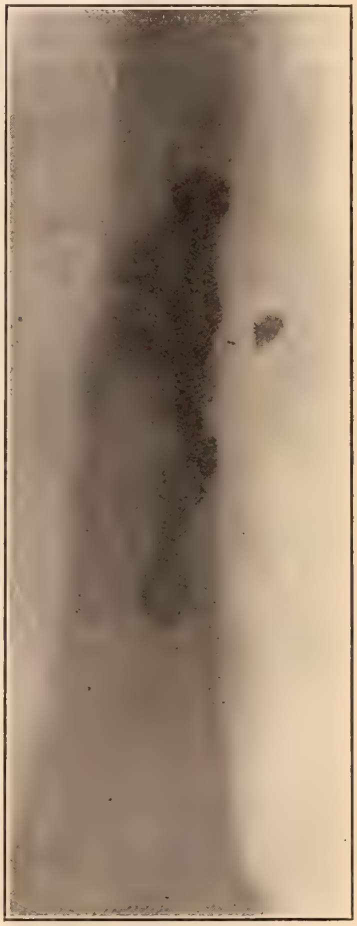
FIG. 9.—Same as Fig. 8 after plating.

also drainage is good. The only advantage possessed by the guillotine method over such modifications is that the circular flapless amputations close somewhat more quickly.

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THE BRADFORD FRAME IN THE TREATMENT OF BUTTOCK AND HIP INJURIES OF WAR.*

By KELLOGG SPEED, M. D., F. A. C. S.,
Chicago,
Major, Medical Officers' Reserve Corps, U. S. Army.

Confinement to bed after lacerated buttock or other wounds involving the posterior hip region, with or without bone involvement, becomes irksome to patients. When the wound is large and infected, as practically all war wounds are, the necessary manipulations for dressing, irrigation, and use of the bedpan cause severe pain. Pus accumulates rapidly; the patient lies in a soggy dressing which forbids free drainage from the wound surface and favors secondary infection from fecal contamination. No matter how frequently moist dressings are applied nor how thoroughly irrigation is practised, these conditions will be present, and no binder nor many tailed bandage can be applied satisfactorily to the wounded man.

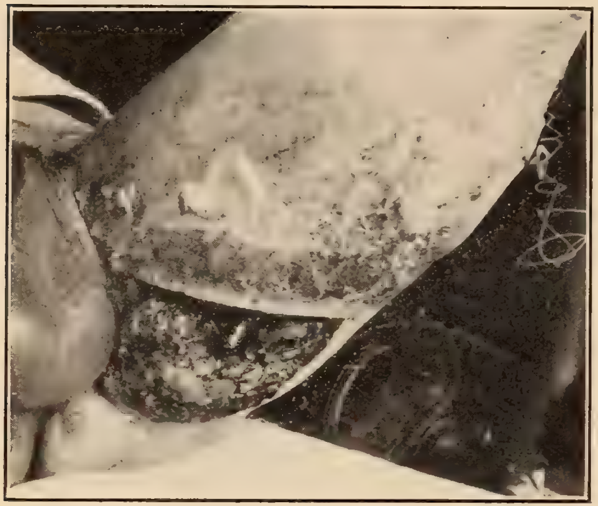

FIG. 1.—Wound of inner aspect of thigh. Difficult to keep clean and free from pressure. Wound of entrance on outer side of thigh.

After observing several of these patients literally lying in their own pus or stretched out in the tiresome prone position, I made an effort to make them comfortable. Mental comparison was made to patients in civil practice on whom bone transplants had been inserted in the neck of the femur for ununited fractures. Such patients are put in body plaster encasements with a suitable opening about the anus and genitals, the legs are held in abduction so that a nurse may tip the whole stiffened body over on one side and slip a bedpan beneath without much effort. No soiling of the bed or patient follows this procedure. It was evident, however, that it would be impossible to place patients with these large wounds in any such dressing, nor did I believe it advisable to perform inguinal colostomy to avoid fecal contamination and possibly tetanus. (See Figs. 1, 2, and 3.) A search in our splint supplies revealed several Bradford frames which had never been used and they seemed to fill the requirements of safty, comfort, and dressing for these wounded men.

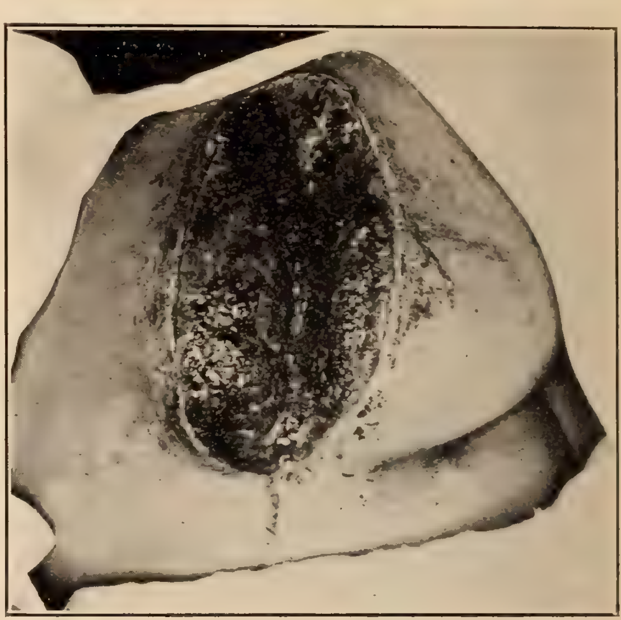

FIG. 2.—Transverse buttock wound laid open for drainage and irrigation. The impossibility of constantly lying on the left side to keep the wound exposed is apparent.

Most war wounds, profusely suppurating, are best treated by open air exposure with irrigation. The Bradford frame then had to meet the following surgical and hygienic demands: 1, exposure to drying and healing effects of open air; 2, nonretention of discharges against the wound; 3, a simple, easy, and free exposure to irrigation; 4, a minimum disturb-

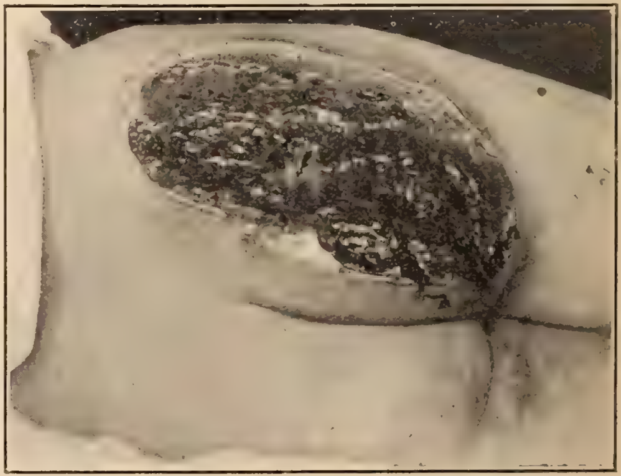

FIG. 3.—Longitudinal buttock wound. Area exposed is large and discharge very free. Healing is long continued. These injuries are received not while running away from enemy fire, but while lying prone under orders to avoid bursting shells.

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*From material obtained while officer in command of the Surgical Division, 23rd General Hospital, British Expeditionary Force, France, 1916. Major Speed is now with Base Hospital No. 12, U. S. Army, France.

ance of the patient for dressing, irrigation, or use of bedpan; 5, the patient's comfort in a normal position; 6, avoidance of soiling bed linen by irrigating fluids and discharges (see Fig. 4); 7, easy observation of and quick access to secondary hemorrhage. Frames were prepared with the canvas divided into two parts, the opening approximating that necessary to fit the wound treated. By means of pillows the patient was made very comfortable on the sling thus arranged and the wounded area was left free in the opening, the frame being supported some six inches above the bed level (Fig. 7) on firm blocks. If extension was needed for femur fracture it could be maintained while the patient lay thus. An irrigating can with rubber tubing was easily installed so that a constant drip or an intermittent flushing over the wounded area could be accomplished. On the bed beneath this surface a bowl of suitable size was placed to catch the discharge. The bedpan was easily slipped under the patient and used without any disturbance. If the wound threatened secondary hemorrhage it was left without any cover so that the nursing sister could give it a glance in passing and see the first signs of serious oozing. This seemed a necessary precaution to take after I had nearly lost two patients from secondary hemorrhage into thick bound on dressings and the bed (Fig. 8).

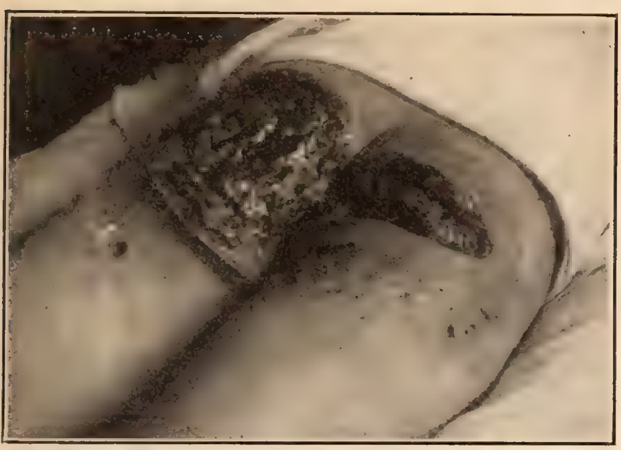

Fig. 4.—Double buttock wound opened for drainage. No position except the prone one is possible with customary dressings or a protecting cradle.

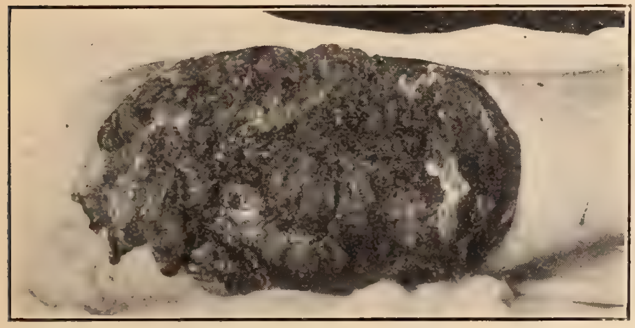

Fig. 5.—An enormous wound of the upper thigh and buttock 24 inches long. No serious bone involvement. Application of dressings very painful.

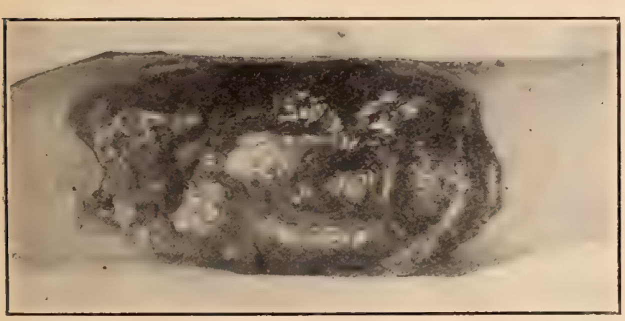

Fig. 6.—Same wound thirteen days later after open treatment and constant irrigation with easol (hypochlorous acid solution). Note the rapid granulation.

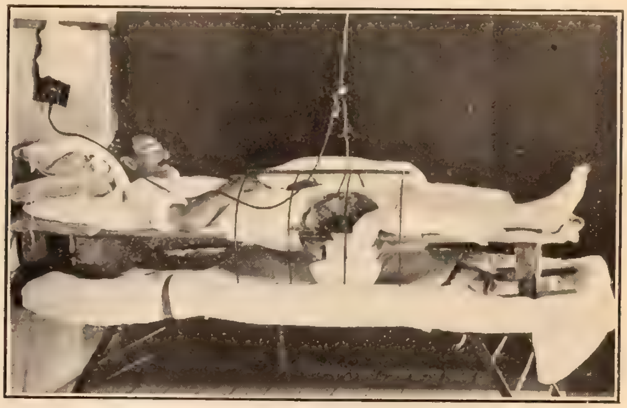

Fig. 7.—The manner in which this wound was treated on the Bradford frame. Patient comfortable in a normal position. Frame elevated from bed surface. Constant irrigation on open surface. No dressings; cradle protecting from bedclothes. Bowl on bed catches discharge. This patient contracted tetanus even with this open treatment and a prophylactic dose of antitetanic serum, but made a recovery.

After these surfaces become clean and start to granulate, they can be strapped together or secondary approximating sutures can be inserted, and in proper time the patient can be taken down off the frame and dressed with dry gauze in an ordinary bed. I trust that those who enter active military service will bear this method in mind and give it a fair trial.

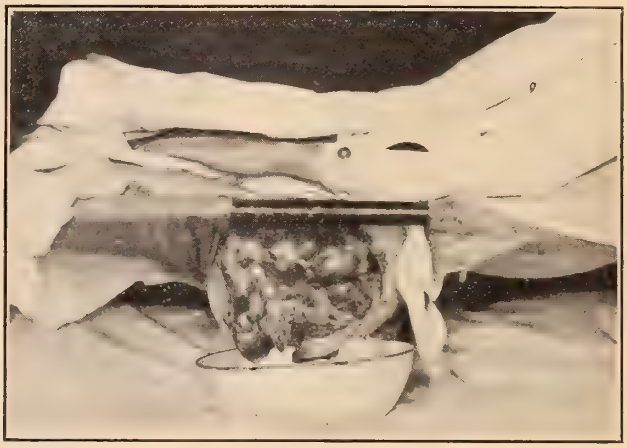

Fig. 8.—Close up view of a severe gunshot of the left buttock and greater trochanter of the femur with fracture. Note the patient's elevation from the bed, the opportunity for free drainage of the wound and the apparent relaxed comfort. Recovery.

CREOSOTE CARBONATE AND QUININE IN PNEUMONIA.

By Charles M. Nice, M. D.,
Birmingham, Ala.,
Physician in Chief, Birmingham Infirmary.

Cassoute, of Marseilles, introduced creosote carbonate in 1898 for use in the treatment of pneumonia and since then numerous internists have vouchsafed for the especial efficacy of the drug. I. L. Van Zandt reported a collected series of cases thus treated which showed only five per cent. mortality. Charles E. de M. Sajous advocates ten to fifteen grains at two or three hour intervals and ascribes the almost specificity of the drug to its depression of the sympathetic centre, dilatation of the arterioles and consequent freer distribution of blood to the diseased area. It also stimulates the test organ he says, promoting the production of autoantitoxin. Quinine is said to act much like creosote carbonate and has been lauded by various writers at different times as an extraordinary medicinal agent in the treatment of pneumonia. Some European physicians insist upon extremely large doses of from fifty to sixty grains. From my own experience of these two drugs I am surprised that they are not more commonly used and written of.

Case Number.	References.	Age.	Sex.	Day treatment instituted.	Type of disease.	Temperature fell by.	Day of normal temperature.	Complication.	Results.
1	O. L.	68	F.	2nd	Small area	Crisis	4th	None	Recovery
2	Arthur	19	M.	2nd	Single	Crisis	4th	None	Recovery
3	Sol. 1	20	M.	1st	Single	Crisis	3rd	None	Recovery
4	Sol. 2	24	M.	2nd	Single	Lysis	4th	None	Recovery
5	Thor.	5	F.	3rd	Single	Lysis	5th	None	Recovery
6	Neg.	20	M.		Double (aortic regurg.)	Lysis	5th	Embolism	Death
7	Anderson	2	F.	3rd	Double	Lysis	5th	None	Recovery
8	Auton	23	F.	2nd	Single	Crisis	5th	None	Recovery
9	Brunly	57	F.	1st	Single	Crisis	4th	None	Recovery
10	Conk	9	M.	2nd	Double	Crisis	3rd	Empyema	Recovery
11	Donahoo	40	F.	1st	Single	Crisis	3rd	None	Recovery
12	Gilmore	36	M.	1st	Single	Crisis	4th	None	Recovery
13	Holc.	9	M.	1st	Single	Lysis	4th	None	Recovery
14	Horton	2	F.	1st	Double	Crisis	3rd	None	Recovery
15	Hunter	18	M.	1st	Double	Crisis	3rd	Empyema	Recovery
16	Reeves	14 m.	M.	1st	Single	Lysis	3rd	None	Recovery
17	Rem.	38	F.	1st	Single	Lysis	4th	None	Recovery
18	Stov.	2	F.	1st	Broncho.	Lysis	7th	None	Recovery
19	Bue.	63	F.	1st	Single	Crisis	4th	None	Recovery
20	Young	37	F.	2nd	Double	Crisis	5th	Miscarriage	Recovery
21	Aker	19	M.	2nd	Double	Crisis	6th	None	Recovery
22	Chris	28	M.	1st	Double	Crisis	4th	None	Recovery
23	Cor.	13 m.	M.	1st	Double	Crisis	5th	None	Recovery
24	Dav.	42	M.	1st	Single	Crisis	4th	None	Recovery
25	Den.	18	F.	2nd	Broncho.	Lysis	9th	None	Recovery
26	Echol.	31	M.	3rd	Single	Crisis	7th	None	Recovery
27	Flem	65	M.	2nd	Double	Crisis	6th	None	Recovery
28	Field	20 m.	M.	1st	Double	Lysis	7th	None	Recovery
29	Hend.	13 m.	M.	1st	Broncho.	Lysis	10th	None	Recovery
30	Inf. "A"	15 m.	F.	2nd	Single	Crisis	5th	None	Recovery
31	Inf. "B"	31 m.	M.	3rd	Double	Crisis	5th	None	Recovery
32	Inf. "C"	9 m.	F.	1st	Single	Crisis	3rd	None	Recovery

Some time ago I adopted the combination of quinine hydrochloride and creosotal in a series of thirty-two unselected cases, at the same time treating thirty-two cases by other methods in vogue, and I have been wonderfully surprised with the results in the comparison. The quinine was given in doses of five grains with five to seven minims of creosotal every three hours and the dose decreased according to age. The only additional drugs used were caffeine or camphorated oil in a few at or about the time of the crisis and never as a routine or for any length of time. Fresh air and forced feeding were the adjuncts of this treatment. No symptoms of cinchonism, gastric discomfort, or urinary changes were noticed at any time and on the other hand delirium and nervousness were not seen in any of the number. The ages of my patients ranged from one year to sixty-eight. There was one death, probably due to an embolism occurring suddenly in the case of a man twenty-two years old, in whom the treatment was started after an indefinite period following the onset. The children appeared to take the treatment as readily and with as quick response as did the older patients. In these cases either euquinine or cocoa quinine was used in doses of two to four grains in combination with two to five minims of creosotal. Complications were noted in two patients only as an empyema, both of whom were operated on and went to a successful recovery.

The most remarkable point was the rapidity of the crisis, which in a number of cases was replaced by a twenty-four hour lysis and in none did the frequent shock and depression appear which is usually associated with a crisis. The majority of these occurred the second and third days after treatment was started. In some instances the change was so sudden that the diagnosis had to be definitely reconfirmed. In five children thus treated and purposely not included in the table, the temperature dropped and recovery proceeded in twenty-four hours after the treatment was instituted.

The mortality did not differ from a similar number treated in other ways, there being one death only in each series. The duration was so much shorter with the creosotal and quinine, the toxemia so much less, the complications so much less frequent and the convalescence and recovery so much quicker, that I am free to say that for the time at least I am in favor of the routine empirical use of these two drugs, especially when the disease is treated in its early stages. Since the above report was made six similar cases have been added thereto with crises before the fifth day and without complications or death, making a total of thirty-eight.

525 Woodward Building.

Medicine and Surgery in the Army and Navy

THE FIELD HOSPITAL.

By William W. Reno, A. M., M. D.,
Major, Medical Corps, U. S. Army; Director of Field Hospital Companies, Medical Officers' Training Camp, Fort Riley, Kansas.

Medical help for the sick and wounded with armies in the field is divided into two classes: that given in the zone of the line of communications and that in the zone of the advance. These zones will bear a slight explanation. In the American army a division of troops, about 26,000 men, is the great administrative unit. It forms the model for the organization of the administrative service of smaller units operating independently. All the territory in which its troops—infantry, cavalry, artillery, and special troops—and ammunition, supply, sanitary, and engineer trains operate is called the zone of the advance. All territory along a prearranged line of supply for this division, beginning at the zone of the advance and ending at a place called the base, is termed the zone of the line of communications.

One of the great duties of the medical department in time of war is to give temporary care and professional treatment to the sick and wounded in the zone of the advance and, except minor cases, transport them with as little delay as possible to the zone of the line of communications. To perform this duty there are four surgeons, thirty-three enlisted men, Medical Department, with each regiment, and a proportionate number with other troops; also four field hospital companies, four ambulance companies, and four camp infirmaries with each division. A wounded man, say in the trenches, is given first aid there by the regimental medical staff and during a lull in the firing or at another suitable time is transported to a sheltered place in the rear of the regiment called the regimental aid station. Here he receives further care and meets other wounded soldiers who have been collected at this point. At favorable times litter bearers from ambulance companies visit these regimental aid stations and transport the wounded unable to walk to the ambulance company dressing station. This is done by hand litter usually, by wheel litter, by ambulance if possible, or by any other means of transport available. At the dressing station the wounded man receives nourishment and further professional care if needed. Ambulances ply back and forth carrying the wounded from the dressing station to the field hospital. The field hospital is the last link of the sanitary chain in the zone of the advance. The next link is the evacuation ambulance company, a transport column which passes the wounded from field hospitals to the evacuation hospital, the first hospital in the zone of the line of communications.

Fortunate indeed is the wounded man who arrives at a field hospital in fairly good condition, as real hospital attention begins at this point. Yet the hospital equipment, though ample, must be meagre, as a field hospital is a part of the division and must, if possible, advance and retreat with it. Consequently the field hospital carries no cots, beds, or other heavy hospital equipment. Each patient gets a bed sack and pillow sack filled with hay, straw, grass or other available material, a rubber blanket to place under this, a blanket, and in certain cases a suit of pajamas. The field hospital is well supplied with food, medicines, dressings, and field surgical equipment; also with proper equipment to make and preserve individual records of sickness and injury in order that future claims may be adjusted with justice to the Government and to the individual. The capacity of a field hospital is 216 beds.

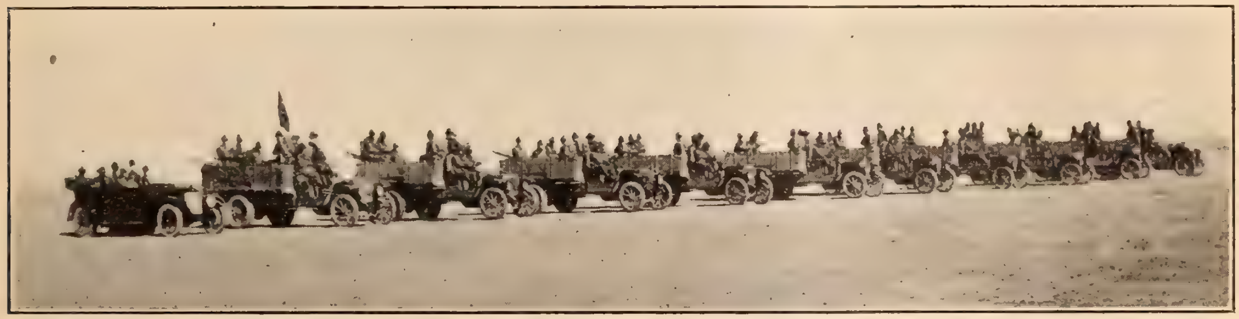

Fig. 1.—A motor driven field hospital company. Six surgeons and eighty enlisted men of the medical department form its staff.

Of the four field hospitals with a division two are motorized and two are animal drawn. The transport equipment of the motorized field hospital consists of eleven one and one half ton trucks and two motorcycles. The field hospital shown in Fig. 1 has a touring car instead of two motorcycles. When a field hospital is motor driven both the personnel and equipment are carried. The personnel of a motor field hospital company consists of one major and five captains and lieutenants of the Medical Corps or Medical Officers' Reserve Corps, three sergeants first class, six sergeants, two cooks, one mechanic, and sixty-eight privates first class and privates, Medical Department. The transport equipment of an animal drawn field hospital company consists of seven one and one half ton wagons with four draft mules for each wagon and two extra, and twenty-two riding horses. As to personnel there are one major and five captains or lieutenants of the Medical Corps or Medical Officers' Reserve Corps, three sergeants first class, six sergeants, one horseshoer, one saddler, one farrier, one mechanic, two cooks, and sixty-five privates first class and privates, Medical Department. All the personnel of this field hospital march on foot except the medical officers, noncommissioned officers, orderlies, cooks, and drivers. (Se Fig. 2.) These staffs perform all duties connected with the field hospital. They are under the immediate orders of the director of field hospitals, who correlates their activity under the supervision and direction of the division surgeon.

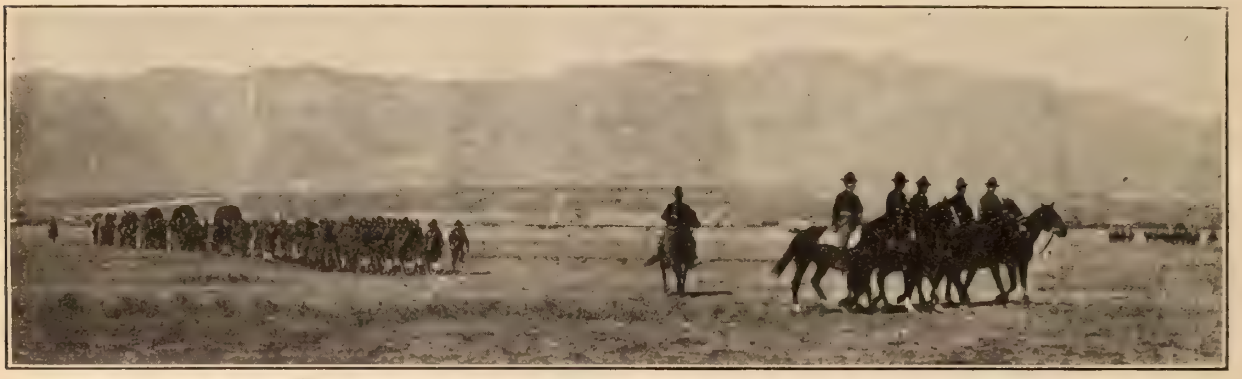

FIG. 2.—An animal drawn field ambulance. Its staff is the same in numbers as for the motorized field hospital.

When a field hospital is opened the following departments are established: dispensary, kitchen, receiving and forwarding, slightly wounded, seriously wounded, operating room, mortuary. All wounded arriving or departing pass through the receiving and forwarding department in order that proper records can be made. Under ordinary battle conditions operations at field hospitals are only such as are needed to fit the patients for transportation to the rear. All operations are done under the strictest antiseptic or aseptic precautions and every effort made to dress wounds so that they will not require redressing for some time. Every opportunity is taken to relieve the field hospital of its wounded, as an order may arrive at any time to advance or retreat. When the number of wounded is great and transport facilities to the rear are bad, or when nontransportable wounded are present it may become necessary to immobilize a section or all of a field hospital or even several field hospitals. In such an event the line of communications takes over and administers these hospitals and gives the division duplicate equipment.

The field hospital is a tent hospital. Its 216 beds are placed in six tents called ward tents. Each tent is sixteen feet wide and fifty feet long. (See Fig 6.) Four other tents called hospital tents, ground area about fourteen by sixteen feet, each house the dispensary, office, operating room, and stores. The kitchen is placed under a tent fly. Whenever buildings are available for use by the field hospital the tentage is not pitched. As quickness in pitching and striking a field hospital is of prime importance in preparing to receive patients or to make a quick departure, these procedures have been developed in the army to a high state of proficiency. Not long ago an army field hospital pitched its huge amount of canvas and was prepared in every detail to receive patients in fourteen and a half minutes. Fig. 3 shows the tentage ready for erection.

The pitching of a field hospital includes the following operations: Six ward tents are pitched. The store tent, operating tent, office tent, kitchen and kitchen store tents are pitched. These tents are the official hospital tents with jointed ridge poles and projecting flies. All equipment for one ward is added and nine beds are laid out. The operating table in the operating tent is set up, a fire started under the instrument sterilizer with instruments in water therein, operating table arranged with sheets and towels, and other operating equip-

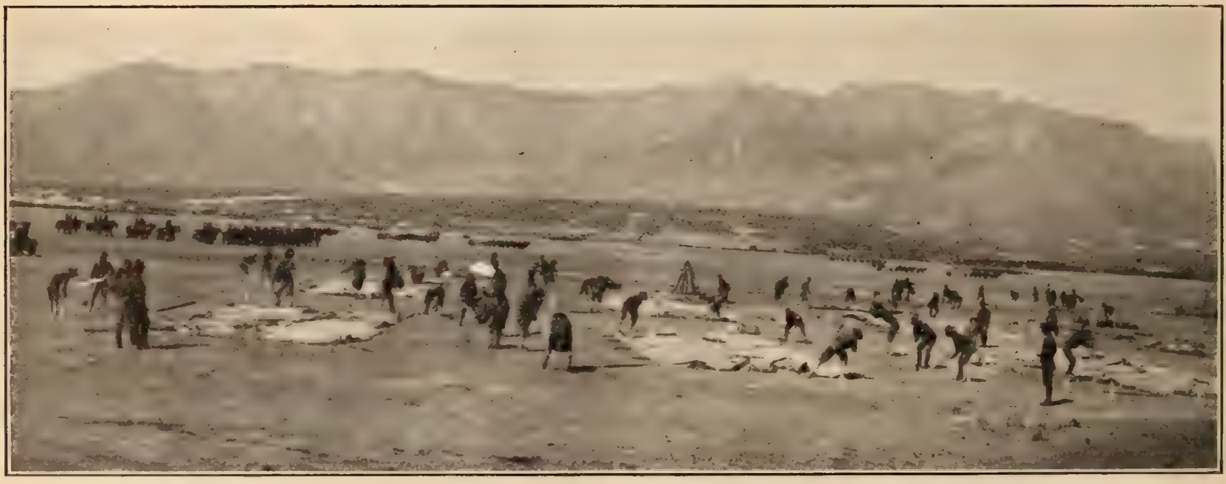

FIG. 3.—Pitching the field hospital. The tentage is spread out ready for raising.

ment placed adjacent. The operating surgeon dons an operating gown and rubber gloves, his assistant a gown only. The kitchen field range is placed in proper order and position in the kitchen, a fire started and coffee and soup placed on to boil. A garbage pit is dug; wagons are parked; every storm guy is in position. Every hood is facing in one direction. All corner uprights are in position and all tent uprights in alignment. Every wall pin and guy pin is driven into the ground in good alignment, every wall loop and guy rope placed over its proper pin. Every ward and hospital tent door is tied back open. All axes and extra pins are collected and placed near the front door of each tent. The twenty litters belonging to the field hospital equipment are stacked in front of the office tent; also six guidons placed in proper position to direct patients to the hospital. Fig. 4 shows a field hospital completely erected and ready for patients. After all patients are discharged or transferred it is usually necessary to strike the field hospital and move elsewhere. The striking of the field hospital, loading of equipment, and leaving the hospital site has been done in six minutes. The following operations were completed in the six minutes: striking all tentage; folding and tying all tentage according to authorized methods; sacking all tent pins; all equipment mentioned in the pitching loaded upon wagons, the loads partially lashed, all wagon sheets placed in position, and the wagons moved off the hospital site; the hospital site thoroughly policed and nothing left behind except the tent pin holes. (See Fig. 5.) Our field hospitals are well organized and will give a proper account of themselves whenever brought into active service.

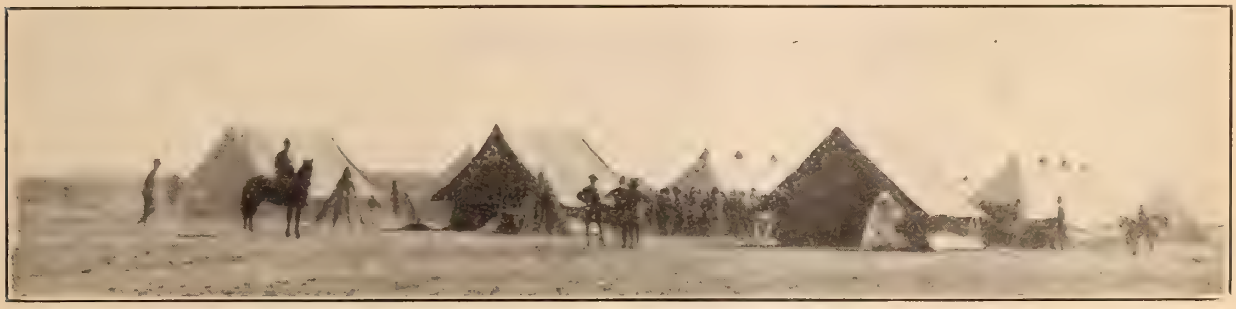
Fig. 4.—A field hospital completely erected. Its capacity is 216 bed patients.

Fig. 5.—An animal drawn field hospital packed in its seven wagons ready to march.

THE MEDICAL OFFICER IN ACTION.

In an interesting article in *The Sun*, June 17, 1917, John Walker Harrington says: The military surgeon, according to that revised art of war which began to be on a fateful August day three years ago, is no longer the neutral ministrant to the wounded. He is a leader of men, for he sustains the morale of troops, he restores the slightly injured as speedily as he may to the fighting line, and he fits his fellow soldiers for their trade.

When the war began many of the best surgeons of both England and France were sent to the furthest front. So many of the profession have lost their lives that in these days when a skilled and experienced surgeon is worth as much to an army as a colonel, to quote the words of Dr. Frederick H. Albee, who has recently returned to this city from the European battle fronts, every effort is being made to protect the surgeons. Army surgeons who are serving with the battalions are instructed to fall back in the event of a retreat and not to try to stay with the wounded, as their capture would deprive the service of their help in the restoration of the slightly wounded to the fighting line.

Turning over the pages of the London *Lancet* brings to light casualties among the army surgeons. A special department is devoted to the losses sustained by the medical personnel each week. Both old and young are on the muster roll of death. Here, for instance, is the record of Captain Joseph Ellis Milne, "killed in action in France." He met death at his aid post in the first trench, where he had given instructions that no wounded man was to be removed unless he had first seen him. Captain Hamilton Mathewson, a physician of the Medical Corps, as was Captain Milne, was mortally wounded by a German sniper as he was attempting to aid a wounded man in front of the firing line. He died in four days. It is set down that Lieutenant Thomas Jones, M. D., was killed in action because he insisted on ministering to men who were so seriously wounded that they could not take shelter from shell fire which he braved. He was killed while striving to drag a wounded soldier from No Man's Land.

Together with the chronicles of death in the discharge of duties go many records of rewards for personal bravery. There are hundreds of the British army surgeons who have won a place in the Distinguished Service Order and many have received decorations for bravery both from England and France. Conspicuous for gallantry on the field of battle is Dr. David E. Wheeler, son of Everett P. Wheeler, a lawyer of this city. Doctor Wheeler was practising his profession in Buffalo at the outbreak of the European war. He was the first of the American surgeons whom *The Sun* sent to France with money supplied for that purpose by the Duchesse de Tallyrand. After service in several battles he enlisted as a private in the Foreign Legion, where he acted also as a regimental surgeon. Doctor Wheeler performed his duties with especial coolness and bravery at the battle of Champagne, where he was badly wounded in the leg by a fragment of shell. Although suffering agony, as bones were shattered, he crawled back from the front for four miles, stopping on his way to give first aid to wounded comrades or to administer hypodermic injections of morphine to ease their pain. For this deed he received from the French Government the Croix de Guerre. After recovering from his wounds he spent three months working for the American Ambulance at Neuilly and he is now attached to the military hospital in Reading, England.

FIG. 6.—An army ward tent. This tent accommodates thirty-six bed patients.

Lord Northcliffe in his recent book *At the War* devotes a chapter to the army surgeons, who within the danger zone and often in dugouts and underground hospitals directly on the firing line were dressing the wounds of men just brought from the trenches. In one case a section of captured German trench work had been converted into a subterranean hospital, to which the men were brought for the first dressing of their wounds. The enemy had evidently the range of the place, for within a few minutes shells had been planted near each of the four corners. This may have been with the view to destroying it, or again there may have been enough grim humor on the part of the Germans to notify the English to be good.

The whole scheme under which the wounded are removed from the field of battle and sent to places of at least comparative safety puts tremendous work and responsibility on the modern army surgeon. First of all are the regimental aid posts in the thickest of the fight, where there is time only for the attentions from the medical officer. At advanced stations the surgeons reapply dressings when necessary, sorting the cases into groups and forwarding the severely wounded to the main casualty station and those of slighter nature to the corps main dressing room. Every sufferer before he gets as far back as the casualty station receives an injection of 500 units of antitetanic serum, and at the base hospital a second injection is given.

The fact that there are so many agencies for the relief of the wounded within what is really a danger zone is commented upon in the recent report prepared by Dr. Charles L. Gibson for the New York Hospital, where he is attending surgeon. Doctor Gibson has lately been at the front both in France and Belgium. "The close proximity to the trenches," he says, "of a thoroughly equipped and organized institution, comprising a picked personnel and the highest possible surgical skill, means giving to the unfortunate victims of the war the maximum of relief. In most cases the promptness with which the effects of the dangerous wounds are remedied renders possible the saving of not only a life, but prevents great disability and suffering. As a typical example of the perfection of the system I saw a soldier who at three o'clock in the afternoon received a shell wound while serving in the trenches. He was promptly carried out of the trenches, received efficient first aid dressing, was brought to La Panne by a skilfully driven automobile ambulance, notwithstanding the possibilities of being hit on the way, was examined by Professor Depage in person, x rayed, surgically cleansed, anesthetized and operated upon at once with the aid of the x ray plate which had been promptly developed. After fragments of shell which had been deeply embedded in the tissues were removed he was put to bed and at 6:30 o'clock that very evening he was ready to begin a comfortable and uneventful convalescence."

Thousands of practitioners in this country, including many who have abandoned fine practices in the city of New York, are closing their offices and joining the army. The muster roll at Fort Benjamin Harrison, at Indianapolis, shows that many an office in this metropolis has been closed and that its former tenant is now making his preparations for service with the armies. Leaders in the profession in New York are ready to pack up and to join Pershing at the head of units which have been prepared with the greatest care. All recognize that upon them rests the task of renewing the life of the army, of preventing wastage and of keeping up the fighting edge. They go as officers on a mission of inspiration and help, and if degrees of chivalry there be, surely they will find the highest among their brother Knights of the Great Adventure.

MEDICAL NEWS FROM WASHINGTON.

Plan of Instruction at Medical Officers' Training Camps—Physical Examination of Drafted Men—Work of the Sanitary Branch of the Bureau of Medicine and Surgery.

WASHINGTON, *July 23, 1917.*

Among the most important work now being carried on under the surgeon general of the army is the instruction of newly appointed medical reserve officers, who are destined for duty at cantonments and with the forces in the field. This is under the general charge of Colonel Henry P. Birmingham, Medical Corps, with Lieutenant Colonel Edward L. Munson, Medical Corps, as principal assistant. There are three main training camps for medical officers: at Fort Riley, Kans., under command of Major William N. Bispham, Medical Corps; at Fort Benjamin Harrison, Ind., under Major Percy M. Ashburn, Medical Corps, and at Fort Oglethorpe, Ga., under command of Lieutenant Colonel Henry Paige, Medical Corps. Each of these camps has a capacity of 1,000 student medical officers. There also is a training camp for colored medical officers at Des Moines, Iowa.

At each camp there are four ambulance companies, four field hospitals, one evacuation hospital, and six regimental detachments. Authority has been given to organize ten regimental detachments of colored men at Des Moines. In addition, there is a class of some 150 medical officers under training at the camp at Allentown, Pa., where ambulance companies are being organized for service abroad, under charge of Major Elbert E. Persons, Medical Corps. The total enlisted strength at these camps at present is about 12,000. The course at the camps is intensive, occupying about eight hours a day, with lectures and special exercises in the evening, and it will last for three months. The course is divided so that during the first month the instruction is in the work of the enlisted men of the medical department so as to fit the student officers for duty as instructors, and to this end the work is practical and thorough. The second month is given over to the duties of medical officers proper, and the third month continues this with amplification of work in the field, such as the conduct of ambulance companies, field hospitals, etc. The student officers are organized in provisional companies of 150 men each, with officers and noncommissioned officers appointed from their number.

At each camp there are ten regular medical officers as instructors and in charge of administration, who are assisted by physicians and surgeons from the Reserve Corps and from the medical departments of the National Guard. Later, upon qualification of the student officers, these more experienced physicians and surgeons will be relieved and assigned to other duties. The course is so framed that officers may be in readiness for work in the field and at posts, and it is desired to have them qualified for this duty on sudden call. The three main training camps are organized effectively with a capacity of producing about 12,000 thoroughly trained medical officers annually. Selected officers are being relieved from duty at the instruction camps from time to time and sent to other places for special training, to the Rockefeller Institute for Medical Research, New York, for instruction in laboratory work, and to Richmond, Va., Kansas City, Mo., Boston, Mass., and Cornell Medical College, New York, for instruction in military röntgenology.

It is considered by the army medical authorities that one of the most important factors in the efficiency of the national (drafted) army is the preservation of the health of individuals and the elimination of the physically unfit. The physical examinations of those that are drafted for this force will be conducted by local boards, and it is anticipated that there will be passed on to the cantonments a certain percentage of men that afterward will be pronounced disqualified for active service.

Plans have been made by the surgeon general of the army to maintain by the aid of specialists as rigid and thorough a system of personal scrutiny as is possible, with a view to determining those that in any way may prove an impairment of the new fighting personnel. It is desired to identify, as unfailingly as may be, those that shall be regarded as unfit because of the presence of tuberculosis, heart trouble, defective sight or hearing, and mental defects. The last are believed to be the most difficult to recognize and require the services of the most trained observers. It is planned to have the personnel of the national army on the highest plane of physical fitness, and it is to that end, as a contribution to the efficiency of the force, that the army medical authorities are working diligently. Special attention already is being given to the identification of cases of tuberculosis among the personnel of the regular army and national guard now in the federal service and of the remainder of the national guard about to be brought into the service. To this end, boards of experts, some of the Medical Reserve Corps and some contract surgeons, have been directed to convene at various posts and camps, including the training camps for reserve officers destined for the staff, cavalry, field artillery, coast artillery, and infantry of the national army.

Reports coming to the Navy Department Bureau of Medicine and Surgery already indicate gratifying results from the new sanitary branch of that bureau, under which officers of the Public Health Service have been assigned as sanitary inspectors in all of the naval districts. They send in periodical reports of conditions prevailing at navy yards, naval stations, and at other places under the jurisdiction of the Navy Department, and as well among the residents of the neighboring communities. The information is being recorded graphically on a map in the surgeon general's office to show at a glance the prevalence of various epidemics. It has not been overlooked that disease in the civilian population is destined to have an appreciable influence upon the health of the newly enlisted men. This has been the cause of some of the outbreaks that occurred when the navy was recruited in such large volume and so suddenly, as was necessary on account of the increase of the allowance of the personnel. All of the epidemics are under control, and the only trouble that now is experienced, and that to a minor extent, is mumps which, on account of necessary detention of the patients, interferes with their military training.

Editorial Notes and Comments

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EDITORS
CHARLES E. DE M. SAJOUS, M.D., LL.D., Sc. D.
Philadelphia,
SMITH ELY JELLIFFE, A. M., M. D., Ph. D.,
New York.

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PRISON REFORM AND SOCIAL HEALTH OR DISEASE.

Selfinterest is so fundamental and inevitable a principle of action that prison reform based upon it may promise at last effective stimulation to society at large. A candid recognition and admission of this egoistic starting place for reform is the first great step to a true and effectual altruism. Prison conditions and prison reform have succeeded in awakening a certain public concern, in part a sentimental deploring of conditions and a sincere desire that they should be otherwise. In large part, however, public opinion avoids these things by an equally deplorable ignorance or shelters itself on the side of superior moral position by the very measures which continue the long existent state of things. Nevertheless sentiment and this indolence of ignorance resolve themselves into an utter commonsense attitude if the honest selfinterest point of view is adopted. Therefore when Osborne [Thomas Mott Osborne: Health Conditions in Prisons, *American Journal of Nursing,* July, 1917] presents the prison problem as one of defense of the community against the most insidious and serious form of sickness, as a matter which can make most extensively for public health or disease, sentimentalists, the stupidly ignorant, and those stubbornly harsh and inhuman in their own unconscious selfdefense must enter into a new scientific attitude toward actual and unavoidable facts.

Facts which Osborne reports from his own personal contact with the prisons of our presumably enlightened States are sufficiently appalling to arouse more than a passing horror that they should be so. Yet they exist, while the spirit in which they have arisen and held their place through human history continues to dominate our courts, our prison management, the general attitude of society individually and collectively. The bland security of the individual and the social group is indeed maintained by setting the prisoner as a thing apart beyond the pale of ordinary consideration, ceasing to take account of him as still an integral part of the body social. The common humanity which is courageous enough to recognize the prisoner as a brother—the very reason unconsciously why this bitter defense against the common bond is so rigidly held—forbids the continuance of such a spirit among people who have at their command the means for a truer selfknowledge and social control. The practical application of such common humanity brings the question back again to that of wholesome selfinterest.

The prisoner, as Osborne says, is in prison because of a disease. He is a menace to the community just as is the victim of an infectious physical disease. The difference lies in the method of treatment in the two cases. Hospitals exist for the care and healing of physical disease. The hospital devotes itself to careful diagnosis in the first place, and cure of the patient and protection of the community by eradicating from him all danger of further infection before his entrance again into the world. The work of the prison is no less important, should be no less scientific, differentiated, and exact. Because the disease which finds harborage there reaches further and deeper in its insidious moral and social aspect, it demands in greater measure all the factors of prophylactic and therapeutic efficiency with which modern advance has equipped the service of physical disease. Instead of this the obstinate disregard of the prisoner's wellbeing, or of community wellbeing through him, permits a condition even of neglect of physical disease which allows it to disseminate itself among the prisoners and then through the discharged out into society. The moral disease which has made necessary prison sojourn is, however, still more neglected and left out of account. Solitary confinement, senseless infliction of the same rules of treatment upon all alike, rules that violate all common decency and cleanliness, punishment and discipline that fairly crowd the men down into "mental, physical, and moral degeneration"—these are the methods whereby physical, mental, and moral disease are never by any means subjected to cure, but fostered and kept festering until the term has expired and the man, sicker than when he entered, goes out to infect society with disease which has grown more virulent and noxious to himself and his fellowmen.

Over against this stand Osborne's methods of letting in "light and air," simple democratic measures of admitting the community into a knowledge of affairs not only, but, more important still, of cooperation with the men who are sick. Who knows the whole problem, says Osborne, better than they, and who is better fitted to work it out? These sick men are as desirous of ridding themselves of illness as any others, even though it is a question of moral sickness. Again moral sentiment comes down to the sound basis of selfinterest, and on this basis the democracy of prison reform has proved itself practicable. For after all, men in the prisons are of the same mould as the men in hospitals, asylums, or the active walks of life. Sickness is a handicap manifesting itself in separation from society, ineffectualness, lack of adjustment to social demands. True selfinterest seeks to get away from this back to social harmony. Health of body, health of mind, health of morals lies in this; success and manhood lie in them all. The men in the prisons have proved themselves ready to learn this as they have been given opportunity. Society's own health demands that such opportunity should be given them.

DRUG RESISTANCE IN SYPHILIS.

There is probably no disease in which the question of a cure is more important than syphilis. For many years mercury and the iodides have been employed as a rule with great success, yet the fact remains that many a patient shows little improvement, the treatment is distinctly unsuccessful, and both physician and client are disappointed. That a complete cure is not as common as was formerly imagined has been clearly demonstrated since more accurate methods of control have been elaborated.

Many, after having undergone a long regimen, still show a positive Wassermann reaction, particularly if the more delicately reacting antigens, such as the cholesternized, are used. With some it seems as though no amount of treatment has any effect. Before the comparatively recent investigations it was generally supposed that this lack of response was the result of an inherent condition of the patient's tissues. Ehrlich, however, in his studies of the sleeping sickness, a trypanosome disease, found that the causative agents varied in their resisting power to the action of various drugs. If small doses were given, the trypanosomes developed a well marked resistance so that larger amounts had to be given. A point was reached where the trypanocidal dose was toxic for the patient. On this account he developed his theory of *therapia sterilisans magna,* the principle of which was that by means of a single large dose, the infecting organisms would be destroyed before they had developed their resisting powers. Unfortunately in the use of salvarsan its application has not fulfilled the expectations. It has been shown repeatedly by clinical observations that in order to get the full benefit of the drug, successive doses must be employed.

Believing that the unfavorable results obtained were probably due to the treponema becoming accustomed to the medication, Akatsu and Noguchi report in a recent number of the *Journal of Experimental Medicine* the results of their experiments. There being no way to control the condition in animals, they used for their work pure cultures of the treponema and some allied nonpathogenic varieties of spirochetes. Their findings were most interesting and substantiated their belief. They employed salvarsan, neosalvarsan, bichloride of mercury, and an iodine iodide solution of potassium. Within three to four months it was found that the treponema had increased their tolerance to salvarsan and neosalvarsan to five and one half times the original. The results with the bichloride of mercury were even more marked; with this drug the increase in resistance was about thirty-five to seventy times, while with the iodine iodide solution the increase was only about three times.

One other important point was noted. It was found that this acquired resistance disappeared when the spirochetes were cultivated through several generations in drug free media. Although no such suggestion was made by the authors this might be a basis for the value of an intercepted treatment.

PHARMACISTS TO AID THE SURGEONS.

By a happy coincidence we received communications simultaneously from Dr. J. Madison Taylor, of Philadelphia, and from Dean Wulling, of the School of Pharmacy of the University of Minnesota, president of the American Pharmaceutical Association, urging the recognition of pharmacy in the army as a means of enlisting the cooperation of the pharmacists of higher attainments. Both of these were published in our issue of July 21st. The organization of our army on a peace footing required no recognition of pharmacy as a separate calling. Our medical supplies were purchased, packed in convenient receptacles, and ready for dispensing, which could be done by almost any intelligent layman. The comparatively small pharmaceutical skill required under the organization of the army in times of peace was easily acquired by the more intelligent enlisted men of the Medical Department. Now that we are at war, however, and our army has been suddenly increased to ten times its former size with prospects of still further enlargement, it seems highly desirable that the physicians in the Medical Corps should be relieved of the details of the medical supply service, and that this should be turned over to skilled pharmacists of high professional training. This could only be done successfully by creating a pharmaceutical corps with commission rank.

This proposal met with the approval of the Section in Pharmacology of the American Medical Association at the meeting held in New York, and has also been approved by the journal of the Association. In view of the acknowledged difficulties in obtaining the services of the required number of medical officers, it would seem that the physicians in the Medical Corps would be exercising an enlightened selfishness if they too would lend their aid to the movement begun by the American Pharmaceutical Association for the establishment of a commissioned pharmaceutical corps in the Medical Department. Not only would the pharmacists of a higher type, who might thus be induced to join the service, be useful in the purchase, preparation, and distribution of medical supplies, but they would be of great help in making clinical examinations of sputum, urine, etc., in doing certain kinds of bacteriological work, in examining foodstuffs and water as to potability, and in doing other chemical work which is now either neglected or performed by medical men who can be ill spared for purely medical fields of labor.

Doctor Taylor quite properly urges that the army and navy surgeon be given the expert assistance which could be rendered by such a pharmaceutical corps. In the armies of every first class power, except Great Britain and Russia, the value of the pharmacist's service has long been recognized by commissioned rank. In the armies of Italy and France the chief pharmacist is a major general; in the German army, before the war, he bore the rank of colonel, though his rank has probably been raised since that time. In the Japanese army the chief pharmacist was a lieutenant colonel, and in the Spanish army a colonel. Even in the British army there are a few pharmacists who have commissioned ranks, though there is no organized corps of commissioned pharmacists. It is to be noted that all those nations which maintain large standing armies have recognized the value of the services of the expert pharmacist by conferring commissions upon them. Surely the soldiers of the United States are entitled to have the services of men of the highest degree of skill in every line.

MECHANICAL FACTORS IN THE PATHOLOGY OF VISCERAL SCLEROTIC PROCESSES.

It is more particularly by the clinical and pathological study of the various viscera that the preponderating influence of inflammation as a mechanical factor in the production of visceral sclerosis is made clearly evident. Thus the part played by asystolic disturbances is very considerable, and lesions in nearly all organs, from simple congestion to sclerosis resulting from this, have been described. Prolonged stasis in cardiac patients is generally admitted to be one of the essential mechanical contributory causes in the production of hepatic, renal, and pulmonary sclerosis.

Unquestionably, the disturbances arising from asystolia are a predisposing factor in the causation of visceral scleroses, but further mechanical causes arise from infection or intoxication. As Bard long ago pointed out, an attentive study would seem to show that even in undoubted cases of primary cardiopathies, such for example as those resulting from rheumatic endocarditis, the marked scleroses met with in various organs are not alone the result of purely physical disturbances but are also related to local inflammatory processes derived from the same pathogenic factor as the cardiac lesion, and represent a more or less autonomous localization.

These are the cases in which the inflammatory process has multiple localizations, representing the so called polyvisceral interstitial inflammation described by Bard and the multiple disseminated scleroses of Grasset. The inflammatory process may attack a single viscus, giving rise, for example, to interstitial myocarditis, interstitial plastic pneumonia, etc. The inflammatory processes, a very general phenomenon, which occur at the same time both in the skin and viscera, arise and undergo a simultaneous evolution in many instances. The coexistence of inflammatory attacks not only in the connective tissue of the viscera and in the dermis, but also in peritoneal and pleural serosa, giving rise to ascites and pleurisy with effusion, has been frequently recorded. The pleural fluid collection occurring in cases of interstitial nephritis, aortitis or polyvisceral sclerosis was formerly compared to simple hydrarthrosis and in the mind of the older pathologists this represented stasis with serous transudation of an entirely passive nature.

But the results obtained by Letulle and other observers from comparative chemical analyses of the fluid in pleurisy and in the pretended hydrothorax, show that in reality there exist all the intermediate lesions, from the viewpoint of chemical composition, between the transudates and exudates, the only difference being a greater content of fibrin and solid matter in the pleuritic exudate. It was thus made evident that a pleural hydropsy was, in reality, a subacute serous pleurisy and as in the case of ascites, blood stasis is not a sufficient cause and that a concomitant inflammatory process in the serosa must exist. It is precisely these subacute pleurisies that are frequently accompanied by inflammatory edema and the existence of this latter process is unquestionably closely related to the inflammatory process seated in the pleural serosa.

The practical deduction to be made is that in order to prevent the production of visceral scleroses one should not only combat the mechanical disturbances of the circulation with digitalis, etc., but at the same time an efficacious prophylactic treatment must be brought into play against the various factors of infection or intoxication. The inflammatory attacks should be dealt with by strict attention to cleanliness, where the skin is concerned, while a revulsive and resolutive medication, combined with rest in bed, is the essential element of treatment when the viscera are involved.

DIGESTION.

To those who studied their physiology ten years ago, instead of then and every year since, the processes of digestion seem comparatively simple and independent of what is taking place elsewhere in the body, and comparatively unrelated to what takes place in the different sections of the food tube. Proteins, carbohydrates, and fats, in those school days, underwent certain mechanical manipulations and chemical changes in the stomach, and in the intestine the materials not yet ready for absorption were churned about, other chemical reactions took place, and digestion was completed. What took place was illustrated before our eyes with test tubes and juices from the glands of an animal. Many of us were troubled on clinical application of our knowledge of physiology to find that the human digestive apparatus did not work so simply or so disconnectedly.

Very important information of a practical nature has come to light in recent years with regard to the processes of digestion. The psychological and nervous conditions, if they can be separated, at the beginning of digestion have loomed up, affecting not only salivary digestion but gastric and indirectly intestinal digestion. The discovery of the formation of hormones in the stomach and duodenum exciting the stomach to complete action and the liver and pancreas to do their coordinate duty, have cleared up much of the mystery of the dissimilarity between laboratory and actual digestion, and have made experiments in glass seem simple by comparison with the real processes.

All this later information indicates that the organs of digestion, while more or less supplementing each other, work together as a whole, the functioning of each organ in succession serving to prepare and proportion the activity of the succeeding organ. The importance of the first stage of digestion, the only one over which we have any conscious control, is thus magnified to supreme importance. Food taken in a reasonably happy emotional atmosphere, and thoroughly masticated and tasted—in a word, food that is needed and consciously made the most of can be expected to be well taken care of in all the succeeding sections of the alimentary canal. It goes without saying that the food shall be selected to fit the needs of the individual, but hunger present under these circumstances means that the digestive organs are most ready and willing to work, and if a sensible selection of material has been made and the activities of digestion under control of consciousness have been sufficiently utilized, one is not likely to overeat and abuse his powers of digestion. When digestion is upset the methods of feeding are almost certainly at fault and not any one organ.

A SHINING MARK.

No one who is at all conversant with the reports from the western front in the war doubts the dangers confronting the Medical Corps. The term "noncombatant," in this connection, has ceased to have any meaning. Our English cousins have sent their bravest and best physicians to the front and seen them mowed down by hundreds. In the teeming hell of No Man's Land nothing is sacred, not even the mission of the healer of men. Small wonder then that the military surgeon occasionally forgets that his duty is to build up, not destroy, and launches a blow himself against the enemies of civilization. An editorial writer in the *British Medical*

Journal reminds us that the English physician has often in the past shown himself a "first class fighting man." There is the old story of the army surgeon at Waterloo who charged into battle with the Scots Greys, holding on to the stirrup of a horseman. Twice in Guinea the Duke of Cambridge was rescued by physicians from situations of peril. Sir Anthony Howe at Lucknow and Lieutenant Colonel J. H. Reynolds at Rorke's Drift both won the Victoria Cross for valor in defense of the wounded under their care.

In these and many other instances the British profession have set for us a shining mark. The kindly heart, the ceaseless zeal have been theirs, and with them a little of the fire that never dies. "He rushes to the fray as if he were summoned to a banquet" might be said of one of them.

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News Items

Women Doctors Wish Commissions.—At a meeting of women physicians held recently in San Francisco resolutions were adopted requesting that women be accepted for service in the Medical Corps of the army and be given the same rank as men.

Assistant Surgeons in the Navy.—Secretary of the Navy Daniels has recommended to the President for appointment as assistant surgeons in the U. S. Navy, 270 members of the Medical Reserve Corps who have passed their examinations and qualified for appointment.

Poisoned Plasters.—The assistant attorney general of the United States has issued a notice to the effect that samples of the alleged poisoned plasters which are said to have been used as a means for distributing tetanus germs are being examined by the Department of Justice. In the meantime the public is warned not to use plasters except such as are obtained from approved sources of supply.

Donations to Red Cross by Postal Employees.—Partial reports from postmasters throughout the country show that there has been contributed for Red Cross work by postal employees and through the instrumentality of postal employees the sum of $55,994.31. The reports are by no means complete, but they give evidence of the enthusiastic cooperation of postal employees in Red Cross work.

Medical Department of Columbia Open to Women This Fall.—Through an unexpected gift of $50,000 from George W. Brackenridge, of San Antonio, Texas, Columbia University will be able to put into effect at once plans for the admission of women students into the medical department which had been held up for lack of funds. More than a year ago Columbia authorized the coeducational department in medicine and it was to become effective as soon as the building and equipment were ready. Plans were prepared for a five story addition to the present building with extra laboratory facilities in the departments of chemistry, bacteriology, pharmacology, and pathology, costing $85,000. Mr. Brackenridge's gift makes it possible to begin work at once, and it is expected that the university will matriculate its first women medical students in September.

Promotions in the Medical Corps of the Army and Navy.—The following nominations have been sent to the Senate by the President: War—First lieutenants, Medical Reserve Corps, to be first lieutenants, Medical Corps: Dr. Frank C. Griffis, Dr. Henry C. Bierbower, Dr. Edgar F. Haines, Dr. Frederick H. Mills, and Dr. Val E. Miltenberger. Navy—Medical inspectors to be medical directors: Dr. George T. Smith and Dr. George A. Lung; to be assistant surgeon, Assistant Surgeon Julius F. Neuberger, Medical Reserve Corps.

Madison Barracks to Become a War Hospital.—It is reported that the War Department will probably use Madison Barracks as a hospital after the present reserve camp, which is to end on August 5th.

A Woman's Bureau of the Red Cross.—The American Red Cross Society has established a bureau, composed of prominent women from all parts of the United States, to aid in developing war relief work by women. One of the first undertakings of the bureau will be to assume supervision of the making of surgical dressings. Miss Florence M. Marshall, director of the Manhattan Trade School, is director of the bureau.

Medical Care of Injured Federal Employees.—In accordance with the provisions contained in Section 9 of an act of Congress approved on September 7, 1916, civil employees of the United States who are injured while in the performance of their duties, shall be furnished, upon application and without personal charge, reasonable medical and surgical treatment by all medical officers at first, second, and third class relief stations of the service, in accordance with certain prescribed rules.

Association of Military Surgeons.—It is planned by the officers of the association to hold an annual convention this year on October 8th in Indianapolis. There was no meeting last year on account of the mobilization of troops in Texas and along the Mexican border, but it is desired to have one this year. At the coming convention there will be an election of officers and the transaction of other important business. The membership of the association is increasing rapidly, and the organization never before was in such a prosperous condition.

Medical Students Not Exempt from Draft.—Surgeon General Gorgas has issued a statement that medical students are not to be exempt from draft, but will be given conditional and limited furloughs to continue their medical studies. This furlough is intended to furnish an opportunity for the student to complete his studies and obtain his required year of hospital experience, so as to fit him for service in the medical department of the army. The Surgeon General, through the medical section of the Council of National Defense, is endeavoring to prevent the undue depletion of the civilian hospital staffs for service at the front.

Philadelphia Gives Another Medical Unit to the Navy.—St. Agnes' Hospital, at Broad and Mifflin Streets, Philadelphia, has been turned over to the government service. It will soon go into active work at League Island, changing its name to Naval Station Hospital No. 2. Dr. John A. McGlinn is director of the unit and will have the rank of lieutenant commander in the navy. His first assistant will be Dr. Francis J. Dever, who will also have the rank of lieutenant commander. Other members of the staff, who will have the rank of lieutenant, are: Dr. Benjamin D. Parrish, Dr. Eugene Casem, Dr. Gilbert M. N. Berger, and Dr. Joseph Hart Toland.

Mental Hygiene in the Army.—Dr. Pearce Bailey, of New York, chairman of the Committee on Furnishing Hospital Units for Nervous and Mental Disorders to the United States Government, a subcommittee of the National Committee for Mental Hygiene, has been invited by the Surgeon General of the United States Army to accept a commission as major and to come to Washington as personal adviser to the Surgeon General in all matters pertaining to psychiatry and neurology. Major Bailey is now on duty in the Surgeon General's office. Dr. Frankwood E. Williams, associate medical director of the National Committee for Mental Hygiene, has been appointed vice-chairman of the committee and placed in charge of the work in the New York office.

Medical Officers Ordered to Fort Oglethorpe.—The following named officers of the Medical Reserve Corps are assigned to active duty and will proceed to Fort Oglethorpe, Ga., and report in person to the commanding officer of that post for duty and by letter to the commanding general Southeastern Department: Captains Joseph W. Bauman, Vilray P. Blair, Andrew R. Bond, Eugene Davis, Ralph W. Holmes, Randell Hunt, William H. Leet, Thomas P. Lloyd, and John G. Martin; First Lieutenants Oliver W. Alford, James H. Arnett, John E. Boyd, Walter W. Harris, William E. Hart, Charles W. Hoffmann, Samuel G. Hollingsworth, Joel W. Hood, Elmer J. Lambert, John A. Lightfoot, Edward O. Little, Homer P. Prowitt, Thomas Ragan, Homer Reese, George H. Richards, and George W. Sherouse.

Elks to Establish Hospital Units in France.—More than 400,000 members of the Order of Elks have been notified of an order of the grand lodge calling for a fund of $1,000,000 to be used in establishing base hospital units back of the trenches in France.

According to the chairman of the war relief commission of the Elks, each base hospital unit will have a capacity of caring for 500 wounded and will cost about $60,000. They will be maintained by the government. Each unit will have 26 surgeons, 68 nurses, and 150 orderlies.

Neuilly Ambulance Now an American Army Hospital.—The American Ambulance at Neuilly, France, which was organized by the American colony in Paris, became an American army hospital on July 22d. The ceremony, which was a simple one, took place in a large ward which had been cleared for the purpose. It was filled with surgeons, physicians, nurses, members of the American colony, and officials of the French sanitary service. Among those present were Ambassador Sharp, M. Gogard, Under Secretary for War; Dr. Bouche, chief surgeon; Mrs. William K. Vanderbilt, Colonel A. E. Bradley, of the Medical Corps, U. S. A., and Mrs. Robert W. Bliss, wife of the secretary of the American Embassy.

Plans for Hospitals at Army Cantonments.—Plans for hospitals for all of the sixteen army cantonments have been completed by the office of the Surgeon General and the work will be commenced by the cantonment division of the Quartermaster's Department and rushed to completion before troops are called under the selective service law. All cantonments will have complete hospital facilities, so that any of the 40,000 troops to be stationed in each cantonment can receive at once the best medical care. The hospitals will have, with few variations, thirty-four wards, including two isolation wards. Separate barracks are to be provided for hospital internes and other employees, and special buildings for the administrative offices, power station, operating rooms, kitchen and dining room, chapel, and other hospital needs.

Psychiatrists and Neurologists Wanted to Examine Troops.—The Mental Hygiene War Work Committee of the National Committee for Mental Hygiene is anxious to obtain the names of psychiatrists and neurologists who are willing to give part time service in the examination of National Guard troops in their vicinity. The recent decision of the War Department to examine the National Guard troops in their armories before sending them to camp makes it necessary to secure at once a large number of examining physicians. To meet the situation the Surgeon General of the Army has arranged to accept for this work qualified physicians on contract. A physician may contract for specified duty, at a specified place, for a specified time, or for part time. This latter provision makes it possible for many physicians who cannot take out commissions, or who cannot give all of their time to the work for a period of months, to give part time each week. Further information can be received from Dr. Frankwood E. Williams, vice-chairman of the committee, 50 Union Square, New York.

War Department Orders for Officers in the Medical Reserve Corps.—Captain Charles W. Haverkampf, Medical Corps, is relieved from duty at the United States Military Academy, West Point, N. Y., and will proceed to Fort Oglethorpe, Ga., and report in person to the commanding officer of that post for duty as surgeon and also to take charge of the general hospital.

Captain W. Cole Davis, Medical Corps, is relieved from further duty at the United States Military Academy, West Point, N. Y., and will proceed to Wrightstown, N. Y., take station, and act as camp sanitary officer during the period of construction of cantonment.

Major John T. Sprague and First Lieutenant Edward D. Ellis, Medical Reserve Corps, are assigned to active duty and will proceed to Fort Oglethorpe, Ga., and report in person to the commanding officer, medical officers' training camp, for a course of instruction.

Captain William T. Cade, Jr., Medical Corps, will proceed to Atlanta, Ga., and report for duty as camp sanitary officer during the period of construction of cantonments.

Personal.—Dr. Winthrop Talbot, of Flushing, N. Y., has been appointed adviser in alien industrial education to the New York State Bureau of Industries and Immigration. Doctor Talbot will cooperate with the chief investigator of the bureau and will consult employers with regard to English classes in industrial plants.

Dr. J. S. Shearer, professor of physics at Cornell University, has been granted leave of absence during 1917 and 1918 for war service. He is directing the standardization of x ray apparatus for the Medical Corps of the army and navy.

Dr. C. E. A. Winslow, professor of hygiene at Yale University, is engaged in Red Cross work in Russia.

Dr. Saxton Pope, of San Francisco, has been appointed chief surgeon of the Emergency Hospital service in that city, succeeding Dr. Alanson Weeks, who resigned to become chief surgeon of army base hospital No. 30 when that unit is called into service.

Professor Veranus A. Moore, director of the New York State Veterinary College at Cornell University, has been called to Washington, as a major in the veterinary corps of the Army. Professor Moore is an authority on diseases of animals.

Major Lewis Gregory Cole, Medical Reserve Corps, United States Army, now at Cornell University Medical College, has been assigned to active duty in New York as an instructor in röntgenology.

To Combat Venereal Disease in the Army.—To protect the American soldier from venereal disease, the Medical Department of the Army has organized a section which will devote its attention exclusively to this problem. Cooperating with the newly organized section will be the United States Public Health Service and the sanitary and training camp divisions of the Army Medical Department. Major F. F. Russell, Medical Corps, United States Army, will have charge of the laboratory investigations. Dr. William Allen Pusey, of Chicago, a major in the Medical Reserve Corps, will devote himself to the scientific side of the problem. Educational and sociological studies and investigations into environmental conditions will be carried on under the direction of Major William F. Snow, Medical Reserve Corps. Surgeon General Rupert Blue will represent the United States Public Health Service; Colonel F. P. Reynolds, Medical Corps, United States Army, will cooperate in the field of sanitary inspection; and Lieutenant Colonel Edward L. Munson, Medical Corps, United States Army, will work with the section of the training camp division.

Red Cross Commission to Rumania.—The third Red Cross commission to be sent to Europe since the organization of the war council to make first hand investigations in belligerent countries is to go to Rumania. It is headed by Henry Watkins Anderson, a lawyer of Richmond, Va., and will undertake at once, in addition to its investigation of sanitary and health conditions, actual relief work among the Rumanian refugees. To do this work a Red Cross medical unit of twelve doctors and twelve nurses accompanies the commission. Quantities of medical supplies, serums, vaccines, and foodstuffs urgently needed in Rumania are being sent with the commission by the war council. A special emergency appropriation of $200,000 has been voted for Rumanian relief.

In addition to Mr. Anderson, the chairman, the members of the commission are: Arthur Graham Glasgow, an engineer of Washington, D. C.; Dr. Francis W. Peabody, of Boston; Bernard Flexner, of Chicago, a lawyer. Dr. H. Gideon Wells, of Chicago, professor of pathology in the University of Chicago; Dr. Roger Griswold Perkins, of Cleveland, professor of hygiene, Western Reserve University, and Dr. Robert C. Bryan, of Richmond, Va.

Doctors of the medical unit accompanying the commission are: Dr. W. D. Kirkpatrick, Bellingham, Wash.; Dr. Richard Penn Smith, Fort Loudon, Pa.; Dr. D. J. McCarthy, Davenport, Ia.; Dr. George Y. Massenberg, Macon, Ga.; Dr. R. H. Rulison, Syracuse, N. Y.; Dr. B. C. Hamilton, Syracuse, N. Y.; Dr. Benjamin Earl LeMaster, Macomb, Ill.; Dr. Louis H. Limauro, Lynn, Mass.; Dr. E. F. Hird, Bound Brook, N. J.; Dr. W. T. Lowe, Pine Bluff, Ark.; Dr. Joseph H. Gruener, Chicago, Ill.; Dr. Feo Duro Guca, Chicago, Ill., and Dr. William J. Kucera, New Prague, Minn.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

THE USE OF INEXPENSIVE DRUGS IN PRACTICE.

By Louis T. de M. Sajous, B. S., M. D.,
Philadelphia.

In foregoing issues the cost of ergot and of adrenal and pituitary preparations was compared and the indications of the first two of these agents as stimulants to the vascular system discussed. Adrenal products were shown to be superior to ergot in the treatment of certain special types of vascular disturbance, this superiority in clinical action rendering the substitution of ergot for these purposes inadvisable, in spite of its less cost, dose for dose. Pituitary preparations, as we have seen, are at present about ten times as expensive, at least in the liquid forms now customarily used, as the suprarenal active principle, and in comparison with ergot, the difference is even greater. The question is thus suggested: To what extent are the special properties of the pituitary products of such distinct and exclusive value as to necessitate substitution of these products for epinephrin and ergot in the treatment of vascular hypotonicity, with or without low general blood pressure?

Considering, in the first place, the actual power and certainty of action of pituitary preparations as vascular remedies, we may note that, for practical purposes, these preparations occupy a place between epinephrin and ergot. They are believed by many to contain, like the latter drug, more than one active principle—a view entailing the possibility that owing to variation in the proportions of these principles in different specimens, the specimens may exhibit quantitative and even qualitative differences in their effects. In the vasoconstrictor action of the liquid posterior pituitary preparations, there seems to be distinctly less of uncertainty than obtains in the case of ergot. In respect of the cardiac action, experimental work appears to have shown that pituitary solution may at times exert a depressant effect on the heart. Clinically, however, this action has not proved troublesome, except, perhaps, in a few instances of intravenous injection, in which transitory symptoms suggestive of cardiac depression have been observed. Possibly such symptoms, if actually due to heart depression, could have been avoided by a slower injection of the drug. According to some clinical observers, pituitary preparations actually strengthen heart action.

Pituitary solution resembles ergot in being capable, as pointed out in 1912 by Noel Paton and A. Watson, of evoking the "vasomotor reversal" phenomenon, i. e., of causing the bloodvessels to respond to an intravenous injection of epinephrin by dilatation instead of contraction. This applies particularly to large doses. Another point of resemblance is the stimulating action of the two drugs on certain involuntary muscle tissues, such as those of the uterus and intestines and, in some degree, the bronchioles, though Hoskins has encountered some specimens of pituitary solution which seemed to inhibit the contractions of excised intestinal tissue. Epinephrin, as already pointed out, typically inhibits the intestinal and bronchiolar muscle layers. As regards special actions on certain restricted portions of the circulation, we note that whereas epinephrin is held to exert in man but little effect on the pulmonary, cerebral, and coronary vessels—or an effect varying according to the dose used—pituitary products seem to cause a definite vasoconstriction in these areas. Clinically, on the basis of the action on the pulmonary vessels, good results from pituitary medication have been claimed by several observers in acute hyperemic conditions of the lungs and in hemoptysis. In the case of ergot there appears also to be a tendency—much less definite, however—to vasoconstriction in the special areas referred to. Comparing the three agents further in regard to their efficacy by various routes of administration, we find that ergot is believed to act on the circulation even when taken by mouth; that adrenal products until recently were by nearly all writers held inactive by this route, though evanescently active when used intramuscularly or intravenously, and that pituitary preparations are still considered but slightly active unless injected into a muscle or vein.

The chief objections, hitherto, to the use of epinephrin as a general vasoconstrictor agent have been the suddenness and brevity of its action. Josué, in recent military as well as civil practice, has observed that these drawbacks can be eliminated by the subcutaneous administration of epinephrin in normal saline solution. An ampoule containing 0.001 gram of epinephrin and 0.01 gram of novocaine in solution is emptied into 250 or 500 c. c. of saline solution just before injection of the latter. With this method absorption is slow and the effects can be satisfactorily kept up by repeated injections for several days, if necessary.

In connection with this the fact that, under epinephrin, "the arterial muscle remains stimulated, in the susceptible vessels, as long as effective concentrations of epinephrin are present" (Sollmann) may prove of significance. While the action of posterior pituitary solution on the circulation normally lasts longer than that of epinephrin, its power is known gradually to wane upon repeated injection of large doses. Epinephrin, moreover, acts in a more certain manner on the blood pressure than pituitary solution, and there is never any doubt as to its stimulant action on the myocardium itself. According to Josué and others, epinephrin will produce a distinct effect on the circulation even if given by mouth, provided fairly large doses are used.

On the whole, it would seem that if methods of administration such as will slow down and prolong the action of epinephrin can be clinically employed, there is no reason why, in a large proportion of cases, this agent should not supplant as a vascular stimulant the far more expensive pituitary preparations. According to Watanabe and Crawford, 1916, indeed, epinephrin or a closely allied substance is one of the active principles actually comprised in pituitary preparations. Under certain circumstances, to be sure, pituitary solution presents accessory advantages which epinephrin does not possess. Thus, in the treatment of circulatory depression in acute infectious diseases, the former tends, as S. Solis-Cohen, 1916, and others have emphasized, to prevent tympanites and dilatation of the stomach. In other cases, the action of pituitary solution, administered hypodermically, in reducing the coagulation time of the blood may prove an advantage—though Cannon and Mendenhall, 1914, showed that small doses of epinephrin, given intravenously, likewise accelerate coagulation. As for ergot, while similar to pituitary preparations in many of its effects, it must be held inferior to the latter in certainty of action on the circulation, and in many instances cannot, therefore, be substituted without prejudice for the more expensive drug.

(*To be continued.*)

Treatment of Toxemias of Pregnancy.—George H. Lee (*Texas State Journal of Medicine*, May, 1917) divides toxemias of pregnancy into several types, for which there are different methods of treatment. Pernicious vomiting of pregnancy may be of the reflex, neurotic, or toxic type. The reflex type should be treated by treating the cause; the neurotic type, by isolation, forced feeding, stomach lavage, etc. If isolation, stimulation of the skin and kidneys, etc., do not cause an improvement, but rather an accentuation of the symptoms, the uterus should be emptied. In cases of nephritic toxemia, the uterus, should be promptly emptied, unless the symptoms are very mild, the child alive, and the pregnancy near the twenty-eighth to thirty-second week. In cases of hepatotoxemia 0.25 grain of morphine should be given for pain, unless the blood pressure is low or there are signs of heart failure. Chloral and bromides should be administered to promote rest. Elimination should be promoted by every possible channel—through the bowels by salts or calomel; through the skin by hot packs, hot drinks, hot air baths; through the kidneys by diuretics, abundance of fluids, Fischer's solution. The diet should consist of milk, skimmed sweet milk, or buttermilk. The urea output and albumen loss should be estimated daily and the blood pressure should be watched. If urea decreases, albumin increases, or blood pressure is above 180 the outlook is bad, and the patient should be delivered. If the fetal heart beat reaches 160 or drops below 100 quick delivery is indicated to save the child. Eclampsia is a rather serious phase of toxemia and demands different treatment. To control the convulsion, 0.25 grain of morphine should be given, and if the blood pressure is high, 0.125 grain pilocarpine. Bromide may be given in dram doses with half a dram of chloral by enema. If an anesthetic is given, ether is to be preferred. Ten minims of veratrum viride by hypodermic every hour until the pulse falls below 80 is recommended After the convulsions have been controlled it is good to deliver at once. In a multipara or a primipara before term the cervix if dilatable should be dilated manually; with a rigid cervix vaginal hysterotomy or delivery by forceps or version, as most applicable, should be done under ether anesthesia. If there is a moderate contraction of the pelvis or a slight disproportion between the fetus and the pelvis or other complication producing dystocia, the Sanger operation is to be preferred. Following delivery elimination is to be actively pushed by the use of croton oil and calomel, followed by salines, by hot air baths, hot packs, hot drinks, or by fluids, as hypodermoclyses or intravenous introduction of Fischer's fluid after reduction of blood pressure or phlebotomy. When consciousness returns diureties are to be administered. The diet should consist of milk which is to be given freely.

Treatment of the Solitary Furuncle.—Willard Bartlett (*Journal of A. M. A.*, June 23, 1917) protects the lesion when it first appears with a bunion plaster or vaccination shield. It is not pricked, squeezed, or otherwise manipulated. It should then be exposed to sunlight or to the rays from an ordinary incandescent electric light as much as possible. Aspirine should be given in amounts up to five or ten grams. If this treatment does not abort the furuncle, time should be allowed for frank pustulation. Then the area about the furuncle should be infiltrated with one half per cent. novocaine containing four drops of 1:1,000 epinephrin solution to each thirty mils. The lesion should then be opened crucially with a thin electrocautery blade and the necrotic centre lifted out. If this does not separate at once, suction with a Bier's cup should be applied gently every hour or so. No dressing other than the shield or bunion plaster should be applied and exposure to light should be continued. Most of the treatment can be carried out in his own home by the patient with the aid of a member of his family if the furuncle is not accessible to him.

Primary Removal of Bone Fragments in Wounds.—Heitz-Boyer (*Presse médicale*, May 31, 1917) understands by primary removal one effected in a first line hospital within twelve to twenty-four hours after the injury. His observation has been that where bone fragments are freely removed at this early period the ratio of subsequent pseudoarthroses is very high. Where the original length of the limb was maintained by extension or a parallel bone, consolidation did not begin until the limb, after several months, was finally allowed to shorten and the bone extremities to come in contact. The periosteum, which according to Ollier normally loses in the adult its osteogenetic property, unless there is local morbid irritation, begins to thicken and react only after the twelfth hour subsequent to an injury. On the whole, with the present organization of hospitals behind the fighting front, Heitz-Boyer believes primary free removal of bone fragments a mistake in the great majority of cases. When able to operate in the first few hours, one should remove only enough bone fragments to insure drainage of the marrow cavity. Free removal of fragments remains good practice in the hospitals farther back, after twenty-four or forty-eight hours.

Spina Bifida.—E. D. Fenner (*New Orleans Medical and Surgical Journal,* July, 1917) advocates excision of the sac. An elliptical incision is made through the skin around the base of the tumor and the membranes are left intact as long as possible, are freed from the skin by blunt dissection, but must be opened at some stages. In most cases the strands of the cauda equina are found spread out over the interior of the sac and adherent to it. These are freed and replaced in the canal, and the membranes are closed by purse string or continuous suture of chromic catgut or fine silk so as to shut off the spinal canal. He believes that in the majority of cases the tender age of the patients contraindicates any complication of the operation by osteoplastic or other flaps. Suture of the dura and good closure of the skin is sufficient, but in favorable cases he thinks it advisable to attempt to suture the lumbar muscles over the gap in the bone.

Intraspinal Medication in Syphilitic Disease of the Nervous System.—Lewis M. Gaines (*Medical Record,* June 16, 1917), reviewing the history and describing the technic with its attendant dangers, is convinced that the early case of whatever type is most benefited. Those showing meningitic involvement with high cell count and globulin content have a better prognosis. The three principal methods of intraspinal therapy are the Swift-Ellis, the Ogilvie, and the use of mercurialized serum, with the consensus in favor of the Ogilvie method. Provided that the measure is used early, energetically, and frequently, the four reactions may be rendered permanently negative. In many cases the Wassermann remains positive, though the cell count and globulin content are reduced to normal; even in the presence of such positive reaction there may be clinical improvement or apparent cure. As to frequency of treatment, intraspinal injections are advocated every one to two weeks and the intravenous once every three to seven days; a case should not be called Wassermann fast until from ten to twenty injections have been given.

Therapy of Pellagra.—George W. Niles (*Medical Record,* June 2, 1917) bases his treatment on the observation of 1,150 cases, and he divides it into dietetic, hygienic, medicinal, and climatic. In the diet we may give egg albumen, sweet milk when it agrees, buttermilk, and when there is constipation oatmeal, vegetable puree, baked potatoes, and cereals with little sugar. Later when there is diarrhea, barley gruel, rice water, lighter cereals, thick broths, malted milk and egg, dry meat powders, dry albuminized powders, and butter are given. Peas and beans in the form of soup are valuable. As a constitutional treatment Niles gives on alternate days an ampoule of sixteen minims of iron arsenite solution and one containing 0.75 grain of sodium cacodylate by hypodermic, and by mouth a combination of Fowler's solution and a saturated solution of iodide of potassium up to the physiological limit. Careful treatment of symptoms should be carried out of correcting sleeplessness and constipation, allaying erythema, etc. Pellagrins do better when removed to a cool climate and if possible should avoid hot weather for ten or twelve months after the disappearance of all symptoms.

Dangers of Concentrated Neoarsenobenzol Injections.—G. Milian (*Paris médical,* May 19, 1917) asserts that the intravenous injection of neoarsenobenzol with a syringe is, in the first place, difficult because the large ten or twenty c. c. syringe used is hard to handle, meeting with obstructions against skin folds at the elbow, and in addition, dangerous because the physician, while pushing home the piston, is apt to push the needle through the vein wall, thus injecting the arsenical product into the cellular tissues—a mistake which may not be noticed until five or six c. c., or the third, half, or even the whole of the injection, has been forced out. The concentrated solution awakens in the cellular tissues a violent, pseudophlegmonous reaction, which results in extensive sloughing where the skin happens to be thin. In a recent instance in which this error in technic was made by a physician, the resulting slough was so marked as to lead to exposure of the veins at the bend of the elbow, which appeared as black cords over the yellowish and necrotic perimuscular fascia. Such lesions are painful and take three or four months to heal, without mention of the cicatricial retraction that may follow. With the dilute solutions of arsenobenzol, in which the arsenical injection is preceded by the introduction of saline solution, such serious results cannot occur, for if the needle leaves the vein the injection will be noticeably slowed down and even if a little solution enters the cellular tissues, its dilute form obviates excessive local irritation.

Surgical Treament of Hernia in Children.—A. J. Ochsner (*Saint Paul Medical Journal,* May, 1917) states that over ninety per cent. of all hernias encountered by him in children less than twelve years of age healed spontaneously or under a nonsurgical treatment. The latter consisted in the prescription of a diet calculated to prevent abnormal intraabdominal pressure, overcoming all other causes of excessive pressure, such as constipation, phimosis, crying, and cough, and in keeping the child in bed with the foot of the bed elevated for at least fourteen hours each day. There are, however, certain definite and easily recognized classes of hernia in children which should be operated in, for sooner or later in these cases an operation will become necessary, at a time when its danger and inconvenience to the patient will be greater. All persons suffering from hernia in adult life who have had hernia during childhood are probably included in these classes, which comprise, 1, reducible strangulated hernia; 2, hernia complicated with hydrocele of the cord located in the inguinal canal; 3, hernia with omentum or intestine adherent to the sac; 4, hernia with congenital weakness of the tissues which normally should close the inguinal canal; 5, hernia with a tendency to strangulation but without a tendency to spontaneous healing; 6, hernia with cryptorchism without tendency to spontaneous cure. All these cases, constituting only about five per cent. of all hernias, require careful removal of the hernial sac and closure of the external wound. Classes 1, 3, and 5, are especially suited for the Anderson method. In Class 2, the hydrocele should be opened and everted. In Class 4 the Ferguson-Andrews-Bloodgood operation is indicated, and in Class 6 the Ferguson-Andrews-Bevan procedure.

Treatment of Acute Gonorrhea in the Poor.—W. Ray Jones (*Medical Record*, June 2, 1917) outlines a simplified treatment for men who have limited means. The patient is instructed to wash out the urethra with warm water in a syringe before each injection and several times daily in the intervals and then to use a solution of protargol beginning with 0.3 per cent. and increasing up to one per cent. Internally plenty of water and large doses of sodium bicarbonate will accomplish all that expensive drugs such as santal oil will. Later when the discharge becomes scanty zinc sulphate, one per cent. solution, will toughen the mucous membrane and may be given morning and night for a time while the protargol is used during the day and then used alone for several weeks. A suspensory should be worn to prevent epididymitis, the diet should be bland, testicular swelling should be treated by hot applications, and posterior infections can usually be cleared up by the drinking of large quantities of water to irrigate the urethra.

Treatment of Acute Aniline Poisoning.—J. Chalmers Lyons (*Pennsylvania Medical Journal*, April, 1917) in outlining the prophylactic treatment, points out that a physical examination of every employee should be made and that employees should wear clogs, respirators, and rubber gloves. Mild cases present symptoms of headache, vertigo, and nausea with more or less cyanosis. When these symptoms present themselves the patient should be sponged with acetic acid, which is followed by a general bath. He is then given a mild cathartic and put to rest in the fresh air. The employee usually returns to work in twenty-four hours but is not exposed to aniline for several days. The symptoms of a severe case are the same as those of a mild case, but they are exaggerated. There may be drowsiness with a slow and feeble pulse. Unconsciousness may develop. If symptoms of collapse present, active stimulation is instituted, preference being given to camphorated oil by hypodermic, and oxygen is administered.

Fifteen Cases of Complete Laryngectomy.—R. J. Moure (*Bulletin de l'Académie de médicine*, May 8, 1917) points out that, while formerly considered an exceedingly dangerous operation, complete extirpation of the larynx has of late been rendered, through improved technic, more and more safe. He is now able to report fifteen cases, operated in within the last year and a half, all of which recovered. Apparently local anesthesia is one of the chief factors of success in this operation, though in two of the author's cases general anesthesia was used. Another important measure is the institution of tracheotomy two weeks before the laryngectomy, thus accustoming the air passages to the entrance of air through a cannula. Where the larynx remains quite patulous and the tumor in it has not yet grown beyond the laryngeal cavity, the extirpation may be performed from above downward, separation of the larynx from the intact esophageal opening being easy. Where, however, the epiglottis and its lateral folds have become involved in the tumor, extirpation from below upward seems preferable, permitting likewise of free resection of the diseased upper portion of the esophagus and performance of appropriate plastic work. Procedures intended to insure breathing and prevent entrance of blood into the air passages serve only to prolong the operation uselessly. All that is required is the introduction of a large cannula and the superimposing of a thick tampon of gauze to prevent passage of blood between the cannula and the tracheal wall. It is important to even off the wound in the soft tissues in such a manner as to obviate postoperative sloughing. The wound having been properly cleansed, Moure places, in addition to a tampon of iodoform gauze above the cannula, another tampon in the region of the esophageal entrance, and sutures layer by layer the esophagus, prelaryngeal tissues, and skin. A permanent esophageal tube and a Lombard cannula greatly facilitate the dressings on the first few days after the operation. The postoperative care is a very important factor; beginning on the second day, two and even three dressings a day should be made. The operation should be performed early if a good immediate result and the minimal chances of recurrence are to be secured. The ultimate results of the operation are best in encapsulated malignant tumors in the thyroid cartilage.

Abortive Treatment of Erysipelas.—Capitan (*Bulletin de l'Académie de médicine*, May 22, 1917) finds that in mild and intermediate forms of erysipelas satisfactory results are obtainable by the use of hot antiseptic lotions and sprays and the application over the diseased area of a thick layer of the following ointment:

℞ Adipis lanæ hydrosi, } ....ana..50 grams;
Petrolati,
Phenylis salicylatis, } ....ana..5 grams.—M.
Antipyrinæ,

The treatment also includes frequent purgation; one gram of quinine daily; various diuretics, such as sparteine, 0.1 gram a day, generally with two grams of soft extract of cinchona and twenty grams of alcohol; camphorated oil injections—one in ten—and theobromine, one gram, according to indications. In the severe cases, with spreading erysipelas and destructive ulcerations or involvement of the myocardium, kidneys, or lungs, the duration of the disease seemed shortened by five c. c. intravenous injections of collargol once or twice a day, repeated for three to five successive days at a time. The best results, however, were obtained by subcutaneous injections in the flank of fifty c. c. of antistreptococcic serum, either once or twice a day. Usually the temperature descended, under this treatment, from 40° C. to normal in three or four days; the general condition strikingly improved, the eruption became paler with the tissues less edematous, and the skin quickly returned to normal. Even a complete involvement of the scalp was checked in two days. The treatment was as a rule continued two to four days; in one instance, five days. No untoward effects from the treatment were observed except, rather frequently, a serum rash on the fifth or sixth day, sometimes with joint pains. The latter yielded to salicylates and local use of chloral and bromide solution. In patients who had previously had horse serum injections a desensitizing dose of two c. c. of the antistreptococcic serum was given four hours before the first therapeutic injection.

Radiotherapy in Gynecology.—F. E. Keene (*Pennsylvania Medical Journal,* April, 1917) concludes that the large percentage of cures in even fairly advanced cases of carcinoma of the fundus indicates operation as the treatment of choice. In early cervical cancer radical operation is advised. In the more advanced cases, the application of radium is the preferred method. The application of radium in the vaginal cuff immediately after radical operation may be followed by disastrous results. For hemorrhage and foul discharge in inoperable cases radium is best. In benign hemorrhage due to myomata, radium should be employed. In young women radium should be used with caution as it may bring on a premature menopause. In no case of uterine bleeding should radium be used without a preliminary curettage.

Prophylaxis of Heat Stroke.—Amar (*Presse médicale,* May 21, 1917) ascribes the form of heat stroke experienced most frequently by soldiers and workers in the fields to an intoxication by fatigue products, acting in conjunction with the heat of the sun. In subjects who are not performing an excess of muscular work, heat alone is incapable of causing death. Prophylaxis on this basis consists in insuring sufficient lung ventilation, oxygen destroying the toxic material and thus preventing heat stroke. For this purpose, the thorax and shoulders should be rendered as free as possible, light clothing of ample size being worn, without collar or tie. No burdens at the level of the kidneys should be permitted. At regular rest intervals, forced respirations should be practised, with the head thrown back and mouth open. The subject should carry with him a mixture of water and vinegar, which he should on occasion use to moisten the face and snuff up into the nose in order to stimulate the respiratory reflexes.

Conservative Treatment of Puerperal Sepsis.—E. E. Montgomery (*Pennsylvania Medical Journal,* April, 1917) warns against operation as a routine in these cases. Very frequently it does more harm than good. The patient should be put at rest, elimination promoted, and immunity established. Locally, cold should be applied to the abdomen in the acute stages and hot applications after the temperature has become normal to promote absorption of exudation. Immunity is promoted by the use of vaccines and serums. The vaccines are to be preferred and they may be either autogenous or stock. The employment of autogenous vaccines has the following disadvantages: 1, Special skill is required in their manufacture; 2, examination of the blood of the patient often proves negative; 3, in severe cases considerable time is lost in preparation. The initial dose of an autogenous vaccine should be from ten to twenty million and should be repeated the following day if no reaction takes place. Serum should be employed in large doses of ten to twenty c.c. and should be given twice daily in severe cases. Collections of blood within or external to the peritoneum should be evacuated, and if suppuration of the peritoneum has taken place, incisions for drainage either in the vagina or in the sides of the pelvic wall should be made. Localized collections in the tubes, ovaries, and uterus should be removed only when they endanger life.

The Blood in Cancer under Röntgenotherapy.—Rollin H. Stevens (*American Journal of Röntgenology,* May, 1917) summarizes his observations carried out on a great number of cases, as follows: 1. Röntgen rays applied in repeated large doses, with deep penetration, profoundly affect the erythrocytes, which is contrary to the experiments reported in small animals. 2. For the first few days the lymphocytes are suppressed or destroyed by large doses of Röntgen rays; in favorable cases, this is followed by a lymphocytosis between the third and seventh days, which may continue until the fourteenth day, or it may stop after the seventh day and reappear on or about the fourteenth day. 3. There is a strong resemblance between the curves of these lymphocytic reactions and those which constitute the opsonic index. The treatment should probably not be repeated until the reaction is over. 4. The repetition of the dose should probably be governed by the reactions in the blood as well as in the skin, the former being much more sensitive than the latter. 5. In some cases of cancer, the Röntgen rays tend to stimulate a general immunity, if lymphocytosis is an indication of immunity. In cancer the Röntgen rays have a twofold action: to destroy disease cells and to stimulate resistance by producing a lymphocytosis.

Disinfection of Drinking Water.—H. D. Dakin and E. K. Dunham (*British Medical Journal,* May 26, 1917) found that chloramine-T was not very efficient for the disinfection of contaminated drinking water, requiring a considerable proportion of the drug and rendering the water decidedly unpalatable. The acidulation of the water with any acid, such as citric, tartaric, etc., greatly enhances the disinfectant powers of the chloramine-T and the water was not unpleasant to the taste. This combination was not suited for military use since the drug could not be made up into tablets with the acid without undergoing decomposition. Further experiments along this line led to the elaboration of a substance, p-sulphondichloraminobenzoic acid, which was called "halazone" as a convenient name indicating something of its nature. This chemical could be readily prepared from cheap and abundantly available materials, was stable, could be made into tablets, was powerfully disinfectant to water, and did not affect its palatability. The method of its preparation is described by the authors. A concentration of one in 300,000 would sterilize ordinary heavily contaminated water in half an hour. It was found most satisfactory to mix the drug with some salt, sodium carbonate having been found to give the best results. Tablets were made of the following composition: four per cent. each of halazone and sodium carbonate and ninety-two per cent. of pure sodium chloride. The drug should be ground with the dry salt and the carbonate then added. Tablets could be made of this combination without the use of any lubricant or other addition. The tablets should then be tested for their strength. Each such tablet should weigh about 100 mgm. and should be stored in amber glass bottles. Each tablet will sterilize one litre of water. Such tablets could be made at a cost of about two cents for the sterilization of about 100 gallons of water.

Miscellany from Home and Foreign Journals

Amebic Dysentery with Adrenal Insufficiency.—R. Dujarric de la Rivière and Villerval (*Paris médical,* April 21, 1917) consider adrenal insufficiency a rather frequent complication of amebic dysentery, manifested in marked general depression, asthenia, a feeble pulse, etc. In the case of a soldier on the Franco-Belgian front, stationed where Senegalese and Moroccan troops had recently been, the onset of diarrhea was accompanied by prostration and tachycardia. Careful examination revealed no organic disturbance save in the liver, which was slightly tender and distinctly enlarged. The number of stools rose as high as forty-five in twenty-four hours. The white line phenomenon was elicited on the abdomen and the pulse remained thready at 120 a minute. The diastolic blood pressure descended to seventy mm. Hg (Pachon instrument). Emetine hydrochloride in divided doses, to the total amount of 0.06 up to 0.1 gram per diem, together with adrenaline and camphorated oil, within a few days placed the patient on the road to recovery. The use of adrenaline is especially recommended where there are signs, even slight, of impairment of the adrenals due to toxic action of the amebæ on these organs.

Gastric Disturbance in Gallbladder Disease.—William Fitch Cheney (*Archives of Diagnosis,* April, 1917), studying sixty-two cases of gallbladder disease with regard to the frequency and character of accompanying gastric disturbances, found it possible to divide them into three groups. The first of these, comprising thirty cases, includes patients free of all gastric complaint between the typical acute gallbladder attacks. In fifteen of this group who were subjected to operation, the stomach was uniformly found normal; yet among thirteen gastric analyses, five cases showed total hyperacidity, six, subacidity, and only two, normal total acidity. In the second group—twenty-eight cases—there was a mixed picture of gallbladder attacks with more or less constant stomach trouble in the intervals. No definite gastric history diagnostic of gallbladder disease could, however, be formulated, some complaining of anorexia, distress soon after eating, fullness and distention, belching, constant nausea, and frequent vomiting; others chiefly of "sour stomach," and still others of a consciousness of their stomachs at all times, no matter what food was taken. The danger in this group is that the gastric history may so impress the patient as to remove or suppress the remembrance of attacks of biliary colic experienced, as a rule, at long intervals. In seven patients of this group treated by operation all were relieved thereby of their gastric symptoms. Of twenty-one treated medically, many were improved but none cured. Of gastric analyses in twenty-seven, fifteen showed hyperacidity and seven a decided subacidity. The third most puzzling group comprised four cases of persistent stomach trouble, due actually to gallbladder disease, but without any history suggesting gallbladder disease as the causal factor. Thus, in a man aged fifty-three years with anorexia, oppression after eating, belching, loss of weight, complete achylia, much mucus, but without any pain or physical sign, an exploratory operation performed for possible malignancy after failure of medical treatment revealed a large single gallstone, removal of which was followed by disappearance of all symptoms. In the second case, cardiospasm revealed by the x rays, with hyperacidity, disappeared permanently upon removal of two large mulberry gallstones; in the third, with "sour stomach," a small, obstructing ulceration was found at the pylorus and a large stone in the gallbladder. The x rays seem to offer most hope in the diagnosis of such cases, either by elimination of ulcer or cancer, or by demonstrating gallstones or pyloric distortions due to gallbladder adhesions. In indefinite cases that one is tempted to label "gastric neurosis," the possibility of gallbladder disease should be borne in mind.

Determination of the Intracranial Pressure.—L. H. Landon (*Journal A. M. A.,* May 26, 1917) emphasizes the fact that we still know little or nothing of the absolute intracranial pressure, although such knowledge should prove of considerable diagnostic value. The pressure has been estimated in a rough manner by many observers, but none has determined it with any degree of accuracy. The author has devised a simple U tube mercurial manometer reading to seventy mm. Hg and fitted with a short length of small bore rubber tubing to which is attached a metal connecting piece ground to fit the standard slip joint needle. A needle for similar connection, fitted with a double outlet, three way stopcock, and a suitable obturator was also devised. To take the intracranial pressure the patient should be placed in the horizontal position with the spine forming as nearly a straight, horizontal line as possible. The needle is then to be inserted through the space between the fourth and fifth lumbar spines, the obturator withdrawn, and the moment a drop of spinal fluid appears in its opening the stopcock is turned to shut off the escape. Then the manometer is connected and the pressure read directly on the mercury column. While still connected with the manometer fluid may be withdrawn to the desired amount and the pressure read from time to time for control, or injections may be made through the second outlet of the needle. The normal pressure was found to be from eight to ten mm. Hg. Readings above twelve mm. under proper conditions should be regarded with suspicion, and those that were materially higher were indicative of abnormal intracranial pressure. Increased pressure was never found in purely functional disturbances, but was commonly found in various forms of spinal or intracranial disease. Exact data have not yet been obtained, but the readings seemed to give a much earlier indication of increased intracranial pressure than was shown by any other method, including the examination of the ocular fundus.

Poliomyelitis.—Charles V. Craster (*Journal A. M. A.*, May 26, 1917) concludes from a study of the recent large outbreak of epidemic poliomyelitis in Newark that the infection was carried originally by a healthy adult whose daily work took him to New York. That the subsequent development of small areas of incidence of the disease indicated the infection from a single case of exceptional virulence also seemed evident. It was not possible to determine the precise mode of transmission but it seemed to be through some human agency, although no outbreaks could be traced to direct contacts with any certainty and none to gatherings of children in schools. There were relatively few instances of more than one case in a family and none of the transmission of the disease in hospital wards. No food seemed responsible and the common domestic animals did not seem to spread the disease. The prevalence among the latter of paralytic diseases was exaggerated due to the focussing of attention on them. Almost eighty-four per cent. of all cases occurred in children under five years of age and over eighty-five per cent. of the deaths occurred in the same age group, although the highest mortalities were recorded among those under one year and between twenty and twenty-four years of age.

Unrecognized Congenital Syphilis.—R. Sabouraud (*Presse médicale,* May 17, 1917) divides cases of inherited syphilis into five groups, the last two of which remain unrecognized because their characteristics are not fully known to the practitioner. The first three comprise the stillborn, those who die within a few years of birth, and those who survive longer, exhibiting such stigmata as dwarfism, cranial or facial deformities, low intellectual capacity, and distinctive cutaneous or special sense lesions. The fourth group exhibits merely oral stigmata, including, besides prognathism ,deformity of the upper jaw and approximation of the two superior maxillary bones, such dental defects as eversion or inversion of the teeth, imbrication of two incisors, the growth of a molar from the vault of the palate, complete or partial microdontia, Hutchinson teeth, and, most frequently of all, striated or pock marked teeth—with brownish discoloration of the enamel free depressed areas —together with "screwdriver teeth" and partial loss of enamel about the crowns of the molars, which become irregular in shape and later worn down and flat. Such patients are apt to have a history of numerous and varied diseases in early childhood, to which presumably the syphilitic infection may have predisposed. The fifth class, which outnumbers all the others, is that of syphilitic children who are supposed to have completely escaped the paternal taint. It is a mistake to believe that in a family with several children, complete absence of miscarriages implies absence of syphilitic infection. Everything depends on the severity of the infection in the father and the treatment he has received before marriage. That a father whose syphilis has been passably treated may have healthy children is a mistaken notion too generally believed in. In all cases where syphilis is known to have existed in the father, and no matter what treatment he has received, a Wassermann test should be made in the children coming under observation—if necessary, under pretense of estimating the urea of the blood, or with some other excuse. If this is systematically done, the appalling extent to which syphilis figures in general morbidity will be realized. Mere lack of harmony in the conformation of the body should be held somewhat suggestive of congenital syphilis. Low stature, thin chest, a spinal column with doubtful curves, or a striking ugliness of the face are in themselves of some value as indications of congenital syphilis. Careful attention should then be paid to the cranium, eyes, ears, and teeth. Supplementary ledges on the inner aspects of the upper first molar teeth, recently described by the author, constitute the ultimate trace of syphilis remaining in children whose syphilitic father has received treatment before marrage and believed himself cured. This sign Sabouraud has noted in almost a third of all children recently seen by him. So frequently do ichthyosis, extensive alopecia, psoriasis, prurigo, periauricular eczema, and eczema of the elbow and popliteal regions coexist with this dental sign and a semipositive Wassermann, that some predisposing relationship of syphilis to these skin affections must be considered probable. Syphilitics as a class must be treated more promptly and thoroughly than has hitherto been the case and must not marry until symptoms have been absent and the serum reaction negative for two or three years without treatment.

A New Disease Simulating Acute Rheumatism.—Chantemesse, Martruchot, and Grimberg (*Bulletin de l'Académie de médecine,* May 29, 1917) report the case of a woman thirty-seven years old, with a history of a rheumatic attack fourteen years before, who was admitted complaining of joint pains of two weeks' standing, increasing in severity and accompanied by lassitude. Pallor and dyspnea were noted, the pulse rate was 110, and the temperature 40° C. Profuse sweats, a dry tongue, an apical systolic murmur, and slight albuminuria were also noted. Six grams a day of sodium salicylate was ordered, and in two days the temperature descended to 38.6°. Next day, however, meningeal symptoms supervened, with intense headache, great restlessness, tremor, and increasing fever. Two days later, marked but temporary diarrhea was noted. After another two day interval restlessness gave place to coma, and death followed. At autopsy the cranial contents showed congestion, hemorrhagic spots, and edema. In the recent endocardial foci and in the pia, cortex, and cerebrospinal fluid were found numerous examples of a new type of microorganism, appearing in thin, short rods in a young culture and in heavier, much longer, often curved organisms, progressing by a spirillar movement. In old cultures the organism showed long, branched forms, which later broke up into short rods, each developing in its centre a spore. This mode of sporulation distinguishes the organism from the actinomycetes and its mycelium from the bacilli proper—hence the new generic name, Mycobacillus synovialis, which the writers propose for it. Injection of the organism into rabbits often caused arthritis and endocarditis, usually with diarrhea at a certain period of the disease.

Late Cephalic Tetanus with Recrudescence Due to Surgical Intervention.—G. Gross and L. Spillmann (*Bulletin de l'Académie de médicine,* April 24, 1917) report the case of a soldier wounded in the face and back, who was subjected to operative procedures in both of these situations for the removal of numerous small shell fragments. Tetanus antitoxin had been given both before and after the injury. One month later, facial paralysis on the side of the facial wound appeared; the malar bone was curetted and an additional minute shell fragment removed. The paralysis, attributed at the time to the local injury, but actually the first manifestation of cephalic tetanus, persisted and to it were added in three weeks sharp pains in the side of the face and a slight contracture of the sternomastoid. In a few days this contracture increased and swallowing became difficult, and after an additional month trismus was such as to require an exclusively liquid diet, and a painful abdominal contracture supervened which pointed unmistakably to tetanus. Daily large injections of tetanus antitoxin were then started, with twelve grams of chloral hydrate daily and hot baths to overcome the abdominal contracture, with the result that complete recovery took place in seventeen days. The case is especially peculiar in that no less than three and a half months elapsed between reception of the injury and generalization of the tetanus symptoms.

Anaphylatoxin and Anaphylaxis.—F. G. Novy and P. H. DeKruif (*Journal A. M. A.,* May 26, 1917) observed that Trypanosoma brucei produced symptoms analogous to those of anaphylaxis when injected as dead cultures into the lower animals; that these same organisms, when allowed to act on rat serum rendered it extremely toxic for guineapigs through the production of anaphylatoxin; and that this toxic substance was not derived from the bodies of the trypanosomes, but was produced by them from the serum upon which they acted. It was also found that other substances, including bacteria, agar, distilled water, etc., were capable of causing the same phenomenon of the production of anaphylatoxin. Further study of the production of this toxic substance and the phenomena of anaphylactic shock showed they rested on a basis entirely different from that usually accepted. The matrix of the poison which was produced was always present in the blood serum or plasma and was liberated therefrom by a variety of different agencies. The phenomena of anaphylatoxin production was not connected with the problem of immunity except in so far as the ready response of the labile toxic matrix of the serum was thus affected. The production of the toxin was closely similar to the production of fibrin from fibrinogen and the two processes seemed to have certain close relationships, since anaphylactic shock was known to be associated with the development of incoagulability of the blood. It seemed better, therefore, in view of the new facts, to adopt a new nomenclature for the toxin and its predecessor. Since the phenomena were associated with some disturbance in the labile toxin matrix the name suggested for this matrix which was so subject to change was "taraxigen," for the toxin "taraxin," and for the disturbed state caused by the production of the poison, "taraxy." Substances developing within the animal were found also to be capable of inducing taraxy or anaphylaxis, as it was called. It was found that the presence of a relative excess of alkali in the blood serum or plasma would prevent or largely inhibit the production of taraxin and the administration of sodium bicarbonate or other alkali was suggested for the treatment of those human cases in which the phenomena here described were found to occur.

Complement Fixation Tests in Tuberculosis.—H. J. Corper and H. C. Sweany (*Journal A. M. A.,* June 2, 1917) call attention to the wide divergence in the results reported by different investigators in the field of complement fixation in tuberculosis. But few comparative studies have been made in this field using more than one antigen on a given series of serums. The authors conducted such an investigation, employing for comparison the antigen described by Miller and Zinsser and a tubercle bacillus autolysate of their own preparation. Both antigens were polyvalent. Comparatively little difference was shown in the results from these two antigens, but the autolysate seemed preferable because the results were less transient and a satisfactory antigenic unit was more readily established. Neither of the antigens gives results which indicate whether the tuberculosis is active or inactive, although active cases give a slightly greater number of positive reactions than the inactive ones. The presence of a positive Wassermann reaction renders the results untrustworthy for the drawing of conclusions, but a positive or negative reaction in the absence of a positive Wassermann test is of some differential diagnostic value as indicating the presence or absence of tuberculosis.

Action of Bacteria and Dressing Solutions on Catgut Ligatures.—Kenneth Taylor (*Journal A. M. A.,* May 26, 1917) carried out a series of experiments with No. 0 and No. 1 plain and chromic catguts to determine the effects of the common organisms found in infected wounds and of the commoner dressing solutions in the hope of explaining the causes of secondary hemorrhages. He found that Bacillus aerogenes capsulatus attacked and eroded both forms of catgut and was the only organism which did so among those tested, which included Bacillus malignans œdematis, the Hibler bacillus, Streptococcus pyogenes, Staphylococcus aureus, Bacillus pyocyaneus, Bacillus proteus and Bacillus lactis aerogenes. The dressing solutions used were the Carrel-Dakin hypochlorite solution; 0.5 per cent. betanaphthol in 0.1 per cent. sodium hydroxide; one per cent. sodium hydroxide; mercuric chloride 1:10,000; one per cent. phenol; five per cent. sodium chloride; normal saline; one per cent. acetic acid; one per cent. sodium perborate and distilled water. None of the solutions diminished the tensile strength or elasticity of the gut, but the Carrel-Dakin solution made the gut so slippery that no knot would hold under more than two and one half ounces of pull. It seemed that the presence of Bacillus aerogenes capsulatus and the use of the Carrel-Dakin solution might be possible causes of secondary hemorrhage through erosion or loosening of the ligatures about the larger vessels.

Proceedings of Local and National Societies

AMERICAN GYNECOLOGICAL SOCIETY.

Forty-Second Annual Meeting, Held at Pittsburgh, Pa., May 31 and June 1, 1917.

The President, Dr. FRANK FARROW SIMPSON, Pittsburgh, Pa., in the Chair.

A Histological Study of Fifty Uteri Removed at Cæsarean Section.—Dr. J. WHITRIDGE WILLIAMS, of Baltimore, presented a study of uterine contraction and retraction before the separation of the placenta; also a study of the mechanism of the separation of the placenta, the amount of decidua retained after separation of the placenta, and the vascular changes at the placental site, and pointed out some of the indications for the removal of the uterus, notably ascending uterine infection. He likewise presented a study of the scar resulting from previous Cæsarean section.

Dr. EDWARD P. DAVIS, of Philadelphia, was of the opinion that once a Cæsarean section had been done, spontaneous labor might occur in the same patient without any complications whatsoever; furthermore, a Cæsarean section, properly done and not followed by infection, led to an absolutely sound uterus without connective tissue. As regards the separation of the placenta, clinically those means might be disregarded immediately which lessened its bulk after the birth of the child; the clinical phenomena, aside from histological findings of simple separation, varied greatly. Those who had had considerable experience in Cæsarean section realized that the danger point was the removal of the uterine body in all doubtful and suspected cases. While it was difficult to say positively that a woman whose uterus was infected could not recover, he thought far more lives would be saved in doubtful cases by hysterectomy than by leaving the uterus. He had never regretted removing the body of the uterus in all suspected cases, and he did regret not having done so in some cases.

Dr. EDWIN B. CRAGIN, of New York, said that he wished to utter a word of caution as to the relative safety of a uterus on which Cæsarean section had been done, especially if the Cæsarean section was done for obstruction. All specialists appreciated the fact that if a uterus was properly sutured and the puerperium was without infection, the uterine wall would be relatively sound if the original operation was done for such a condition as placenta prævia or eclampsia; but the general practitioner should always bear in mind in the case of a uterus upon which one Cæsarean section had been done, that if the section was done for obstruction it was quite possible that the puerperium would not be absolutely free from infection. A woman working her way in labor in the second stage with a scar following a puerperium and not free from infection, was exposed to the risk of a rupture.

Dr. CHARLES A. L. REED, of Cincinnati, stated that one point of practical interest was the time factor involved in the successful cicatrization of the Cæsareanized uterus. He had had occasion to do myomectomy on two cases—a unique coincidence—in which the injury to the uterus was done through Cæsarean section. In both he operated in the presence of an early pregnancy. The pregnancy was not interrupted. Cicatrization occurred very promptly.

Dr. JOHN O. POLAK, of Brooklyn, New York, stated that the point that had impressed him in Doctor Williams's paper was the fact of fifteen hysterectomies having been done following Cæsarean section. This statement was absolutely out of harmony with his experience as to the frequency of the necessity of this operation following Cæsarean section. Even with the twenty infections, a large proportion of these women had had their uteri removed unnecessarily. It was likewise the experience of his colleagues in Brooklyn that they had not adopted the suggestion of Doctor Williams or of Doctor Davis of doing hysterectomy, but had treated these infected cases by the extraperitoneal method where they knew infection had existed from the history and by repeated examinations through the vulva. and had dealt with these cases on the modified principle of the suggestion of Sellheim.

DR. HERMAN J. BOLDT, of New York, said he had had one opportunity of doing myomectomy during pregnancy. The woman was four months pregnant and showed symptoms of impending abortion. The myoma was enucleated because of the symptoms present. This woman made a good recovery and went on to term without any trouble whatever.

Dr. JOHN G. CLARK, of Philadelphia, said that in connection with the subject discussed by Doctor Williams, Doctor Goodell, of Montreal, brought out a rather interesting explanation a few years ago of the so called myopathic hemorrhages which occurred in women thirty-five years of age and older. Doctor Goodell believed at that time that the subsequent reconstitution of the bloodvessels in the uterus after the puerperium was due practically to the threading of new vessels into the old and their construction in that fashion. He believed that in the majority of women with myopathic hemorrhages at forty years of age and over the uterus would be patent up to the menopause, when there was a failure and bleeding because of successive rings. He had three or four specimens showing apparently one bloodvessel within the other.

DR. HIRAM N. VINEBERG, of New York, stated that a puerperal uterus that was highly septic could not be removed without causing a more severe infection. Doctor Williams had had twenty cases of infection, and the conditions at the time of operation were most favorable for the spread of infection, yet these uteri were all removed with recovery. The point he wished to emphasize was that these uteri could be removed with safety, and that there must be suitable cases in which the uterus could be removed and the patient's life saved.

Dr. E. GUSTAV ZINKE, of Cincinnati, had had a case of a woman on whom he made two Cæsarean sections, the first time for an elongated cervix and placenta prævia, both pronounced. She had a perfectly normal recovery. She became pregnant two months after Cæsarean section and went near the end of term, when he was requested to attend her in confinement. He told her he would do so provided she would submit to another Cæsarean section, and he based his position entirely upon the fact that she had an elongated cervix. To overcome this obstacle necessarily meant a prolonged stage of labor, and not knowing exactly the character of the uterine scar, he did not wish to take any chances. She promptly submitted to another Cæsarean section, and it was performed as nearly at the end of term as he could calculate and before the symptoms of her labor began after the cervix had been obliterated. To his surprise he found it was another case of placenta prævia. The placenta was situated in the lower segment of the uterus, almost centrally implanted. Of the first scar hardly anything could be noticed. The first incision was made transversely near the fundus; the second he made longitudinally, and in both operations the abdominal incision was made above the umbilicus. She recovered from this operation promptly.

Dr. J. Riddle Goffe, of New York, supposed that all who had had experience in removing fibroid tumors had made observations in reference to the healing of the wound later, and it had appeared to endure subsequent pregnancies. He had operated upon three patients from whom he removed fibroid tumors and they had afterward become pregnant A recent case was one in which he operated for fibroid tumors at the fourth month of pregnancy. The tumors were removed, and a miscarriage promptly occurred. Since that time the woman had been pregnant twice and had borne children normally. The deliveries were perfectly normal.

Dr. William E. Studdiford, of New York, stated that he had had in the past year and a half two experiences with rupture of the Cæsarean scar, the latter one occurring about ten days ago. In both of these cases the women went into labor prematurely. In the first case the condition was not recognized, and the prolonged pains led the attending physician to attempt further dilatation of the cervix by the use of the bag, with the result that the woman became infected, and at the time of operation the fetus and membranes were within the abdomen. The uterus had retracted, and the woman died within twenty-four hours after operation.

Dr. George Gellhorn, of St. Louis, Mo., said that there were cases in which a very slight subfebrile temperature ran for ten to fourteen days after Cæsarean section, suggesting the possibility that the wound had separated partially. He had had the opportunity of observing one woman who died about five weeks after Cæsarean section from a cause unconnected with the operation. She had a very slight rise in temperature, not more than 99.2° or 99.4° F. for ten days, for which he was unable to find any cause. At autopsy he found the endometrial side of the incision had separated and gave a picture identical to that shown by Doctor Williams. It was very essential to pay attention to these slight rises of temperature and arrange for the management of the next labor accordingly.

Dr. John A. McGlinn, of Philadelphia, did not believe the dictum "Once a Cæsarean section, always a Cæsarean section," was true by any means. Such a dictum was dangerous. It was simply a catch phrase which remained in the minds of many people who were not able to discriminate. It should be eradicated from the literature, because the general profession and even the public took hold of this catch phrase and would not allow cases to be Cæsareanized when they should be.

Dr. Franklin S. Newell, of Boston, said that he believed that in subsequent Cæsarean section the uterine scar could never be depended upon. He had removed three scars at operation during the last winter. In two of them there was a febrile course after the first operation. One of the scars left a mass of muscular tissue which ran through the middle of it, and he believed that if that patient had gone into labor she would have had a rupture. He did not believe that the mortality following Cæsarean section before labor was as high as two per cent. These cases should be selected carefully, and he thought a woman ran less risk in having Cæsarean section done in a subsequent labor under proper conditions.

Avoidance of Shock and Trauma in Treatment of Eclampsia.—Dr. Edwin B. Cragin, of New York, said that in the first series of 20,000 deliveries at the Sloane Hospital, New York, with 251 cases of eclampsia, the maternal mortality was seventy-one, or 28.28 per cent. The fetal mortality was 151, or 60.15 per cent. In the last series of 15,774 deliveries, with 138 cases of eclampsia, the maternal mortality was twenty, or 14.49 per cent. The fetal mortality, including stillbirths and infants dying before the mother left the hospital, was sixty-two, or 44.92 per cent. The reduction in mortality had been brought about by avoiding shock and trauma; by avoiding chloroform; by preparing the cervix before delivery; by avoiding accouchement forcé; and by treating the toxemia while preparing the cervix.

Dr. J. Whitridge Williams, of Baltimore, agreed with everything that Doctor Cragin said about sparing the patient all possible shock during delivery. Unlike Doctor Cragin, he had in the last few years resorted to bleeding, which had had a good effect in many cases of eclampsia, consequently it was almost a routine in his service now to bleed every woman with ante partum eclampsia. He made a practice of drawing 750 to 800 c. c. In a certain proportion of cases this procedure ended the misery. The woman had no more convulsions, albuminuria fell, and the nitrogenous constituents of the urine rose just as though she had not been bled. These women occasionally went on for some weeks or even months and had a baby at term without further eclampsia.

Dr. Reuben Peterson, of Ann Arbor, Mich., said that long ago he gave up the use of chloroform in the treatment of eclamptic women. The field of Cæsarean section, both vaginal and abdominal, had been limited for a number of reasons. Abdominal Cæsarean section, was limited in a hospital that admitted all kinds of obstetric cases because usually so many vaginal examinations had been made. If there was any risk of sepsis, one should work from below. All the methods indicated by Doctor Cragin should be tried, but an abdominal Cæsarean section should not be resorted to. His investigations of both abdominal and vaginal Cæsarean section had shown conclusively that if a case could be taken early in the eclampsia, both operations were remarkably successful in saving both the mother and the child. He had seen good results from bleeding, but had not obtained satisfactory results from the use of veratrum viride.

Dr. Brooke M. Anspach, of Philadelphia, asked Doctor Cragin and Doctor Williams in how many cases of eclampsia they found acetone and diacetic acid in the urine, and how they met the condition of acidosis. During the last year he had a patient in whom very serious symptoms of toxemia developed more than two weeks after delivery. The woman had three severe convulsions in one day. She showed remarkable improvement after the intravenous injection of a pint of a two per cent. solution of sodium bicarbonate, and she had another injection the next day and recovered.

Dr. Edward P. Davis, of Philadelphia, said that he would not deliver a woman in eclampsia and toxemia unless she showed signs of going into labor; then he would assist her with the least possible traumatism. His objection to the use of the bag was the fact that its long continued pressure sometimes exhausted these patients and led to convulsions. Abdominal Cæsarean section was rarely indicated and vaginal Cæsarean section still more rarely. He had come to have a high regard for venesection in eclampsia if it was followed by the use of salt solution or sodium bicarbonate in the vein.

Dr. Harold C. Bailey, of New York, stated that eclamptics were particularly prone to shock. Accouchement forcé had been discontinued in the Bellevue Hospital service. In 1900, when he took systolic blood readings, several eclamptics were delivered by that method and in several instances he found there was a drop of 100 millimetres Hg. He then made blood pressure readings following the use of veratrum viride, and in one instance in which the drug was pushed he found a drop of 140 millimetres Hg with the woman in profound shock. Since that time he had not used veratrum viride previous to delivery. As regards vaginal and abdominal Cæsarean section his views were in accord with those of Doctor Cragin.

Dr. E. Gustav Zinke, of Cincinnati, said that the principal cure for puerperal convulsions lay in prophylaxis during the pregnant state. Some pregnancies terminated fatally in spite of treatment. It was often a question of whether the case would yield to treatment, or whether the patient would get well in spite of treatment and sometimes because of neglect. About five weeks ago he was asked to see a woman in consultation with a pronounced case of albuminuria. She had edema up to the shoulders almost and her urine was loaded with albumin. She was at the end of the eighth lunar month. He ordered gentle saline catharsis, a hot bath every day, and an absolute milk diet, and expressed the opinion that this treatment would probably precipitate labor, and if it did, it was much better for the patient. She was brought to the hospital three days after she had delivered herself spontaneously of a living child. The albumin slowly disappeared. The milk diet was kept up and she was given a hot bath every day and veratrum viride. Her pulse was never very high. Ten days after labor she had her first convulsion which left her with left sided paralysis, and in spite of all that was done she had three other convulsions and died.

Doctor Cragin, in closing the discussion, said that in regard to diacetic acid and acetone in these cases of eclampsia, he recognized all types of cases. In one type the liver was least involved; in another the kidney was more involved. When the liver was the organ more involved, acetone and diacetic acid were apt to be present, and he had found soda to be a valuable aid.

(To be continued.)

THE MEDICAL SOCIETY OF THE STATE OF NEW YORK.

One Hundred and Eleventh Annual Meeting, Held at Utica, April 24, 25, and 26, 1917.

The President, Dr. Martin B. Tinker, Ithaca, in the Chair.

(Concluded from Volume CV, page 957.)

Treatment of Syphilis of the Brain and Cord by Subdural Injections of Salvarsanized Mercurialized Serum.—Dr. S. T. Nicholson, of Clifton Springs, stated that of fourteen patients with syphilitic infection of the central nervous system treated by subdural injections of salvarsanized mercurialized serum, nine with tabes dorsalis showed marked improvement. Two paretics did not do well, but two cases diagnosed as cerebrospinal syphilis showed improvement, and a third patient discontinued treatment too early to permit conclusive observations. In reviewing these cases it was observed that the patients were loath to return for observation and treatment until the beneficial results, as evidenced by the laboratory findings, were as satisfactory as the functional improvement. Since the Treponema pallidum was demonstrated in paretic brains, a pathological classification of the nervous types of the disease had been made: 1, the interstitial type, also classified under cerebrospinal syphilis in which there was gummatous formation, meningitis luetica, and meningoarteritis; 2, the parenchymatous type previously known as parasyphilis, in which there was a destruction as well as irritation of the nervous elements; and a possible third type in which the lesions were vascular and the nervous disturbances were due to the changes in the circulatory system.

The most rapid results in functional recovery were obtained in the interstitial type, in which there was gumma formation. The tabetic cases, classified under the parenchymatous, responded well to treatment.

The methods of choice of intraspinal therapy were as follows: 1, the salvarsanized serum of Swift and

Ellis; 2, the Ogilvie method; 3, the Byrnes method, which was the basis of his report. Doctor Nicholson said that the results of the combined use of 1 and 3 had been very encouraging. However, salvarsan was not found in the blood an hour after injection. He had bled patients earlier and as Doctor Byrnes had reported originally, had noted in addition the beneficial effects of a mercurialized serum due to previous treatment of the patients by general mercurial therapy. He preferred to inject mercurialized salvarsanized serum intraspinally primarily because the treatment might be adjusted to the individual case. The mercurialized serum was a stable product and might be used at any time. Two years' experience with the Byrnes method led him to feel that it should not be discarded until some other therapeutic agent was discovered which would possess many added advantages. Pain, muscular spasms, nervousness, headache, ataxia, and reduced or lost sphincter control had all been relieved fully or partially, but by far the most important result was the possibility of restoration of some of the patients to their active pursuits of life.

Dr. MALCOLM S. WOODBURY, of Clifton Springs, said that treatment by the Byrnes method had never produced any severe reactions. He had known of instances in which quite severe reactions had followed the subdural use of medicaments. Surgical treatment should not be disregarded and all these patients should have the benefit of a treatment of this kind. He had not had good results in treating paretic patients, but the treatment of cerebrospinal syphilis gave very encouraging results.

Dr. HENRY L. WINTERS, of Cornwall, stated that in his experience in treating cerebrospinal syphilis and other conditions of the nervous system he had not used the mercurialized serum. His experience had been somewhat similar to Doctor Nicholson's. Good results were obtained in the active syphilitic processes. He had been able to arrest the progress of the disease in seventy-five per cent. of thirty patients whom he had treated in that way. In early tabes cases he had not been so successful.

Symptomatology of Peptic Ulcer.—Dr. GEORGE R. LOCKWOOD, of New York, said that various tests —the string test, the x ray, the gastric analysis, and laboratory reports—were often resorted to to save time and to avoid the proper clinical examination. The x ray was of tremendous value, but it had its limitations. In duodenal ulcer it was disappointing and he was inclined to discard its evidence. The string test was unreliable. Gastric analysis might or might not be of help. A double test should be used, one for the empty stomach in the early morning for hypersecretion, and a test breakfast for hyperacidity. Hyperacidity as shown by charts was not necessarily a sign of ulcer, for in chronic ulcer fifty per cent. of gastric secretions were normally acid. The general characteristics of ulcer were the regularity of hunger pains and the relief after eating. Differential diagnosis between ulcer and chronic appendicitis in which this symptom was also prominent, could be made by careful charting of the regularity of these pains before breakfast, lunch, dinner, and bed, and the time of relief by food; it would be found in the long run that pains in chronic appendicitis varied from the clocklike regularity of those in ulcer; pain overlapped a meal, or lasted all day. A confusing point was that in late ulcer there was continuous pain with vomiting of sour acid fluid. This was, however, characteristic of ulcer. The diagnosis was not easy to make; it required time, patience, and careful checking up by laboratory data. Only operation made the diagnosis certain and final, and even then the question was frequently opened by the pathologist's report.

Practical Pathology of Peptic Ulcer.—Dr. JAMES EWING, of New York, said that opinions regarding the frequency with which cancer developed on ulcer of the stomach varied from five to seventy per cent. This discrepancy suggested that the criteria of this condition were not clearly recognized or employed in diagnosis. Statistical, clinical, anatomical, and microscopical data bore upon this problem. Statistics showed that healed ulcers were common at autopsy; that the chief age of incidence of ulcer was between twenty and thirty years, that of cancer between fifty and sixty years; that of ulcer was much more common in females and cancer was more frequent in males; and that the common sites of ulcer and cancer were not identical. Clinical observations showed that a history of ulcer long preceded cancer in the typical cases; that cancer had followed gastroenterostomy for ulcer no more frequently than after resection of the ulcer; that about two per cent. of ulcers long treated medically developed into cancer. The anatomical appearance of undoubted cases of ulcer carcinoma had usually been characteristic, the cancer beginning at one point of the ulcer and leaving the base free. Microscopically there were a moderate number of cases of chronic ulcer which showed suspicious precancerous changes, but these might not be safely regarded as equivalent to cancer. The great majority of chronic ulcers were free from such changes.

X Ray in Peptic Ulcer.—Dr. L. G. COLE, of New York, said that he had long felt that the ascending portion of the stomach had characteristics altogether of stomach, and not of duodenum. Osler's observation corroborated this. He therefore referred to peptic ulcers as being prepyloric or postpyloric, the latter being beyond the sphincter. Morphologically the disease was surrounded by an area of induration and might go down to the muscular coat or farther. That region of the stomach was rendered less pliable as a result and cicatricial contractions or adhesions might be associated with it. He believed that a small, early ulcer could be diagnosed as accurately by serial röntgenology as a fracture of the long bones could be discovered by a single röntgenogram. He showed slides showing the deformity of the cap of the stomach, cicatricial contraction, burrowing ulcer, and small healed ulcer.

Medical Treatment of Peptic Ulcer.—Dr. LUDWIG KAST, of New York, said that the selection of patients for surgical or medical treatment was important. Patients with perforated ulcers and those having repeated serious hemorrhages should be operated upon after delay. "Surgical as soon as feasible" were patients with chronic ulcers, needing preparatory, rigid, medical treatment, those with indurated ulcers, those penetrating ulcers and hour glass contractions, and those suspected of malignancy should be operated upon as soon as feasible. Borderline cases were those where there were no facilities for medical treatment, and neurasthenic cases, particularly those dependent upon anodynes. Surgical cases were all improved by medical preparation. Medical treatment was directed chiefly toward reducing gastric secretion and neutralizing hydrochloric acid as far as possible. The work of Rosenow made it highly probable that peridental infections, and tonsillar, and appendicular infections might be etiological factors. Important points in the treatment were the covering and protecting of the ulcerated surface by use of bismuth, giving of acid binding foods, giving of alkalies; checking of gastric secretion, by proper arrangement of diet avoidance of foods that stimulate gastric secretion. If the patient was still dependent upon a restricted diet after several weeks of medical treatment, surgery should be resorted to.

Surgical Treatment of Peptic Ulcer.—Dr. J. B. Deaver, of Philadelphia, included under peptic ulcer, gastric, duodenal marginal, and jejunal. Jejunal ulcer could occur only as a distinct pathological entity, although it was more commonly met with as a sequel to gastroenterostomy. Gastric and duodenal ulcers comprised two varieties, perforative and nonperforative.

Focal infection no doubt played an important part in the etiology. Gastric ulcers were often secondary to chronic appendicular infections. In the treatment of peptic ulcer the surgeon and the bacteriologist had done very much. It was undoubtedly true that strains of streptococci had a selective action for the tissue of the stomach and duodenum; a metastatic infection was often dangerous. Excision of the ulcer was the best safeguard against carcinomatous degeneration. Gastroenterostomy, although not so efficacious as pylorectomy, should be advised when obstruction was present. The diagnostic symptom of duodenal ulcer was the board like rigidity of the abdomen. The so called internist should be called externist, as he never went into the abdomen until the post mortem, and then he had someone else do it for him.

Dr. Fenton B. Turck, of New York, said that one great point made by Doctor Deaver was the etiological rôle of bacteriology in gastric ulcer. Recent advances led most surgeons to agree that the conditions were of bacterial origin. He had left the surgical field to go into experimental work and had spent twenty-five years in the laboratory. He had found that bacteria penetrated into the intestinal wall and passed into the pyloric region, and had produced thirty-six cases of ulcer experimentally. The injection of bacteria from teeth and tonsils into the blood did not cause infection; it was an autolysis, but not an infection. Peptic ulcer was not produced in that way. In his experiments he had fed the animal with beef and fatty acids and had caused migration of bacteria into the intestinal walls. They passed into the submucous membrane and increased ferments in the pylorus and caused autolysis.

The surgeon knew how to treat these cases because he saw the conditions. There was no recurrence after suture of the perforation because immunity was produced by the intestinal flora and an autovaccination took place.

Dr. Leon T. Lewald, of New York, said that the consideration of syphilis of the stomach had been omitted in the discussion of differential diagnosis. The surgeon should not operate in cases which were a distinct clinical entity. In syphilis of the stomach there was a cicatrization causing pyloric stenosis. The following findings, which were as definite as those of carcinoma, were characteristic: The esophagus was generally found dilated; the calibre of the stomach was very much reduced, and the ordinary quantity of food could not be taken into the stomach, consequently there was regurgitation; and there was a lack of hydrochloric acid and very little secretion because the stomach as a rule emptied very rapidly. Surgeons had resected stomachs that they supposed were carcinomatous, and yet they were proved to be syphilitic by microscopical examination. He had followed up gastroenterostomy cases and had gone to many operations to see the nature of the pathological process, and in only one case had he seen definite carcinomatous change following ulcer. The symptoms in some cases were due to gastric hernia.

Dr. William Skinner, of Geneva, stated that in diagnosing gastric ulcer, slight palpation disclosed a peculiar kind of rigidity over the location of the ulcer. In regard to the treatment of gastric ulcers by posterior gastrojejunostomy, he had had an interesting case in which there was a history of ulcer for twenty-one years. A gastrojejunostomy was done with relief of symptoms for six years, then there was a severe hemorrhage, and a pylorectomy was done. The ulcer had been eating out on one side and healing on the other. After the pylorectomy the patient was well for two years, then had another hemorrhage. An ulcer was found on the anterior wall of the stomach, was excised, and sutured from the inside and the gastrojejunostomy enlarged. The man recovered.

Dr. Alfred W. Armstrong, of Canandaigua, said that he had had a case of perforation of the stomach about the size of the little finger. It allowed the dinner to escape, and about three hours after the meal he sutured up the opening. The patient had a hemorrhage two months later. Two years later he had a posterior jejunostomy, and the symptoms were relieved.

Doctor Hirsch, of New York, stated it was not true that every ulcer should be excised; if it was, the diagnosis would be simplified. It would be sufficient from the radiographer's viewpoint to determine the pathological condition; whether ulcer or carcinoma was not important. But not all surgeons agreed with Doctor Deaver. They wanted to know whether it was early carcinoma or not. Consequently the question of diagnosis was extremely difficult. The x ray had done far more than stomach tubes or string tests, but the plates presented by Doctor Cole were not conclusive on that particular point. Some areas had been called carcinomatous degeneration. Carefully differentiated diagnosis could not be made on morphological evidence. Erosion did not change the stomach sufficiently and functional changes must be considered in ulcer cases. The diagnosis of cancer was not simple on morphological grounds.

Doctor LEVY, of New York, said that infection as an etiological factor was probable, but it was not proved. Thalhimer and others at Mt. Sinai had tried to prove Rosenow's conclusions, but had not been able to do so. Bacteria would occur on any ulcerated surface. The ulcer was not a primary condition, but a secondary. In regard to the x ray, he had seen a chronic ulcer diagnosed as chronic appendicitis on the x ray findings. A simple examination showed the man had a penetrating ulcer which was overlooked. Doctor Cole's plates showed marked indurating ulcer, but he did not see early ulcer. Superficial ulcer could not be shown because one could not make the bismuth adhere long enough to get a shadow. He did not feel that surgeons, outside of Philadelphia, had demonstrated that surgery was the best treatment.

Doctor COLE, in closing on his part, said that Röntgen ray diagnosis would result in fewer failures. In one case he had begged for a surgical procedure, although the man had but few symptoms. Finally the ulcer perforated and an emergency operation was necessary. In regard to malignancy, the statistics could be collected only after a long period of years to determine what percentage became malignant.

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Letters to the Editors

TAKE YOUR OWN MEASURE.

PHILADELPHIA, *July 21, 1917.*

To the Editors:

The first step in the conservation of one's own powers is to take account candidly of personal stock. No man in any line of endeavor can do justice to his own capabilities and proficiencies until he has set down the items, assets and liabilities, one over against the other. I have long urged patients thus to take a survey of themselves and find it of practical advantage as a point of departure, a new start on the road to "Oneselfville." Recently I had occasion to confer with a number of capable, energetic, and patriotic medical colleagues determined to offer their services to the government, who for one or other reason could not get a regular commission. The question was, what could each one do; what particular form or kind or degree of service could each one offer? Every one of them had achieved more or less distinction as a specialist or through large and well digested and winnowed experience. Of course, some of these overelaborated proficiencies would be of little or no immediate or direct availability in military or naval service, yet there was much that each one had over and above this; also many of these trained aptitudes were capable of being transformed and transmitted within or along the needed lines.

I recommended that each man should frankly write out at length a sort of professional confession—"*confessio medicis*"—candidly set in orderly fashion a grouping of his tastes, facilities, experiences, his successes in meeting confusing exigencies, what particular attention or courses of study has been devoted to these trends and aptitudes, then to summarize the assets and liabilities, as a series of debits and credits. Of course, in rendering a report to the government only those outstanding points need be stated which bear directly on the question of military service; the rest is for home consumption. When you come to think about it, how vastly better it would be for us and for our clients if we would undertake only that which we felt confident in the doing well and if we would decline what we knew we were lame at performing! To be sure, this the successful man decides to do soon or late. The time will come when these gradations will be more feasible and more welcomed.

In offering mature medical services to the government, much of which must be partly gratuitous or voluntary, there is much to be said in favor of this scheme. It is fundamentally sound in principle. Whether it will be so regarded as acceptable by the surgeons general United States Army and Navy remains to be seen. Meanwhile I commend this means of enhancing pragmatic personal assessments of professional abilities to the readers of the NEW YORK MEDICAL JOURNAL. It seems to me that every capable practitioner who has won his spurs, or is close to the winning of his accolade, and who begins to be sure of what he wishes to continue doing and what he desires earnestly to avoid being compelled to do, should make such an economic survey of his own parts and powers, and to revise at regular intervals.

J. MADISON TAYLOR, M. D.

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Book Reviews

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

The Treatment of Tabetic Ataxia by Means of Systematic Exercise. By Dr. H. S. FRENKEL, Medical Superintendent of the Sanatorium Freihof in Heiden, Switzerland. Second Revised and Enlarged English Edition. By J. FREYBERGER, J. P., M. D. (Vienna), M. R. C. P. (London), M. R. C. S. (England); Barrister-at-Law of the Middle Temple; Toxicologist, and one of the Pathologists selected for London Inquest Purposes; Pathologist to the Great Northern Central Hospital, etc. With 130 Illustrations. Philadelphia: P. Blakiston's Son & Co., 1917. Pp. xv-209. Price, $3.

As we turn over the pages of this valuable little book, we are pained to note that Doctor Frenkel's admirable work has not been given an English presentation worthy of it. Typographical errors abound, in fact, the book practically begins with one (see the third word on the first page). Others noted at random are on page 52, line 2; page 68, line 1; page 171, last line. The English, too, is faulty; the wrong preposition is frequently used; the subjunctive is mistreated; commas are omitted, and grammatical errors are found. Clumsy expressions are common, e. g., "the spinal column looked like kinked," page 51; "very suitable nervine sedative," page 204. Usages with which many readers will be found to quarrel are seen; throughout, the spelling "shews" is used, such words as "internally," "hypodermically," and "intramuscularly" are sometimes capitalized, sometimes not. The part of the book devoted to the medical treatment has apparently been added by the translator and is of little value, being hardly more than a list of drugs, mostly German proprietary compounds. An effort is made to describe a treatment for the opium habit in 300 words; it is of course totally inadequate. The inconsistency of admitting the universal luetic etiology of tabes in the preface and denying it in the text is observed. The Frenkel exercises themselves are invaluable, they are painstakingly described, and the illustrations are admirable. Two great advantages of them are that they can be carried out in a private home and a minimum amount of apparatus is necessary. The neurologist and general practitioner can not afford to be without it.

Rest, Suggestion, and Other Therapeutic Measures in Nervous and Mental Diseases. By FRANCIS X. DERCUM, A. M., M. D., Ph. D., Professor of Nervous and Mental Diseases in the Jefferson Medical College, Philadelphia; Ex-President of the American Neurological Association, of the Philadelphia Neurological Society, and of the Philadelphia Psychiatric Society; Foreign Corresponding Member of the Neurological Society of Paris, etc. Second Edition. Philadelphia: P. Blakiston's Son & Co. 1917. Pp. ix-395. Price, $3.50.

This book is a reprint of a volume written for the *System of Physiologic Therapeutics*, edited by Dr. S. Solis-Cohen and published in 1903. Naturally much revision has been necessary. Under Suggestion by Magic and Mystic Practices the author makes a vitriolic attack on psychanalysis. His attitude toward the whole mental problem is static rather than dynamic: he believes in sterilization and isolation. The book is a large one and has several very interesting features.

After Office Hours

The *Medical Pickwick* for August is full of good things, as usual. The Spinal Column is especially bright. See the triangle and Damaged Goods.

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The Five Senses are five delightful baby pictures in the *Pictorial Review* for August. They will appeal to everyone who has a baby in the home, and everyone has one—or wishes that he had.

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The *Outlook* for July 18th contains the following information about the best selling novelist, Harold Bell Wright: "When he began to write novels, he went West for his health." Evidently his home town was not without literary acumen.

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The *Midweek Pictorial* of the New York *Times* for July 19th gives a page to pictures of "war chiefs." Among them we are gratified to note Dr. Joseph Blake, chief of the new American Red Cross Hospital in Paris. Another recognition of the importance of the medical arm of the service.

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The *Ladies' Home Journal* has inaugurated a Red Cross Department, edited by ex-President Taft. The August issue fills an entire page with information about the activities of this organization. Many questions of readers about features of the Red Cross work are printed, together with the answers This magazine also contains a real poem, The Madonna of the Curb, by Christopher Morley.

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The story of how the Red Cross was put on a war basis is well told by Elizabeth Frazer in the *Saturday Evening Post* for July 14th and July 21st. How many organizations, all imbued with the noble desire of being of service to the suffering and necessarily pulling different ways, were gradually drawn together under one head, is told by this writer in a way interesting to physicians and laymen alike.

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Leslie's for June 28th is a Red Cross number. First, there is a big red cross on the cover, seated on the arms of which, in an extremely natural pose with their backs to each other, are a beautiful nurse doing something with a bandage roll, which varies in width from place to place along its length, and a handsome gentleman whom we know to be a doctor on account of his Van Dyke beard: he is pouring something from a green graduate into a blue bottle. If he really poured from the graduate as he is holding it, the fluid would run down the side of the bottle, but let us not be hypercritical. We think it is a lovely picture, especially the nurse's shoes. The leading editorials in this number are stirring appeals for the Red Cross and there are also several articles dealing with the activities of this organization. The pictures are very good; especially interesting is the one showing a ward in the Civil War Hospital at Georgetown, D. C. The large, wooden beds, the elaborately carved chandeliers, the hoop skirted volunteer nurses, all transport us back to the days when all abdominal wounds were fatal, when Sherman marched to the sea, and when Lee's ragged army drove the Northern hosts back into Pennsylvania.

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Official News

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending July 18, 1917:

CARSON, H. B., Sanitary Chemist. Directed to proceed to Chicago, Ill., on special temporary duty.

ESKEY, C. R., Assistant Surgeon. Relieved from duty at Ellis Island, N. Y., effective June 30, 1917, and directed to continue on special temporary duty at El Paso, Tex.

FRANK, L. C., Sanitary Engineer. Directed to proceed to Chillicothe, Ohio, on special temporary duty.

PHELPS, E. B., Professor. Directed to proceed to Chicago and other places in Illinois, Indiana, and Ohio, on special temporary duty.

PIERCE, C. C., Senior Surgeon. Relieved from duty at San Francisco, Cal., effective June 30, 1917, and directed to continue on special temporary duty at Little Rock, Ark.

PREBLE, P., Passed Assistant Surgeon. Directed to proceed to Des Moines, Ia., on special temporary duty.

STIMSON, A. M., Surgeon. Relieved from duty at the Hygienic Laboratory, Washington, D. C.; directed to proceed under orders from the Navy Department to Newport, R. I.

STREETER, H. W., Sanitary Engineer. Directed to proceed to Des Moines, Ia., on special temporary duty.

WHITE, J. H., Senior Surgeon. Under executive order dated April 3, 1917, and at the request of the Secretary of War, ordered to report to the Surgeon General of the Army, for special duty.

Appointments.

Dr. Edwin Howard Settle and Dr. Harry Evans Trimble appointed and commissioned as assistant surgeons from date of oath.

Boards Convened.

Boards of medical officers convened for the physical examination of certain officers of the Coast Guard to ascertain their fitness for promotion, on July 17, 1917, as follows: Marine Hospital, Key West, Fla. Detail for the board: Surgeon G. M. Guiteras, chairman; Assistant Surgeon Charles Armstrong, recorder. Ellis Island, N. Y. Detail for the board: Surgeon F. C. Smith, chairman; Assistant Surgeon T. B. H. Anderson, recorder.

The following officers of the Public Health Service have been designated as members of Coast Guard retiring boards: At Government Hospital for the Insane, July 12, 1917: Surgeons H. S. Cumming and Carroll Fox. At Marine Hospital, Baltimore, Md., July 16, 1917: Surgeon C. W. Vogel and Assistant Surgeon E. W. Scott. At Marine Hospital, Stapleton, N. Y., July 12, 1917: Surgeons M. K. Gwyn and A. D. Foster. At Marine Hospital, Port Townsend, Wash., July 17, 1917: Passed Assistant Surgeons B. H. Earle and Hugh de Valin.

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Births, Marriages, and Deaths

Married.

MCATEE-CALLAHAN.—In Omaha, Neb., on Tuesday, July 10th, Dr. John S. McAtee, of Council Bluffs, Ia., and Miss Marie Callahan.

MCHUGH-BARNES.—In Uniontown, Pa., on Tuesday, July 10th, Dr. William A. McHugh, Jr., and Miss Gwendolyn Barnes.

Died.

BACHELDER.—In Rockland, Me., on Tuesday, July 10th, Dr. Lucien F. Bachelder, aged eighty-one years.

BAYNUM.—In Dexter, Me., on Saturday, July 14th, Dr. Mary H. Baynum.

CONVERSE.—In Eastford, Conn., on Monday, July 9th, Dr. Harvey H. Converse, aged seventy-one years.

EBRIGHT.—In Sharon Center, Ohio, on Tuesday, July 10th, Dr. Leonidas S. Ebright, aged seventy-two years.

FARROW.—In Visalia, Cal., on Friday, July 6th, Dr. Edwin D. Farrow.

GINN.—In Dayton, Ohio, on Friday, July 13th, Dr. Charles M. Ginn, aged forty-one years.

HALL.—In Wells, Me., on Wednesday, July 11th, Dr. Jeremiah G. Hall, aged eighty-two years.

JOHNSON.—In New Hope, Ala., on Monday, July 9th, Dr. Harry R. Johnson, aged fifty-five years.

MARRERO.—In Covington, La., on Friday, July 13th, Dr. F. G. Marrero, aged sixty-two years.

MAYBERRY.—In South Weymouth, Mass., on Saturday, July 14th, Dr. Edwin N. Mayberry, aged sixty-one years.

NULL.—In New Haven, Ind., on Sunday, July 8th, Dr. Lycurgus S. Null, aged seventy-six years.

SCOTT.—In Pleasantville, Ia., on Saturday, July 7th, Dr. William A. Scott, aged eighty-five years.

WETMORE.—In Mexico, N. Y., on Tuesday, June 19th, Dr. Warren L. Wetmore, aged forty-eight years.

YOUNG.—In Newark, N. J., on Saturday, July 14th, Dr. Charles Young, aged seventy-five years.

YOUNG.—In Indianapolis, Ind., on Tuesday, July 10th, Dr. Michael A. Young, aged fifty-nine years.

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Original Communications

THE PRIMITIVE MEDICINE MAN'S VIRTUES.

His Knowledge and His Faith in Himself.

BY JONATHAN WRIGHT, M. D.,
Pleasantville, N. Y.

The mercenary nature and the evil which have been attributed to the physician of primitive man have been alluded to in former papers. The ample space the subject requires in order to display all sides of his character is not here at my disposal. I should, however, feel that I had done injustice to our predecessors in the practice of medicine did I not attempt to set forth some material to counterweigh the selfish aims and the evil practices with which to a large degree the papers referred to were concerned. The tendency of the medical man when he speaks in public is perhaps one which drifts easily into a rather fulsome laudation of the profession to which he belongs but he no longer intrudes the estimation he may hold of his personal merits offensively on his fellowmen. There are sometimes differences of opinion in individual cases as to this, but the lack of charity and the cherishing of envy on the part of critics are as often responsible for it, as the offense itself, which in its primitive nakedness is seen in a tale of the red men. Catlin (1) tells a story of a Sioux or Mandan medicine man who had successfully treated a case in his practice and to the gratification of the friends had brought the patient to recovery. He then clambered through the smoke hole at the top of his tepee and harangued the village on the virtue which resided in him and his herbs. Grandiloquent and even eloquent his discourse describing his skill echoed over the surrounding prairies and murmurs of assent and admiration arose from his auditors.

The evil the primitive physician does and the motives which lead him or drive him to it having been to some extent alluded to in the preceding papers, I hasten therefore to say something in defense of the sorcerer and the witch doctor—the medicine man of primitive people. I shall not pause to point out the different categories into which his activities may be divided or the different specialties he practises in his native wilds.

The student of the budding social organization, which is almost the first outward mark man shows of his turning away from the brutes, quickly realizes that the first incentives to weld together units larger than the family are fear and superstition. It is with both that the historian of the evolution of medicine is chiefly concerned. We no longer live in fear of sorcery and witchcraft, of ghosts wafted through the air, or of demons crowded in every space around us, ready through envy to snatch the living away from life or eager from mere deviltry to carry their malice into the vital organs of man; even poison is no longer a thing for us to dread. We no longer live in terror of these things; it is no longer the function of the doctor to allay the fears of patients shuddering at the thought of the spirits of the dead hovering around him. But we shall find the influence of the family doctor upon the Congo, as doubtless in Babylon and Nineveh, where the priestly function usurped the doctor's art, since it dealt so exclusively in warding off devils and demons of disease, beneficent in soothing the terrors of the sickbed by methods appealing as strongly on the Congo to the Congolese as on the Hudson, the Thames, and the Rhine. Were he not human like his patients he would doubtless lose this influence. We have no cause to complain then if he also exhibits failings common to his fellowmen, primitive or civilized. On the Congo "the life of the native, surrounded as he is by all these various spirits, would be intolerable, unthinkably so, were it not for his many witch doctors, who have power to control the spirits, and even kill them, and his many charms that protect him from their many malignant designs, or enlist their power on behalf of the wearers and users of them" (2). What we are ready to vouchsafe to our own family doctor in the way of the comfort he brings we must not refuse to the wizard of the Congo.

I mean to enter an earnest protest against the answer given by the Reverend Mr. Weeks: "I am disposed to think that the witch doctors are largely responsible for the creation of these various spirits to account for their numerous failures in warding off sickness and death.". We modern doctors know how quickly our practice leaves us if we seek more than to reflect in our therapeutics the popular beliefs around us. "What! Expose that poor sick consumptive to the air! Send for Doctor Commontalk," and thirty years later, "What! Shut that poor tuberculous victim in that stuffy room! Send for Doctor Freshairfad!" Every age has its fools, but woe to the doctor who breaks away from them! Yet there is this to say in support of Mr. Weeks.

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The doctor's present talk of the tubercle bacillus and his talk of cancer is a sort of revelation of what the witch doctor may have accomplished by drawing the attention of the hectic savage to the rustle of demons in the leaves over his campfire, the thunder rolling in the heavens, and the quaking earth beneath his feet. His opportunities were doubtless larger but his lineal descendant is not to be despised. The testimony, however, is for the most part against Mr. Weeks, which will appear as we proceed, when it will be seen that witch beliefs and witch doctors stood in the same relationship to one another as in the answer to the widely known conundrum of the hen and the egg. Without stopping just now to puzzle over which originated the other I will attempt to marshal the opinions as to the origin of the witch doctor, having already shown how witch doctrine had its origin in and was part of the pantheistic beliefs of primitive man.

Theology, law, medicine in their practical beginning had to lean on the superstitious fears of the savage. For mutual protection their devotees later entered into a close copartnership, around whose place of business, the shrine, was drawn a veil of mystery lifted no more than necessary even for the initiated. At first it was frequently the case that the functions of the priest, the ruler or chief, and the doctor were all combined in one person. We must keep in mind how out of magic sprang theology, law, medicine. The priest, the king, the doctor necessarily became differentiated as facts were discovered which brought about irreconcilable differences between the three orders of social life. The process of the formation of the priesthood into a class apart among primitive men has as a rule escaped careful investigation. "The progress seems to be that at first all men were, in this respect at least, alike. After a while some became more celebrated than others as sorcerers and diviners. Those persons gradually associated themselves into a special class or caste and assumed also the functions of doctors and priests. These qualities by degrees assumed more and more importance. It is, therefore, in some cases difficult to say whether the 'medicine men' or 'mystery men' are doctors or priests" (3). "As soon as men began to live in villages, or in scattered hamlets under the control, more or less, of the older and shrewder men there seems to have been always a great development of magic as of other arts. How were these older and weaker men to keep the vigorous youngsters in due control? By cunning, by playing on their fear of ghosts, of things of darkness, and of queer shiny creatures—associated with snakes. There were, as we have seen, distinct religious instincts quite as far back as we could expect to find any evidence of them, also, at a very early date a knowledge of vegetable poisons existed" (4).

Frazer (5) declares that the kingship of the most ancient civilizations known to us, Peru, Egypt, China, Japan, "seems to have originated in the order of public magicians or medicine men. . . . The men who for one reason or another, because of the strength or the weakness of their natural parts, were supposed to possess these magical powers in the highest degree, were gradually marked off from their fellows and became a separate class who were destined to exercise a most far reaching influence on the political, religious and intellectual evolution of mankind. . . . Magicians or medicine men appear to constitute the oldest artificial or professional class in the evolution of society. . . . As time goes on, and the process of differentiation continues, the order of medicine men is itself divided into such classes as the healers of diseases, the makers of rain, etc.; while the most powerful member of the order wins for himself a position as chief and gradually develops into a sacred king, his old magical functions falling more and more into the background and being exchanged for priestly or even divine duties."

In social organization the king, the priest, and the physician play their indispensable rôles and their common origin in the sorcerer is frequently apparent. Men must be controlled or society cannot evolve, and until man has learned to control himself, one element in his selfmastery being knowledge, he must be controlled chiefly by his fears, mental or bodily. "So far, therefore, as the public profession of magic has been one of the roads by which the ablest men have passed to supreme power, it has contributed to emancipate mankind from the thraldom of tradition and to elevate them into a larger, freer life with a broader outlook on the world. This is no small service rendered to humanity. And when we remember further that in another direction magic has paved the way for science, we are forced to admit that if the black art has done much evil, it has also been the source of much good; that if it is the child of error, it has yet been the mother of freedom and truth" (5). It may seem that Mr. Frazer has suffused the dark picture with rather a rosy hue, but there is great force in his view. The path upward has not been entirely or chiefly established by the aid of things ethical. It has been over supports resting upon the weaknesses and the sins as well as upon the strength and the virtues of mankind. Not much of it has led through a rose garden filled with the odors of sanctity, but through sorrow and sin and suffering man has reached his high estate, and there is plenty of this swamp land still around us.

This possession of supposed supernatural powers of course gave to the individual among primitive men vastly higher standing than the possession of special or even exceptional and exclusive knowledge does among us. When to this spiritual and mental equipment is added personal magnetism and striking appearance the man indeed is apt to rise above his fellows in any epoch of social evolution. The handsome face and figure has been the start of many a successful practitioner, and later supplemented by a dignified mien and an imposing vehicle, with ordinary common sense and industry and even knowledge below the average his worldly standing is assured. The following seems to be a primitive counterfeit of the recent gold headed cane, which two or three generations ago was the baton of office of many a prosperous practitioner of middle age—the outer symbol of an inner divinity which inspires acts that must save the patient's life and thus excite his reverence and love. Of the Island of Aneityum in the New Hebrides Turner (6) relates: "Among other things there was brought to me in 1859 a smooth old stick of ironwood, somewhat longer and thicker than an ordinary walking cane. It had served here for years in the family of one belonging to the guild of disease makers; it was regarded as the representation of God and was taken by the priest every time he went to visit a patient. The eyes of the poor patient glistened at the sight of the stick. Everything the priest did, was, for the most part, that he sat before the patient leaning upon this stick, spoke to him a short time and told him he had nothing more to fear, and that he might count on his recovery." On the Congo (7) he relied on the originality of his deportment. "When he appears in public he walks on his hands with his body straight and his feet in the air. He can walk in this manner through constant practice with great ease and rapidity. He is the medicine man or fetich doctor." With the advent of the medicine bag and the gold headed cane, of course this impressive practice had to be abandoned, but the awe and apprehension with which the modern child and the red skin of our plains looked upon the medicine bag and the joy of the ladies and of the Pacific Islander in the cane made them not bad substitutes. Idiosyncrasies of the doctor have in the course of time become less accentuated, very much so in the last generation or two, but they once made a marked man of him, and they had their very good reasons. As the doctor has gradually evolved as a social phenomenon in the course of thousands of years of experience, these tricks by which he has been able to excite the wonder of his patients have become more and more futile and he has dropped them one by one although the remnants are still occasionally seen.

Demonstration of the possession of mysterious power is in every form the best bid for a degree and a seat amidst the revered of men. Handling red hot iron, swallowing knives, chisels, needles without harm, the conjurer's tricks properly set forth, so as to create an atmosphere of reverence rather than one of curiosity or hilarity, placed a man on the high road to fortune in the art of healing and divination. The chief object, which indeed is inherent in all, seems to have been to mystify the patient and his friends, whether it was in Dakota or in the Malay Archipelago (8). One of the stories current in Australia, told by the medicine man, is that he became a medicine man through being caught by spirits or wizards, disembowelled, and stuffed with grass. Suddenly recovered through some magic from this trying ordeal, he naturally claimed distinction, but why he thus attained power to heal does not at once appear. There is doubtless something very comforting to the practitioner to feel that he is wonderfully and fearfully made and different from the common run, but to have people believe that your insides are different in this radical way is surely enough to make us regret old times. Fasting when one can have food, celibacy when one can appease sexual appetites, must have produced an immense impression on the savage accustomed to satisfying every animal appetite; the life of a hermit when he could live with his fellows, all these things were brought into play as religious systems developed because of the moral effect they had on the multitude, and they were not missed by the primitive priest doctor. Let us by no means have any uncharitable feelings toward this pretense in men, surrounded on all sides by dangers innumerable which only their superior cunning could avert. Then much more than now, the fierce struggle for existende was a veritable matter of life and death. It was quite impossible in a state of society so near the beginning of things, before vested rights of blood and property prevailed, for any individual to maintain the preponderating influence noted of the physician of primitive man thus far, unless he was endowed with more than the average agility of mind. Whatever might be the ignorance and superstition of his comrades he must be constantly on the alert to protect his reputation and maintain his influence over them. When the individual, whom Catlin (1) remarked vaunting the triumph of his skill from the tepee top when the vis medicina had been kind to his patient and him, finds fortune desert him and his patient dies, he is indeed fortunate if he can satisfy his audience "by assuring them that it was the will of the Great Spirit that his patient should die."

The Reverend J. Jetté (9) relates an amusing instance of the dexterity with which the witch doctor of the Ten'a increases his popularity. After great exertions on his part have resulted in his securing the evil spirit which has been causing the patient's illness the shaman "asks the bystanders if they, to save the patient's life, will give it a harbor in their own body, and they refusing, the shaman sacrifices himself by incorporating it and thus acquires reputation." On the Niger, Major Leonard (10) declares that though half believing in their own pretensions "these wily go betweens, possessing as they do a greater share of intelligent subtlety, are quite capable of practising every wile or stratagem in the art of deception that is possible to them." A more charitable observer (11) of man in these same regions says: "As absurd as these practices of the witch doctor may seem, it is nevertheless a fact that many of these doctors possess an intelligent knowledge of the pathology of diseases, and use a variety of efficacious remedies, of which some are taken by white residents for fever, while others have come into general use throughout the civilized world. To be sure, the African doctors often grope in the dark, but they are guided by the same motive as the real man of science and apply to their cases the same methods of investigation that were common at one time to every science. Medical science, as every other science, arises from a passion or curiosity born in mankind for whatever is strange, extraordinary or mysterious; and it is through this love for prying into obscure things that men invent theories, make experiments, watch results, and occasionally stumble upon some valuable truth. Let us therefore not be too severe upon the witch doctor."

Lumholz (12), speaking of the primitive tribes of Mexico, says all the priest doctors are conscientious; they fast and pray devoutly in compliance with the demands of the gods which impose restrictions and abstinences. They are called righteous and wise men, and their influence is great among their fellows. More than one observer of the medicine man in Africa intimates that as a class doctors and diviners are dreaded because they are believed to be dispensers of poison (10), and Miss Kingsley (13) rather pointedly charges those of her own sex with this propensity in West Africa, but on the whole she testifies to their good intentions and the benefits they actually accomplish. When all his fellowmen around him are unshakably imbued with superstitious fears, which to a large extent the medicine man shares, the beneficence of his ministrations can hardly fail to impress us, quite irrespective of the weird forms in which they are cast.

In *The Native Tribes of South Australia* (14) is a graphic account of an incident which strikes the civilized reader as dramatic and must have served greatly to awe and impress the natives of Australia with the powers of their medicine man in rendering himself invisible. It also illustrates the power of the imagination. In Australia the most serious misfortune a native can suffer is the loss of his kidney fat—even in imagination. A witness saw such a patient. A friend and a brother supported him in their arms and held up his head, when a sudden faintness overcame him. All around them the men took their places in three rows, the eldest in the inner circle, the youngest in the outer. The women quieted the dogs; a deathlike stillness reigned in the camp. A little fire in the loose bark, no flame being allowed to burst forth, was upon the right hand about three yards from the dying man, and at a distance of about 200 yards in the direction of the place where the fat had been taken from him there were laid, at short intervals, little pieces of bark which had been scaled off and which looked like huge fireflies upon the ground. A man watched the glowing sparks upon these pieces of bark but allowed no flame to spring up. A very skillful medicine man named Malcolm was called and began his work. He disappeared in the darkness and the branches cracked as he took his supposed flight through the trees toward heaven. Malcolm's voice was heard. "Goo, goo, goo" was the note which they heard through the still night and the man who held the body answered, "Goo, goo, goo!" Malcolm could not at once find the native who had stolen the kidney fat and he was, therefore, as the blacks believed, compelled to make a long flight. He was gone almost three quarters of an hour. As the rustle of the branches announced Malcolm's return, the old man who sat near the patient cried out, "Come, bring back the kidney fat. Make haste!" Every syllable was sounded and slowly and impressively spoken. Malcolm appeared and without speaking a word he seized the dying man and rubbed him vigorously, his attention being chiefly directed to the side of the poor man which he pitilessly struck and kicked. All at once he declared the cure successfully accomplished, and immediately thereupon the people cried out in joy. The patient rose up, lighted his pipe, and much pleased smoked in the midst of his friends. There was not a single black fellow who did not believe that the physician had actually flown through the air. Indeed many declared they had seen him when he had come back from such a flight with his body thickly covered with feathers. We see by this how much of charm medicine has lost in the course of civilization since the stage of primitive man. Such a brilliant and spectacular success as this rarely bathes the soul of the modern physician with that gratifying sense of a duty well accomplished.

In the Pacific Islands, as in Australia, their nefarious power to cause disease was a firmly established canon of native belief, yet when we soberly consider the relief experienced by the wild man who thought he had lost his kidney fat, we get some insight into something more than the dread these doctors excited. Evidence of the respect in which they are held is not lacking, but it is somewhat difficult always to take note of it. A hundred years and more ago Bosman (15) declared of the natives of the Guinea Coast: "Whatever the priest requires, the negroes freely part with; and he knows to what use to put it. If the patient shortly after recovers, either by virtue of Nature's kindly assistance, or the efficacy of the medicines administered, the priest or doctor is sure not to remain unrewarded; for, although Mr. William Godschalk Van Folkenbrog may pretend that when cured, the sight of the doctor and the devil are equally welcome to them, they on the contrary are very far from ingratitude on these occasions." Upon another continent, speaking of careful physicians among the red Indians Schoolcraft (16) says: "It is this class of practitioners who, by their care and devoted personal attention, are so generally useful. . . . We cannot doubt that they much mitigate the diseases and accidents of Indian life, and deserve to be regarded as benefactors to their race."

The Reverend Oswald Cockayne (17), in his voluminous work on magic in early England, with commendable wisdom says: "From the cradle modern Englishmen are taught to fight an angry battle against superstition, and they treat a talisman or a charm with some disdain and much contempt. But let us reflect that these playthings tended to quiet and reassure the patient, to calm his temper, and soothe his nerves; objects which, if we are not misinformed, the best practitioners of our own day willingly obtain by such means as are left them. Whether a wise physician will deprive a humble patient of his roll of magic words, or take from his neck the fairy stone, I do not know; but this is certain, that the Christian church of that early day and the medical science of the empire by no means refused the employment of these arts of healing, these balms of superstitious origin. The reader may enjoy his laugh at such devices, but let him remember that dread of death and wakeful anxiety must be hushed by some means, for they are very unfriendly to recovery from disease."

Returning to the Africans, Grout (18) says: "Doctor Salvado has observed that when a native has been under treatment by a medical man in a hospital or a private house, he has made no improvement, but when consigned to the care of his friends and taken to the bush, he has rapidly recovered. It is undoubtedly true that the modes of treatment adopted by Europeans are not, as a rule, successful, if the black be at all under the influence of his own people. In the first place, there is the feeling of loneliness; he is separated from his companions, and his spirits droop. Then the old superstitions are strong upon him. His hair, perhaps, has been cut, his old clothes taken away from him, and with them probably some valued possession on which his heart is set. He fears the white man, dreads his medicines, and shrinks from the outward applications which may, for aught he knows, be possessed of secret properties that will cause his destruction. He sighs for a return to his old friends and his old pursuits; and it is highly probable that he neglects every precaution that his medical attendant has enjoined as necessary for his recovery." It is always a little awkward to explain just why a person has a greater affection for others than for ourselves, but often the truth is bluntly stated.

Among the Cherokees, Powell (19) says: "The faith of the patient has much to do with his recovery, for the Indian has the same implicit confidence in the shaman that a child has in a more intelligent physician." In almost all districts in places round the house of a great doctor in Western Africa, according to Miss Kingsley (13), you will find the bush fairly studded with the little temporary huts of his patients. "You see, distinguished doctors everywhere are a little uppish, and so their patients have to come to them. Such doctors are usually specialists, noted for a cure of some particular disease, and often patients will come to such a man from towns and villages a week's journey or more away and then build their little shanties near his residence and remain there while undergoing a cure." In Australia (20) "the native doctors are, I think, everywhere much trusted by the blacks. They like their modes of cure, and they believe in them. A man with failing sight will gladly subject himself to treatment by a native doctor who, after some incantations and mummeries, will pretend to extract straws or pieces of wood from the eyes; and after these things are done the patient is supposed to recover, unless some stronger magician in another tribe has interfered injuriously with the doctor's operations." Among the Zulus Grout (18) remarks that the medicine man's answers are often ambiguous after the style of the ancient Delphian oracles: "He utters his oracular sayings with an air of the surest knowledge, and he speaks to a people who are only too glad to believe all he says. Thus we have a key to his reputation as one who is inspired and able to tell men the cause and cure for all the evils which they suffer." Again we hear from the modern missionary an attempt to attribute a strange reason to the medicine man's influence, but a modern physician will smile to himself as he thinks of something of the same nature he has today noticed in one of the consultants he has met. This is one of the trivial but eternal ear marks of human nature in the doctor, the judge, the professor, the priest.

Ellis (21) who has made a careful study of negro culture in West Africa makes these illuminating remarks about the doctor: "The medicine man is a prime factor in the equation of Vai morals. For the moral good or ill he is consulted in all important matters. When a child is born and the parents desire to know its fate or fortune they consult the medicine man, who claims to be able to tell them everything they wish to know. He demands his fee in advance, and sometimes he makes a lucky guess. More often he tells what proves to be untrue or puts in a condition which makes his prediction worthless. The medicine man knows that he does not know and cannot foretell the future of an individual; he knows that he is encouraging superstition and taxing ignorance, and for his fee he continues to perpetrate what he knows to be a fraud. In all these cases his moral influence is not for good. If one individual desires to injure another he goes to the medicine man to have him 'witched.' The medicine man takes his fee with the understanding that he is to do certain work. Very often he does nothing, but in some cases he secures death by directly or indirectly administering poison. In these instances his moral influence is bad because he encourages malice and revenge; but he reaches his lowest depths when he becomes a secret instrument for the commission of the foulest crimes. The medicine man unquestionably often has an immoral influence, and he is always careful to secure his fee in advance. But bad as the medicine man may seem and frequently is, yet he exerts some good and wholesome influences. For instance, in the case of theft, the belief which he has engendered that through his medicine he can detect the thief is a most effective deterrent from the commission of this crime. And because of this belief, and not because of any medicine, he is often able to pick out the thief through the aid of circumstances, and to render the greatest service to society and the state. As a result of his influence in these cases, his medicine hung up on a bush in a common rag causes many a thief to pass by what he might otherwise take without detection. In cases of infidelity of a wife the loyalty of many a woman is maintained merely because of the belief that the medicine man would be able to detect her infidelity by means of his medicine. He, therefore, is a strong influence not only against the infidelity of a wife but against all those evils and crimes that so often follow in its trail. His medicine allays the fears of the warrior and nerves the arm of him that is sent out in the service of his sovereign and his state. His medicine soothes the savage breast and saves it from the pains and pangs of fright and fear. In many ways the medicine man calms the troubled soul and gives peace to him who is besieged on every hand by wicked, invisible, and malignant spirits. He is a product of African conditions, he was created as the great support of native institutions; and, with all his faults, under present conditions he is indispensable to African life."

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(To be concluded.)

A BARIUMIZED TEST MEAL WITH COMBINED FLUOROSCOPIC AND CHEMICAL STUDY AS A MEANS OF RAPID PRELIMINARY STOMACH DIAGNOSIS.[*]

By G. W. McCaskey, A. M., M. D.,
Fort Wayne, Ind.,
Professor of Medicine, Indiana University Medical School.

The chemical processes of gastric digestion have been studied very minutely and extensively for a number of years, these studies being largely limited to the phenomena associated with the so called Ewald breakfast. This test meal, it is fully recognized, does not call out and therefore does not measure the reserve powers of gastric digestion and is consequently of somewhat limited value in the general field of gastric diagnosis. Such an enormous literature has, however, been built upon its widespread clinical use that it must be regarded as of decided value for comparative purposes, while fully realizing its limitations. It is undoubtedly true that an average normal stomach will usually behave in a certain manner under the stimulus of the Ewald test breakfast and important information concerning secretory and even motor conditions may be obtained.

It occurred to me that if a rapid fluoroscopic method could be combined with this test meal much preliminary information could be quickly obtained. Such an examination made under favorable conditions with an empty stomach would in many cases furnish all the x ray data necessary for diagnosis. This could be done in about an hour's time when a rapid survey of the case is desirable, in conjunction with and during the progress of other preliminary investigations, such as the taking of the anamnesis, the physical, blood, and urine examinations, etc., and would rapidly place the clinician in possession of what might be called a skeletal outline of the most important motor secretory and topographical facts. It is, of course, taken for granted that further fluoroscopic or even radiographic methods will be used when required for the purposes of a satisfactory working diagnosis.

It is well known that the most divergent opinions prevail in European and some American clinics in regard to the relative value of x ray pictures and fluoroscopic examinations. The controversy applies mainly, if not entirely, to certain aspects of diagnosis in the field of internal medicine. In regard to surgical lesions or injuries, for example, of the bones, the x ray plates are absolutely essential for clearness of detail and permanence of record which may often be important from a medicolegal viewpoint. In the early stages of pulmonary tuberculosis it is true that the photographic plates will show details which the fluoroscopic screen cannot reveal, although slight opacities shown on the screen will often quickly guide the clinician to early lesions. In regard to the heart, the screen will generally give all the information needed. In the stomach and in fact in the entire alimentary tract, very competent observers believe this also to be the fact. For instance, Dr. J. T. Case (1), than whom few are better qualified to judge, says: "In the study of the alimentary tract, however, fluoroscopy is the method of choice or, rather, we may say, the method which gives us by far the greater yield of valuable information concerning the case. The röntgenogram furnishes a representation of static conditions, the shape—at the moment—and the position; but, of far greater importance in the majority of cases, röntgenoscopy furnishes data concerning mobility, motility, coincidence of pressure pain points with filling defects, spastic manifestations in the stomach, and other questions relating to function, which, by röntgenograms alone, either cannot be shown at all, or only with difficulty and at considerable expense. After a large experience in röntgenographic and röntgenoscopic examinations of the alimentary tract, I can truly say that with the exception of gallstone and duodenal ulcer cases, in comparatively few instances have the röntgenograms added any material fact of importance to the fluoroscopic findings. In the average patient fluoroscopy of the stomach is quite satisfactory, no plates being needed except for the recognition of possible gallstones."

As representing at least one aspect of British medical opinion, Barclay (2) says: "We have the choice of radiography and radioscopy as our method of examination, and in my opinion there is no comparison. Radioscopy (fluoroscopy) is the method of necessity. The examination should be undertaken with the patient standing with his abdomen against the fluorescent screen, and the passage of the first mouthfuls should always be carefully observed from the lower third of the esophagus till the lower part of the stomach is outlined. . . . Radiographs of the stomach are of comparatively little use except for demonstration purposes; they represent the picture at one particular moment only, and give little indication as to how the stomach received the food, etc. Radiographs are therefore expensive, and in many cases unnecessary luxuries except for demonstration purposes, but a good radiogram of the pars pylorica will often reveal more detail than can be made out on the screen."

Certain details, as for instance in suspected pyloric diseases, filling and budding defects, etc., can perhaps be better studied by radiographs than by fluoroscopic examination, but the fact seems to be that all the help needed in the majority of cases for diagnostic purposes can be obtained by the screen, and the filling of the stomach, which is of the utmost importance, together with the peristaltic phenomena, can only be satisfactorily studied in this way.

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[*] Read before the American Gastroenterological Association at Atlantic City, N. J., April 30, 1917.

In attempting to combine fluoroscopic study which would demonstrate topography and motility with the chemical study of gastric secretion, certain questions presented themselves for solution. The most important of these related to the influence of the barium or other opaque metallic salt upon the determination of the acid content by the usual methods of titration. These questions we attempted to solve in my clinical laboratory. It was demonstrated in the first place that barium did not by any process of chemical reaction modify the quantity of free HCl. If, for example, a solution was shown to contain sixty degrees of free HCl and sufficient barium added to make it very turbid, the titration would give exactly the same result as before the barium was added. The barium, it was found, could not be removed by ordinary filtration so as to give a clear solution, but the color reaction was sharply defined and the presence of the barium turbidity, rather to my surprise, offered no obstacle of practical moment to correct titration. This was found to be true whether proteins were present or not. At this point the way seemed clear to combine these two methods of clinical study. I soon found, however, that when considerable quantities of barium up to one or two ounces were added to a test meal the secretion of the oxyntic glands as compared with that which occurred with barium free test meals was partially and sometimes almost completely inhibited. I had satisfied myself by experiments *in vitro* that this lowered acidity was not due to any chemical effect of the barium on the gastric contents. The only conclusion left was that in some way the barium depressed or inhibited the secretory functions of the gastric glands. I, therefore, have made the following modification of technic, which does not materially interfere with secretion, and which permits of an accurate preliminary fluoroscopic outline of the fasting stomach followed by a modified Ewald test meal which permits of a brief fluoroscopic study of the pyloric region before the barium mixes with the supernatant ingesta. The patient is placed behind the fluoroscopic screen and given to drink two ounces of water in which is stirred up ten to twelve grams of barium as suggested by Doctor Case. This is readily seen entering the stomach and gravitating to the lower outline of the magenblase, its further behavior depending upon the tonicity of the musculature of the potential tube which constitutes the greater part of the average vertical stomach. If this musculature has a normal tonicity, the barium will be seen lingering for a brief time in a semicircular or inverted pyramidal form. It will then be seen to canalize the stomach more or less rapidly and form a dark streak for a variable distance and direction, depending upon the location of the pylorus. It then makes a sudden turn to the right, usually not very far from the level of the umbilicus, and comes to rest as a more or less transverse curved shadow with its concavity upward from one to two centimetres in diameter and five or six centimetres long, its right extremity not infrequently being on a level with or even exactly coinciding with the umbilicus. This is, of course, the J shaped or cow horn shaped terminus of the average vertical stomach, and corresponds with the so called pyloric antrum, which really is not an anatomical entity, but simply the distal end of the stomach segmented by muscular contraction. If there is hypertonicity, the barium will linger longer at the bottom of the magenblase, or if there is hypotonicity no perceptible pause may be seen, the barium at once being seen at the pyloric end, its pathway having been marked by a somewhat broader and fainter shadow. At this point palpation of the abdomen with a Holzknecht spoon or hand behind the screen will enable one to identify the relationship of any tender pressure points, if such exist, to the various parts of the stomach, the precise topography and position of which can also be accurately noted and recorded on tracing paper if so desired.

Before removing the patient from behind the screen he is made to drink a test meal composed of one and one half ounces of cream of wheat boiled in a sufficient amount of water to measure ten ounces when cooked. The movement of the barium in the pyloric antrum shows the amount of depression from the weight of the test meal, which gives some information regarding the mobility and tonicity of the stomach and its supports. Pyloric function, especially patency and peristalsis, can be further studied at this point if the symptoms suggest that this is necessary; if not, the test meal may then be treated in the ordinary manner either by its fractional removal through an Einhorn duodenal tube which has been swallowed with the test meal or by the ordinary stomach tube at the close of the conventional one hour.

The character of the test meal is a matter of some consequence with reference to the facility with which the gastric contents can be drawn through the perforated bulb of the Einhorn duodenal tube, in case this is used. The cream of wheat meal above indicated seems to meet the requirements better than such material as shredded wheat, bread, etc. The progress of digestion both as to acidity and chymification can be observed at suitable intervals. I have found that if about five mils are removed every fifteen minutes and submitted to routine analysis not only the conventional results at the end of the hour are determined, but the rapidity of gastric secretion can be ascertained at any time during the hour. It is also perfectly obvious that the clinical observation can be extended beyond the hour in cases of slow digestion where such observations seems to be worth while. Some information in regard to motility is also obtained in this way, although a different kind of meal and a larger amount are required to develop the actual motor power of the stomach. Such a preliminary investigation as this which is purely incidental to the general scheme of the clinical study will enable one at least to determine whether further röntgenological and chemical studies will be necessary or not. The fluoroscopic study has been carried quite as far as the chemical, and nothing further will be needed along either line in the average case.

There is always great danger of exalting any important laboratory procedure, such as a serological or x ray finding, to the dignity of a diagnosis. The information which these methods give is important and should not by any means be neglected, but the general aspects of the case as determined by a painstaking history, physical examination, of which the fluoroscopic examination is simply a part, and especially including general appearance, occupation, environment, and other routine clinical data are even more important and must enter to a corresponding degree into the final judgment of the case. Where further information is desired, other methods, such as the fluoroscopic study of motility with a larger test meal and larger quantity of barium can be used, but the very simple routine here outlined will in a large proportion of cases furnish all the information needed with very little expenditure of time.

It has been found especially useful in a group of cases which come to the office of the consultant and in which some x ray data seem desirable. A very few minutes spent in the x ray room adjoining the consultation room enables the diagnostician either to get all the information required for a rapid diagnosis, or, in the few cases in which this cannot be done, to advise further study along the lines indicated.

If the widest possible service is to be rendered by x ray examinations in routine diagnosis, something besides cumbersome and expensive serial pictures will be required. The fluoroscope is the alternative and will probably in the very large majority of cases meet all requirements. The specialist in diagnosis should have it at his fingers' ends and make it one of the first rather than one of the last resorts. By sweeping the screen over chest and abdomen with the slight addition suggested in this paper as a procedure which may be either preliminary or final, he can in a very few minutes' obtain some information that he cannot get without an x ray examination and in addition get a great deal of information more accurately than in any other manner in regard to the general physical condition of the contents of both of these cavities.

SUMMARY.

By the fluoroscopic observation of about one third of an ounce of barium stirred up in two ounces of water in its passage to the pylorus, we can get an absolutely accurate outline of the position of the fasting stomach in a perfectly quiescent state without distortion by the weight of a heavy meal. Muscular tonicity is well indicated by the time that the barium lingers in the magenblase and the rapidity of the canalization of the stomach. The coincidence of a point of tenderness on pressure or a palpable tumor with the pylorus or other part of the stomach can be instantly determined. If chemical study of gastric secretion is desired, large quantities of barium cannot be used, as they inhibit the secretion of hydrochloric acid. The quantity above indicated only slightly interferes with secretion and the turbidity caused by mixing of the barium with the test meal does not substantially interfere with the titration for acidity. The delicacy of the Ufflemann test for lactic acid is diminished by about one half. The test for occult blood is not perceptibly interfered with. In a very large proportion of cases, this technic with such modifications as the individual case or the judgment of the clinician may indicate is quite sufficient for the purposes of diagnosis and will either exclude serious organic lesions, or taken in conjunction with other available data, especially the anamnesis, indicate further study along the proper lines of clinical investigation. It is only by the routine use of fluoroscopy that the diagnostic aid of röntgenology can obtain that widespread use so desirable in the field of internal diagnosis.

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409 West Main Street.

STUDY OF DRUG ACTION.

Seventh Communication.

By Thomas J. Mays, M. D.,
Philadelphia.

HEREDITY AND CONSUMPTION.

It may seem surprising to discuss the above title under the caption of Drug Action, yet it is believed that a liberal and comprehensive point of view warrants this approach. When it is considered that health is the product of a harmonious relationship between the actions and the reactions of the forces within the body, as well as between those of its environment, that disease is caused by forces that tend to disturb this relationship, and that drugs are forces, the property of which is to restore and to correct functional and organic dysharmony in the body, then the relevancy of the different phenomena embraced in the heading of this article becomes more apparent. At all events heredity has always borne the reputation of playing an important and a fundamental rôle in the causation and propagation of consumption; but since there seems to be reasonable evidence for suspecting that this term is frequently applied in a vague and misleading sense, it may be worth while to inquire whether it plays any vital part at all in the evolution of this disease. In what does heredity in consumption consist? What is its province, and what is its mechanism? Does it transmit actual disease directly from parent to child, or does it merely convey an impression of, or a tendency to, disease? It is obvious that the first possibility is a contradiction in itself, for such a process is nothing more or less than one of direct infection, and, therefore, is not ordinarily applicable to the transmission of consumption. Whether the second contingency is any more probable the reader will be able to judge better after weighing the testimony here presented.

In order to interpret correctly the factors involved in the origin and in the mechanism of disease, it may be of interest and profit to study the method which was pursued by that great master mind Shakespeare when he unravelled the etiology of King Lear's insanity, a disease closely allied to consumption. He did not attempt to invest his subject with the mysticism and fetichism that prevailed in his day in regard to insanity, and fortunately was oblivious of those that haunt us at the present time; but he held firmly to the principle that disease, particularly insanity, is evolved from a normal mental basis without the intervention of any subtle element like heredity, and he accomplished this notwithstanding the fact that his opportunities and advantages to observe the clinical manifestations of this disease were rare and limited. King Lear, until he became old, was always regarded as being normally sane, although at times he was irritable and eccentric and inclined to what may be termed an exaggeration of natural peculiarities; and out of these few mental characteristics, Shakespeare chiseled a descriptive picture of the origin, development of, and recovery from an attack of acute insanity, which was precipitated by the rude and barbarous shock inflicted by the unexpected perfidy and ingratitude of his two elder daughters, and which, although drawn by a layman, was so natural and lifelike, that it has been equalled by very few modern medical writers.

Now just as King Lear's affliction unfolded itself practically out of a normal mental state under the stress and pressure of unusually severe surroundings, so the possibility exists that the type of the human constitution which is distinguished by great beauty may under unaccustomed conditions be transformed from a normal body basis into that state of disease which is known as consumption. Beauty has at all times been recognized as being closely related to this disease in one way or another, and also as being grafted on a highly developed and impressionable nervous substructure. Other marked features of this temperament are excessive delicacy of feeling, ardor, affection, a vivid imagination, and great intellectual force. Of this disposition Professor Miller says: "The complexion is fair, and frequently beautiful, as well as the features. The form, though delicate, is often graceful. The skin is thin, of fine texture, and subcutaneous blue veins are numerous, shining very distinctly through the otherwise pearly white integument. The pupils are usually spacious, and the eyeballs are not only large but prominent, and the sclera showing a lustrous whiteness." Moreover, the eyelashes are long, the teeth regular and exquisitely white, and the hair abundant.

Now, when this descriptive idea of beauty is viewed in a proper light it must be admitted that it has a world of meaning behind it. For instance, the graceful and refined form, the thin skin through which are seen the transparent blue veins, etc., all indicate that the organism has attained a high degree of anatomical and physiological perfection. Attributes of this variety are, however, not found in coarse grained, uncouth, and crude constitutions, nor are they nurtured and matured in a year, or even in several successive generations. They represent an accumulation of many diversified experiences and impressions which were selected either consciously or unconsciously and guarded by a jealous environment extending over long periods of time. More than is implied by the foregoing delineation, it tacitly lays stress on the well known physiological law which predicates that no organ in the body can become structurally or functionally polished and cultured without the other organs becoming implicated in the same processes at the same time. Thus the lucid walls of the veins signify that both the arteries and veins of the whole body are involved in the same process of structural refinement. It extends still further and imposes a higher state of functional culture on the brain and nervous system, which is marked by the gentle and graceful movements of the body and by the greater intelligence which are said to be leading features in the life of such individuals. From this it is clear that beauty is not a random or haphazard product, and like the beautiful rose is neither the outgrowth of a barren soil nor of a noxious atmosphere.

While beauty in itself is, therefore, a state of health, and has nothing in common with disease, it must be borne in mind that the normal equilibrium accompanying this attribute, like that of the balance wheel of a finely constructed watch, is so delicately adjusted that it is far more vulnerable to disturbances of unhealthful and pernicious influences than one with a coarser grained and less sensitive organization. It was only by ignoring the fact that a marked degree of difference exists between the frangibility of a delicately constructed and that of an unrefined organism which gave rise to the false belief that the temperament of beauty manifested an inherited element of disease and therefore a forerunner of consumption, while both are normal concomitants of the same fundamental condition. It may be of interest to note in connection with this that a probable knowledge of this popular distortion led many of our gifted and illustrious fiction writers to select their heroines from that very type of beauty which is portrayed by Professor Miller as belonging to the consumptive or the scrofulous temperament. This is notably true in the case of Fantine and of Camille, both of whom, after having been exposed to the vicissitudes of outrageous fortune, succumbed to this disease. Moreover, it is commonly supposed that what holds true of beauty in reference to disease is also true of genius, for just as the former has been looked upon popularly as a sure index of consumption, so the latter has been regarded as a certain harbinger of insanity. Dryden's declaration that "great wit to madness surely is close allied" is largely responsible for this false interpretation. That genius and great literary attainment, like beauty, may under certain contingencies be accompanied or followed by insanity and even consumption, is true, but it is a straining of evidence to say that these endowments entail an inborn tendency to acquire either insanity or consumption. It is well known, however, that such complications frequently arise, as is attested by the many notable examples who have fallen victims to this fate. Conspicuous in this list are Emerson, Stevenson, Keats, Shelley, Kant, Hood, Elizabeth Browning, Marie Bashkirtseff, Goethe, Molière, Gibbon, Irving, Charlotte, Emily and Ann Brontë, Kingsley, Southey, Hawthorne, Mozart, Chopin, Descartes, Richelieu, Raphael, Paganini, von Weber, Nevin, Dupuytren—the list might be extended almost indefinitely.

In order to illustrate the vulnerability of such a temperament to consumption, and to exhibit the veritable power possessed by the emotions to mould and modify the physical condition of the human body, it may be of great interest to analyze briefly the short life history of Marie Bashkirtseff, the phenomenal prodigy in art, music, and literature, as chronicled by herself in *The Journal of a Young Artist,* published in 1889. She was born in Russia of noble parentage in 1860 and died in 1884. Her grandfather was a soldier and a man of letters. Very little information is furnished in regard to her very early history, except that she was precocious and inclined to be nervous and excitable, but was apparently normal in every respect. Her grandfather, two of his sisters, a great grandmother and two great aunts died of pulmonary tuberculosis. Even at this time she was musical and extremely religious, and enjoyed literature. In her fifteenth year she fell passionately in love with Duke H., who failed to return her affections, and when she learned that he was engaged to another lady she became very much perturbed in mind and body, and felt "as though a knife had pierced her heart." About this time she became hoarse and unable to sing. She also fainted, her voice trembled with emotion, and she was unable to play the piano on account of the coldness and stiffness of her fingers. In the course of another year the effects of the love disappointment made a more serious inroad on her health. Suffering was depicted on her countenance and she was in a constant state of mental depression. Somewhat later she complained of pain in her chest and spat blood. About this time, 1877, some physical trouble was found in her right lung. She also became very tired, feverish, and emaciated. She traveled through Spain and Italy without benefit in 1878. "I am afflicted," she says, "with a terrible disease. I have too much of some things in nature, too little of others—a character not made to last. One could not live long with a brain like mine."

In 1880 she coughed constantly, was voiceless, and had serious ear trouble. In spite of her precarious health she kept up her interest in art and for this reason became subject to trouble of a new sort. She came to Paris in 1881 to study and entered in competition with another student, who won the first prize. This vexed and tortured her sensitive nature almost beyond endurance. However, at the end of that year the tide of fortune turned in her favor, and her high artistic skill was acknowledged by the Academy of Art, and the medal was conferred on her for her painting.

In less than two weeks, 1882, after this gratifying event she writes: "I have renewed my life, my arms that were so thin ten days ago are now rounded. A week more of this and I shall have to stop growing fat." Everything seemed to come her way now. The artists of Paris bestowed the most favorable criticism on her. Her family gave a great soirée in her honor which was attended by many notables and of which Figaro gave a very auspicious eulogy, and called Marie a beautiful artist, etc., etc. She continued to be deeply wrapped up in her art, working enthusiastically, and was apparently much improved in health. Speaking of her health, November, 1882, she says: "I am growing stout, my shoulders are broader, my arms rounder and my chest fuller." The improvement seemed to last for nearly a year. Another physician, 1883, discovered alarming trouble in her left lung. However, she continued working, finished another picture, and received another prize in 1884. Her father, her uncle, and her aunt died, and she became very ill and expressed the fear that she was doomed. Towards fall she became greatly exhausted, and this notable and exceptional personality came to an untimely end.

This much misunderstood and singular girl has been defined by a prominent literary critic as a vain, fierce spirited individuality, the "offspring of Tartar nobles, with savage instincts lying like half tamed wild beasts in the background of her consciousness." Nothing could be further from the truth and more inconsistent with a just and equitable conception of the personality of this girl as it is laid bare in a striking and most significant revelation of her own inner self. It is true that she was an exceptional being in many of her traits, but in all fairness it must be owned that this furnishes no proof that she possessed the instincts of a barbarian or a savage. Her exceptional nature was formulated by her complex and delicately constituted mental organization, and this expressed itself in thought and emotions which differed in degree, but not in kind from those of the average ordinary mind. In other words there was a difference in quantity of mind, but not in quality. She was a true genius. She acted, felt, loved, and hated with the greatest fervor and intensity. Individuals of that type are cheerful and buoyant under the spur of the slightest agreeable incentive, and depressed and discouraged by the most trivial rebuff or offense. In the throes of a disease like consumption the outlook is gloomy and unfavorable if they are burdened with sorrow and distraction, but this becomes correspondingly bright and auspicious when the feelings are bolstered and stimulated by bright and optimistic surroundings.

In the life of this brilliant personality we possess a graphic exemplification of the fallaciousness of current ideas regarding the heredity of consumption. During the first fourteen years of her brief existence she appeared to be like other individuals of her age and social station, and bore no visible external or internal evidence as far as may be discerned that might be construed as being a forerunner of the disease with which her family was heavily burdened; yet in spite of this apparent immunity she became a sufferer from the incipient form of the same affliction in her fifteenth year. How is the unheralded precipitation of this malady to be accounted for? If a dormant diseased family tendency prevailed in her system where is the proof of its existence, and if it was present what caused it to become active at such an unusually premature period?

Is it not altogether probable that a close association existed between her misplaced love affair and her going into decline? That her passionate love was deep seated, in its onset at least, and was perhaps intensified by the knowledge that it was not returned, is almost selfevident from her own testimony. For when she discovered that the duke was betrothed to another, she experienced the feeling "as though a knife had pierced her heart," became hoarse and unable to sing and before very long she complained of pain in her chest, coughed, spat blood, and was feverish. Now, as a matter of evidence it is known that consumption is more liable to occur in subjects in whom the integrity of the brain and the higher nerve centres are impaired either functionally or organically. This is especially true in cases of shock, fear, or anxiety. Doctor Kohts, in describing the effects of such disturbances during the bombardment of Strassburg in 1870 says that diseases of the respiratory organs were markedly aggravated, and that blood spitting often occurred for the first time in the phthisical. Moreover, Nothnagel states that irritation of the brain of animals is followed by bleeding into the lungs, which he thinks may account for the widespread infiltration of the bright red blood which is frequently found in the air spaces of the lungs among the insane. Taking a candid view of this combination of incidents, we find much reason for believing that the shock of love disappointment which was administered to this sensitively balanced emotional mechanism, which was in great part transmitted to her by her equally intellectual and refined ancestry, was chiefly and perchance wholly responsible for the beginning of her physical breakdown.

Another aspect of this engaging picture is the powerful influence which is exerted on these sufferers by the ebb and flow of their emotional life—a factor which is markedly accentuated in this instance. There is no doubt that in 1881, or three years before her death, this maiden passed through a most critical period of her illness. In addition to the load of her pulmonary defect, she had the misfortune of failing to get a prize for which she was zealously competing. This had a calamitous and dispiriting effect on her, but in a comparatively short time after this she became much elated and greatly encouraged by receiving a medal and several prizes, as well as the most flattering notices from the Parisian press. All this infused new hope, and apparently her health was greatly improved. At this point she said: "I have renewed my energy, and my arms that were so thin are now rounded." This improvement continued until a new physician was called in who unfortunately informed her that she had grave mischief in her left lung. This seemed to have been the saddest blow of all to her, for she said complainingly: "Potain never mentioned lungs, but merely an affection of the bronchial tubes." After this, one affliction loomed up after another. The death of her father, uncle, and aunt took place in a short time, and she lingered a while longer and then died.

Before closing this chapter it may be permissible to yield to to the temptation of speculating briefly on the possibilities of a life of this kind if it had been fated to fall under more auspicious circumstances. While indulging in this propensity it must not be overlooked that such a highly developed intellect, like a delicate plant, when projected forcibly into a barren wilderness, finds very little congenial soil with which to nourish its higher aims and purposes. There is not much doubt, however, that, if in the course of time she had been happily and suitably mated and had the freedom to pursue and mature her loftier aspirations, she would have escaped the attack of her fatal illness, at least at the early period at which it asserted itself. In taking leave of this attractive figure, it may be of interest to add another instance of the disastrous influence of frustrated love in causing consumption, by quoting in part the following touching story written by Holme Lee and as reproduced in Tuke's work, *Mind and Body.*

> There is his grave, and his darling Vic's close beside him. What a bright face it was, that face of Vic's, which just faded and faded and died away from the sun in the very prime of the morning. Here is a picture of a brilliant August day out of doors, but in the professor's study all is grave and quiet, and the long table is cleared for the incoming class. There is sturdy little Fan, just on a comfortable level with her books; and pretty Vic, who has attained the dignity of helping her father, seated with her back against the light and the roses of her cheeks all in full glow under the shadow of the dark grape clusters of her richly tinted hair. She rests her elbows on the big dictionary, and props her dimpled chin in the palms of her wee white hands, on one finger of which gleams an emerald ring—symbol that her heart is given away and her maiden promise plighted already.
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> The door opens and two scholars enter with mysterious air and abrupt news, "There's a wedding at St. Olav's this morning; have you heard of it, Vic?" cries one. "We always thought you and Willy were engaged; did you really break off when you quarreled? It *is* that widow. She has nothing but her money. I would not care if I was you, Vic; he was never worth caring about." And then the chatter subsides into a frightened silence, for out of Vic's face die away the roses and the sunshine, as if the hand of Death had passed over it and turned it to clay. Not a word breathes from her white lips; they only stir with a dumb fluttering pathos, while a blank gaze steals over her beaming hazel eyes and quenches their lustre forever. No one ever saw Vic smile again.
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> . . . Yes, they had quarreled, but they had made it up again, and she thought it was over; he kissed her the last time they said good-bye. She had no more idea of his leaving her and marrying anybody else than she had of the minster falling! Her grief would kill her, *is* killing her—her heart is broken, she says; speaking not in her old sweet voice, but in such a querulous, sharp accent as might thrill from the chords of some fine instrument when overworn and jarred all out of tune. She had her pretty caprices in her happy days; . . . but by and by every tongue is hushed, for it begins to be whispered among us that she is going off in a decline. And before the snowdrops come again she is gone.

Finely wrought and fragile constitutions like those just mentioned are not only more subject to be thrown out of repair by what in other respects are regarded as insignificant insults, as has been already observed, but from an economic standpoint and under all circumstances they require the supervision of more tender and watchful care, a larger amount of proper nourishment, more clothing, better shelter, superior comforts, and greater liberty for the pursuit of their higher ambitions than is necessary for those of a build more robust and inelaborate who for this reason are less seriously handicapped in the general struggle for existence. Indeed, the status of such individuals, when falling under the onus of adverse influences, is similar to that which would obtain among our highly bred domesticated animals were they deprived of their accustomed care and oversight and abandoned to the life that is led by their wild, more robust, and brawny kindred.

That the origin of pulmonary consumption consists largely, if not altogether, in a rupture of the harmonious relationship that normally exists between the human constitution and its environment, is a view that has been presented and defended in this paper. On further investigation, it will be found that this belief is greatly strengthened on a large scale by the well established fact that practically there was no evidence of this disease among the colored population of the South during slavery days, but since their liberation these people have become the most consumptive race in the civilized world. Was this sudden and simultaneous transformation effected by some inherited power lying dormant in the bodies of these people? No. It was due to a complete subversion of their former physical, social, and economic surroundings. During slavery days they were provided with food, clothing, shelter, care, and general supervision. After this period they were no longer furnished with these necessities of life, and hence were thrown on their own resources and forced into a struggle for life with which they are unable to cope and which is as unequal as it is tragic. There is also evidence, on the other hand, to show that if the economic condition of a people suffering from this disease is ameliorated, the disease will disappear. Thus in 1860 the Spaniards brought 250,000 coolies under contract from China to Cuba as plantation laborers. They were chiefly drawn from the slum districts of cities, and although great care was exercised to weed out the sick, many consumptives were included in the allotment. Being under contract all their physical and sanitary necessities were supplied by their overseers, and within the first few years consumption was eliminated through death or cure and never reappeared among them (McHaton). It may, therefore, be true, as has been suggested in the last paragraph, that if it were possible to return the negro race to an economic condition similar to that under which they lived before the Civil War began—involuntary servitude, of course, excepted—they would at all events become as exempt from this disease as they were before that era.

Although consumption may manifest itself at any time of life, it is conceded that its greatest general age prevalence is confined to the years between eighteen and thirty. What is the cause for this death wave reaching its highest point at this age? Is it because a so called heredity exercises a greater influence and so produces a more salient vulnerability at this time? Hardly. The real cause is that this is the period of life when the brain and the nervous system undergo the most varied and intense functional development and the greatest demand is made on the functions of these organs to adapt the body as a whole to the demands of its external surroundings. It is the period in which man is compelled to face problems which are untried and difficult. He is removed from parental protection and left to struggle for his own existence in the battle of life. He becomes burdened with family cares and duties. He is confronted by a social condition, with its education, knowledge, and inventions, its diverse manners and customs, its changeable institutions, its rankling politics, its innumerable arts, sciences, and manufactures, its multiplicity of industries and employments, its burning life contests and tragedies, and its accompanying proneness to vices, excesses, and abuses of all sorts, which demand of him the exercise of the highest skill and qualification to protect and sustain his wellbeing. He is like an animal on which are imposed new physical conditions incidental to a succession of geological changes and to which it must adjust itself in order to preserve its life.

From all that has been said so far, it appears that heredity as a morbid factor plays no part in the propagation of consumption; that notwithstanding the well established fact that this disease is more prevalent in some than in other families, there is not a scintilla of proof that the child inherits a hidden morbid nidus or proclivity which lies in waiting until the time for its mysterious fulmination arrives; that this disease originates chiefly through the action and reaction that takes place between the body and a relatively hostile environment; and that some human constitutions, which by reason of their greater intellectual and artistic refinement are much more liable to be thrown out of normal balance by unfriendly influences than those who are possessed of a more stable or phlegmatic temperament, and hence become more susceptible to this disease.

Apparently then it may be taken for granted that the chief agency that determines the time of the onset of this disease resides not within the confines of the body, but in the forces that play on it from the outside; and that the inimical environment acts the part of a bolting mechanism which selects and throws into direct and indirect activity those of its forces which have the power of calling forth this disease in the impressionable tissues of the body. Prominent among these influences are the effects of insufficient food, poor housing, injurious occupations, physical overwork, insanitation, sudden and prolonged environmental changes, alcoholism and vice, worry and mental strain, grief, and disappointment.

1829 SPRUCE STREET.

THE CAMPAIGN FOR PURE FOOD.*

By HARVEY W. WILEY, M. D.,
Washington, D. C.

The problem to be met in the campaign for pure food is one of great magnitude. All the pioneers in this work have been bitterly opposed at every step. The man who tries to do his duty in public life ought to be upheld and supported, and he usually is so long as he does not attempt to interfere with vested interests; but when this happens he must either yield or make up his mind for a long and hard fight. Just now this problem has assumed an aspect of greater gravity than ever before. In times of peace we can usually get along, although it may be in a very poor way, but now we are confronted with the threat of universal famine. The danger which is now threatening humanity is a worldwide one, not confined to any one country or group of countries. Probably our country is better able than any other to withstand this threat, but already it has impressed itself upon those who have the destiny of our nation in their hands, and it behooves every one of us, irrespective of his views on this or that question or this or that man, to support every effort of the Government to control the food supply of this country and to make it more efficient and economical. At the same time, we must consider very carefully the dangers attached to this problem of food control.

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*Read before the Medical Association of the Greater City of New York, May 21, 1917.

It has been stated very truly that the various cereals form the foundation of our diet, especially of those whose incomes are limited. In spite of the great advance in prices, the cereals remain our cheapest food; there is no other that gives so much for the price. In more senses than one they constitute the staff of life, and they are to save the world from famine if it is to be saved. Therefore the control and proper utilization of our cereal foods is the problem of supreme significance.

Medical men as a class are ignorant in regard to the matter of diet and nutrition. This is not their fault particularly and it is a fault which is very rapidly being remedied. When I was a medical student I never heard a single lecture on scientific diet. I remember being told what to give patients in typhoid fever and so far as I can remember the information was all wrong; it was not based on any scientific knowledge, but such food had been given to patients and they lived in spite of the doctor. In all the courses given in those days not a word was said about any scientific diet or any principle of nutrition, and I left the medical school absolutely ignorant of the science of food and nutrition. That was no fault of mine, but it was the fault of the profession. Now all that is being changed, and we have in many medical schools very valuable courses in regard to diet and nutrition.

The condition of this country today is to some extent pitiable. Recently I had a letter stating: "My doctor tells me that there is nothing in shredded wheat biscuit except the milk and sugar put on it." It seems incredible that any physician today should make such a statement. I have no interest in boosting shredded wheat biscuit because the manufacturers state that one biscuit contains enough nourishment for a man for half a day, but I would not like to trust my stomach to the care of that physician, for he is ignorant of some of the first principles of nutrition. Are we going to hold what we have gained in the struggle for pure food? There is a concerted movement now on foot to take advantake of this crisis in our history to repeal or paralyze every paragraph of our hard won pure food laws. It parades under the guise of cheapening our foods, but it is really working for worldwide adulteration. If there ever was a time when food should be pure and wholesome, now is the time. If there ever was a time when we should guard our own households, that time is now. Yet no one is raising his voice or having a chance to raise his voice in protest against these efforts, and especially the attempt to repeal the law which forbids the mixing of flour. I am not a supporter of white flour, as every one knows. Had I the power, I would forbid its manufacture now and forever in the interests of humanity. If you feed white flour alone to chickens or pigeons, they will all die in twenty to thirty-five days. They will die as soon as if they had nothing to eat. The same is true of commercial corn meal, though if you feed that to chickens they may live a few days longer. If you feed polished rice to a Japanese and give him nothing else, he gets beri beri. So, if you feed white flour to any human being, he has a neuritis similar to beri beri. Scurvy has long been known, and all these other diseases of malnutrition which we have learned about lately, beri beri, polyneuritis, pellagra, etc., belong to the same class of diseases and all arise from a deficiency in the food products as prepared by the milling processes of today. It is a process of degradation pure and simple; and for the sake of having white flour we are willing to sacrifice all the vital elements of wheat and corn and other cereals. Then why are we not all dead? It is because we eat other things in connection with our white flour and polished rice and commercial corn meal. But the time is coming when the poor man can eat nothing else scarcely than cereals. I do not advise cereal alone for anyone, especially a child. It is not at all desirable because when we burn the cereal in the body in the process of digestion the ash is acid, just as the ash of meat is acid. When you burn a vegetable or fruit the ash is alkaline. The stomach must always be acid and all the rest of the body alkaline, and if we eat nothing else except that which gives an acid ash we bring on a condition of acidosis, and then the blood begins to be diminished in its alkalinity and we have a threatening disease which soon ends life. Therefore we cannot live on cereal alone, but if we do eat the entire cereal we have a better chance to preserve health and strength and vigor of body than if we use white flour or commercial corn meal.

Now in this time of great stress that is before us, wheat and corn have acquired a new meaning. It is sympathy and patriotism, and because of sympathy and devotion to a great cause we have gone into this war with our hearts as well as with our hands because we believe in preserving human liberty and we want to make all our patriotism count. If we utilize our supply of cereals to better advantage we shall help not only ourselves but our allies and the great cause in which we are all engaged. If we mill the whole grain instead of a part, we use 100 per cent. At the present time we use only about seventy per cent. of the grain for human food, and that is very poor because of the way in which it is ground. Are we going to do better or are we going to be guided by those who do not know or have some ulterior purpose, and continue to use this white flour and commercial corn meal, and so lose much of our efficiency? I have never seen the wheat prospect so poor as now: first, a winter without snow, leaving the wheat uncovered, and then a cold and dry spring on the winter wheat. At this time, when we need grain more than ever before, the crop in the East is poor and in the West it is still worse. We are depending on the spring wheat crop, and the spring has been cold and backward in the whole wheat growing region, so that it seems probable there will be a shortage of the whole crop. We are facing a crop of 600,000,000 bushels when we need double that amount. Now, if we use our scientific knowledge, we can make out of that 600,000,000 bushels the equivalent of 900,000,-

000; that is, we can make it more effective by requiring the milling of the whole wheat, and so perform a patriotic duty in the service of humanity. It is stated that whole wheat will not keep. That is not so. Nothing will keep better than whole wheat flour and whole corn meal if the right kind of wheat and corn is ground. They take the farmer's wheat, for which they pay at the rate of sixty pounds to a bushel, and before it is ground they moisten it with water. They do that for two reasons: 1, it mills better, for the bran, which is such a *bête noire,* softens and is easily bolted out; 2, they get more flour, for it weighs more than before they wet it—but what is it that weighs? The water.

Whole wheat flour has many elements of decay—the white flour does not have all these nutritious elements and if the whole wheat is moistened before it is ground it goes bad more quickly than if it is ground dry, as it should be done. I use every day—May 21, 1917—whole wheat flour ground last October and whole corn meal ground last October. If dry wheat and dry corn are ground they will yield a product which will keep six months, and that is as long as any wheat or flour should be kept.

As to the nutritive properties, five elements are to be considered in every problem of nutrition: The elements that furnish heat and energy are found in 1, starch; 2, sugar, and 3, fat of foods. The tissue building materials are found in 4, proteins and 5, minerals. So we have starch, sugar and fats on the one hand, and the proteins and minerals on the other as the essential elements of nutrition. We have in every complete food a balancing of the materials in such a way that the final result of the combination in the body is complete nourishment. And then, in addition, there must be the vital spark. The food must not be dead; it must have a soul, the vitamines. That is absolutely neglected in almost every scheme of nutrition that I have heard urged. We know that they exist and that they are an essential of a diet which is properly balanced chemically to sustain life and vigor. If you feed any animal on pure minerals, pure fat, sugar and starch and pure protein, that animal will soon die although it is supplied with every common element of food in its purest form. In addition to that apparently perfect food the precious things which we throw away, the potato peeling, the bran of wheat or corn, or orange juice which does not seem to have much nourishment, will keep you alive. In the milling process, these vitamines, as they are called, are almost absolutely eliminated. That would soon make away with us. It has almost done it anyway. It is among the children of the rich that we find malnutrition as a rule—not among the children of the poor. There is where we see pale faces and shrunken shanks and hollow chests—among the children brought up in the lap of luxury. They eat what is not good for them, and the poor little things are starving. I would like to give them all a good old fashioned meal of corn meal mush and milk. Yet eminent scientific men are telling the authorities in Washington, who do not know any better, that whole wheat flour and whole corn meal are deleterious, that they tend to kill and should not be permitted. Is it not almost incredible what these false prophets are doing? How horrified they would have been to see the Saviour going through the fields with his disciples and plucking the whole wheat and corn and eating it! Yet the Bible tells us that they broke the Jewish Sabbath and did this. The Saviour also told how David went into the temple and ate the shew-bread.

These are the dangers with which we are threatened. Are we going to permit under the guise of economy any further degradation of our food supply, or shall we demand of our representatives in Congress, who are charged with the responsibility of the ordering of affairs, that they protect the purity and excellence of our food products beyond all risks and hazards? Mr. Hoover, the splendid executive who has made such a brilliant record in distributing the food supplies in Belgium, has been appointed the administrator of our food supplies and I have no doubt that in every respect save one he will make an excellent director. He has had no opportunity to know anything about these matters and there is danger that he may be advised by the same clique of scientists who sought to overturn my ruling some ten years ago when I had laws made that food should be kept free from substances that were injurious to health. All prosecutions against food adulteration were stopped until this new body of men should report, thus opening the doors wide to every form of adulteration. This action still stands unrepealed, so that the manufacturer can load his prepared foods up with benzoate of soda and sulphur dioxide. Are we going to have another embalmed beef scandal? Is that the kind of food we are going to send to our soldiers? Are we going to mix with our white wheat flour white corn flour and have it doubly debased? Is that what our soldiers are going to eat, while the cows are fattening on the food which our soldiers are not permitted to eat? I like to see my cows eat bran, but I would not starve my boys to feed my cows. I will give them all the whole wheat I can, and feed the cows on what is left over. I would like to go before Congress and show them my whole wheat flour and whole corn meal and show them the boys who have been nourished on it and ask them if it is a dangerous thing to eat. If this whole country today were put upon whole wheat flour and whole corn meal and other whole cereals, there would be a great cessation in the activity of the physicians.

One other point in regard to this emergency that is now upon us. About ten million men between the ages of twenty-one and thirty-one years have been called to register themselves for service in the army. How many of this ten million will be found fit to serve their country? I can only judge by a personal experience in 1864, when I went up to offer my services to the army in the late unpleasantness between the States. At the same time a neighbor of about the same age went for the same purpose. I was accepted and Andrew Aberdeen was rejected. With tears running down his face because he had been rejected on account of his teeth he stepped aside. In those days the army used muzzle loading muskets, and we had to tear the covers off the cartridges with our teeth before loading the guns.

Andrew's teeth were poor and he could only fire once in a fight; he could not reload his gun. Why could I tear my cartridge with these same teeth I have today, while Andrew could not? I was happily the son of poor parents who had to work hard to get enough to eat. We carried our wheat and corn to the mill and had it ground and ate the whole product with milk and sorghum molasses. I was brought up on corn meal, milk, sorghum molasses and the Bible. That was my diet and it is a good diet. Andrew was the son of wealthy parents and had white flour bread and cake. My boys are eating the simple diet today that I ate and they are sturdy and well nourished. I doubt if there are better nourished boys in the country. Their teeth are hard and white and firm, and they have no diet disease or scorbutic disease of any description, but every part of their bodies is thoroughly nourished and sound. They are fed on whole cereals, milk, fruits, and vegetables, with hardly any meat, and no tea, coffee, or candy.

This is a very serious crisis that we have to meet and I wish to impress upon medical men the supreme necessity of seeing to it that our food products are not deteriorated by reason of the war, but that they should be kept up to a higher standard than ever before. I have no voice in this Government and no means of giving a word of advice, but it is listening to men who either through ignorance or malice are giving the wrong advice; and you cannot blame the officials for taking advice from those who ought to be competent. They do not go to the public health officials. In Bulletin No. 333 of the Public Health Service, all these facts which I have summarized are published. There they tell of the fowls and pigeons fed with white flour exclusively, which died on that diet. Are the millers of wheat and corn products going to carry this through? We have a just law on the statute books, forbidding the mixing of anything with wheat flour, and requiring that if any one wishes to do so he shall take out a license for mixed flour and that every package so mixed shall be so labeled. That killed the business. No one wants it except the mixers who make the adulterants. If they get that law repealed, the door will be wide open. Any mixing of our bread materials that is desirable should be under the auspices of the United States. When the doors of the temple of Janus were closed there was peace; and when the war was on they were opened wide. Is our food supply to be ruled by the modern temple of Janus? My message to physicians and to the people is to get this matter some how and in some way before the proper authorities. Let us not wait supinely without some effort to utter a note of warning against the further degradation of our food products. Let us do everything possible to impress upon the authorities the supreme necessity of utilizing to the fullest extent possible nature and nature's good intent by using the whole grains of cereals with all their properties and vitamines. These combined with milk, vegetables, meats and fruits, give muscle and sinews and nerve, and our soldiers when they go forth to battle will be physically fit.

Our army raised by this conscription, when it goes across the sea, will be a typical American army. How many are going? If we get two million men who are physically fit for the army and navy out of this ten million we shall be lucky. For two years prior to this war the authorities have rejected nearly seventy out of every hundred, and sixty out of that seventy were rejected for physical defects—bad teeth, bad liver, bad lungs, bad sight, or bad something. Imperfect development, and that in the cream and flour of the youth of our country—seventy per cent. bad, and due almost exclusively to the methods of feeding to which we and our parents have been subjected. If they had been fed properly, ninety-five per cent. of the youth of our country would be fit for service.

THE CONTROL OF NOSE AND THROAT HEMORRHAGE.*

By Lewis A. Coffin, M. D.,

New York.

It is well to consider first the blood supply of the nose. The arteries which supply the nose come from both the external and the internal carotids, the internal maxillary coming from the external and the ophthalmic from the internal carotid. The sphenopalatine from the internal maxillary divides into two branches, the external and the internal which supply the corresponding walls of the nasal fossa. The two branches from the ophthalmic artery supply the ethmoidal region and a branch from the superior coronary supplies the anterior part of the nose; these all anastomose freely. When little was known about the surgery of the tonsil, tying of the external carotid was occasionally resorted to. Now the bleeding point is tied off and all hemorrhage controlled while patient is still on the operating table. If one would control bleeding from the nose by shutting off the supply, one must tie the common carotid on account of the free anastomosis referred to. The venous supply is perhaps even more important than the arterial. The veins for the most part are veins named after the arteries and accompany them out of the nose. There is a variation in children in which, it is said by McClellen, the late Philadelphia anatomist, some of the veins of the nose frequently make their exit through the foramen cecum, direct to the longitudinal sinus. As a rule this foramen closes before adult life, but occasionally persists and suggests an explanation of some of the persistent hemorrhages from the nose. I do not see how, unless the foramen becomes smaller and thus impedes the venous flow. Some one has said that hemorrhages of the nose depend upon the condition of the veins. It is of great importance to remember that a large part of the venous supply of the nose is through the ethmoidal into the ophthalmic veins. The ethmoid is one of the most frequently diseased parts of the body. These veins may be the site of bacterial or inflammatory thrombi or on account of the swollen condition of the tissues the venous flow may be impeded by pressure.

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*Read before the Medical Association of the Greater City of New York, March 19, 1917.

Another influence responsible for some minor hemorrhages is the very function of the nose, due to which there is an ever varying rate of flow and pressure within the vessels of the nose. This variation occurs with every change in temperature and humidity of the air breathed and may account for many of the frequent nosebleeds we were accustomed to in schooldays. We were wont to laugh at the victim and accuse him of being lovesick. It seems that even the country people recognize the relationship between the nose and the sexual organs. Hemorrhage from an accessory sinus is extremely rare, if indeed it ever occurs, although blood stained secretions from the sinuses is commonly due to the oozing from the congested lining. Of course, if a sinus is occupied by malignant growth, hemorrhage may occur from that growth. I have seen two cases of bleeding from the nose due to the erosion of an artery accompanying a supratonsillar abscess.

Case.—A young man came recently to my clinic with his nose plugged, the plugging having been done by a good rhinologist. It was removed and no bleeding point was found within the nose. A further examination revealed a considerable swelling in the soft palate in the neighborhood of the supratonsillar fossa, and an instrument inserted between the tonsil and anterior pillar and pushed well into the supratonsillar fossa liberated an amazingly large quantity of pus. Evidently the abscess had projected further into the nasopharynx than into the oropharynx and somewhere in that region the bleeding had occurred, evidently, from its copiousness, from an artery of considerable size. No bleeding occurred subsequent to the opening of the abscess.

I have also the history of a patient who died from a like process.

Hemorrhage from the nose frequently occurs from systemic causes such as plethora, anemia, purpura hemorrhagica, etc., and as a symptom of certain diseases, as typhoid fever. Why this should occur in this disease I do not know, unless it be that there is a general congestion and the walls of some of the bloodvessels give way. Vicarious hemorrhage takes place from the nose. Within the last month Doctor Freudenthal presented a patient before the rhinological section who had bled at regular intervals from the nasopharynx for years. He had been able to find in that time no local cause for the bleeding.

As to control of nasal hemorrhage, it has been stated that hemorrhage from any part demands immediate action, that there is no time to consult authorities, etc. This does not hold in case of nasal hemorrhage. The nose, being a tube, may be plugged at either or both ends and hemorrhage controlled while the authorities are consulted and the case is studied. A large proportion of so called nosebleeds are due to a faulty nasal architecture and the bleeding is from the convexity of a deviated septum or the anterior end of a turbinal body. Before resorting to plugging of the nose, one should inspect carefully the anterior portions of the septum and the anterior surfaces of the turbinals for bleeding points. If the bleeding is too profuse to allow of this, a pledget of cotton soaked in cocaine and adrenalin solutions should be laid against the septum and the alæ of the nose pressed firmly against the cotton, inward, downward, and backward. This will generally stop, temporarily at least, any bleeding from the anterior portion of the nose when the search for denuded areas may be made. Such spots having been found, any one of the various procedures may be instituted; actual cautery, chromic acid, or nitrate of silver may be applied. My own method is to apply nitrate of silver in various strengths of solution, beginning with a fairly weak solution, by which means I believe that a deeper effect is produced than would be obtained by applying the stronger solution first.

The custom of packing the nose with styptic gauze or cotton is happily no longer followed. When the bleeding point cannot be found, bleeding will sometimes cease after a fairly hot nasal douche. Recurrent hemorrhage, when due to deformity—mostly septal deflections—should be prevented by operative correction of the deformity. Postoperative hemorrhage occasionally occurs. If it cannot be controlled by methods just described, it will generally have ceased after from twenty-four to thirty-six hours' packing, which is always better done by the man who has operated, as he knows whence the bleeding comes. Often the removal of loose tags of tissue causes bleeding to stop. It has been found to be good practice to soak the packing in a 12.5 per cent. solution of acetotartrate of alum. This may be done by soaking the packing previous to placing it in the nose or by dropping it into and around the packing by means of a medicine dropper while packing is *in situ*. This is not only an astringent but a highly antiseptic solution. It may be dropped into the nose two or three times a day while the packing is in place.

Hemorrhage which is not controlled by the above procedures is probably due to individual idiosyncrasy or constitutional vice, and resort must be had to some of the general methods such as the use of horse serum, emetine, pituitrin, transfusion, etc., the particular method used depending upon study of the individual case. Throat hemorrhage is generally postoperative and must be controlled on surgical principles.

616 Madison Avenue.

THE AMBULATORY TREATMENT OF PEPTIC ULCERS.*

By Henry A. Rafsky, M. D.,
New York,
Attending Physician, Gastroenterological Department, Harlem Hospital, O. P. D.

It is a common experience that most patients with gastric or duodenal ulcers will not follow any form of treatment which necessitates their staying in bed. While this type is seen mostly in dispensary practice, there are many such cases in private. In order that these patients may be relieved and cured, I have adopted the following procedure at the Gastroenterological Department of the Harlem Hospital Outpatient Department. The results have been excellent.

The history of the patient is carefully obtained and a complete physical examination is made. An investigation of the stomach is made while the patient is in a fasting state, following which the motor and secretory functions of the stomach are determined. The patient is directed to take twenty raisins and two ounces of rice eleven hours before his visit to the clinic, and a half hour before examination he is requested to take a meal consisting of two crackers and eight ounces of water. The gastric analysis is determined by the fractional method of examination, by which the motor and secretory functions of the stomach are ascertained. Normally, no residue of the rice or raisins should be present. Then a röntgenological examination of the gastrointestinal trace is made. The complete examination of the patient requires about a week. While the above methods are of material benefit from a diagnostic point of view, they are also of inestimable value as a guide in the progress of the case.

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*Read before the Clinical Society of Harlem Hospital, April 3, 1917.

The patient is given a diet listing those foodstuffs which he is permitted to take for several days. At the expiration of this period he is required to return and the diet is altered accordingly. The patient must report twice the first week and once every week thereafter for two months. From then on he reports once a month until discharged. The motor and secretory functions of the stomach are again determined after the first, third, and fifth months from the beginning of the treatment. Another röntgenological examination is arranged for at the end of six months, but this is not always possible, as the majority of the patients do not thoroughly appreciate the necessity of further examination when they are feeling well.

The plan of treatment adopted is as follows: I first impress the patient with the fact that he must save as much energy and vitality as possible. His daily routine is gone over and he is instructed to avoid as much as possible useless exertions. A patient accustomed to walking very much should now ride; wherever the opportunity presents itself he should sit and not stand. In the evening upon his return from business he is required to retire about one hour after a light dinner. He is advised to lie in bed at least eleven hours, although he may not be able to sleep all of that time. Once a week the patient must stay in bed continuously for a period of twenty-four hours. This can be easily arranged for, as most people are free from business at least one day during the week. This period of restricted activity is of great importance in the successful management of these cases. It must be continued for about three months. From then on, the patient is gradually allowed more freedom from his rest.

The following dietetic instructions are given to the patient: For the first twenty-four hours he is put on a strict milk diet. He is given one and one half quarts of milk daily, eight ounces at a time at intervals of two and one half hours. He is permitted to have small quantities of water at frequent intervals. On the second day the milk diet is continued, but the quantity is increased to two and one half quarts. An ounce of cream is added to the morning, noon, and evening portions. On the third day three pieces of toast and an ounce of butter is added. At about this time the patients will often complain of hunger, but this should not alter the plan of treatment. The weight of the patient is the best guide as to whether the diet is being well tolerated. From the fourth to the seventh day cocoa is substituted for the milk every morning. During this period two eggs are added daily. These can be given soft boiled, poached, coddled, or as egg nogs. The quantity of the toast is increased to six pieces daily. If the milk is taken without any difficulty then it is increased to three quarts a day. On the eighth day and up till the tenth cereals are given, as rice and fine oatmeal. These should be served with sweet cream and no more than three ounces of the cereal are allowed at one time. After the tenth day small quantities of tea and coffee are permitted, just enough to give the flavor. At the same time this serves to vary the monotony of the milk. Butter should now be given in as liberal quantities as the patient's digestive system will tolerate. Vegetables are added from the tenth to the fourteenth day. They must not be given fresh but in the form of purees, or thoroughly cooked and ground up. Chopped chicken and a small quantity of light fish as sole, whiting, or fresh haddock can be allowed from the fourteenth day. On the twenty-first day scraped and chopped meat is added. The quantity of toast can be increased now and crackers or zwiebach added.

This dietetic plan is followed for three months. The patient must be continuously advised to eat slowly and take small quantities of food at frequent intervals. This cannot be impressed upon him too often. Certain variations in the diet will have to be made from time to time according to the patient's habits, desires, and tolerance for the diet. Individual idiosyncrasies for certain articles of food must be respected, and in this class of patients, we may have to substitute for some article another variety of equal caloric value. At the end of three months the patient is permitted to have bread, chicken, and roast beef. The latter article of food need not be scraped or chopped. At the end of the fifth month cherries, peaches, and fresh vegetables are given. A full diet is permitted at the beginning of the seventh month.

Medication is necessary, but is not the important factor. One half of an ounce of olive oil is given every night before the patient retires. This is continued throughout the entire course of the treatment. One half of an ounce of bismuth subcarbonate is taken a half an hour before arising. This is kept up for three months. For the constipation that is usually present a powder composed of ten grains of sodium bicarbonate and ten grains of calcined magnesia is given every four hours. The interval between doses can be increased or diminished according to the resulting laxative action. This powder is continued for a period of six months. If pain is present then an eighth of a grain of the extract of belladonna foliorum is given twice daily. That some of these patients will respond more readily than others is to be expected, though in following this plan of treatment I have been able to treat successfully the vast majority of cases of peptic ulcer without causing the patients to lose any time from their business.

In conclusion, I wish to thank Dr. Lewis K. Neff, medical director of the Harlem Hospital, for the courtesies and privileges extended to me, which were essential to the successful management of these cases.

200 WEST 114TH STREET.

SERUM THERAPY AS APPLIED TO PNEUMOCOCCIC INFECTIONS OF THE EYE.*

By LOUIS LEHRFELD, M. D.,
Philadelphia,
First Clinical Assistant, Wills Eye Hospital; Secretary of the Pneumonia Commission, Philadelphia.

The announcement by the Rockefeller Institute that the pneumococcus is no longer a single organism but a family of cocci composed of four different species has paved the way for extensive research along the lines of serum therapy for each type of microorganism. In the experience of those who have used antipneumococcus serum in the treatment of pneumonia, only the serum of the Type I variety has given conclusive and encouraging results. In fact the Department of Health of New York City has recommended in a recent health bulletin the distribution of serum of Type I to the medical profession. The Pneumonia Commission of the Department of Public Health and Charities, Philadelphia, has also extended the use of the serum to hospitals. If serum therapy can be of value in the treatment of an acute pulmonary disease such as lobar pneumonia, there is every reason to believe that the same treatment could be applied with advantage in the acute inflammatory diseases of the eye caused by the pneumonia germs. The same types which are found in the sputum should also be found in the inflammatory discharges from the eye, caused by the pneumococcus. This remains to be verified, however, by the laboratories working under the auspices of the Pneumonia Commission.

The absence of the determination of the types of pneumococcus in the eye does not, however, defer the consideration of the serum therapy of these infections. In 1909-1910 Professor Paul A. Roemer, of Greifswald, Germany, used a polyvalent antipneumococcus serum in the treatment of serpentine ulcers of the cornea and reported encouraging results. No distinction was made by Roemer, however, of the various types of the same pneumococcus which we have now divided into four groups. It is proposed, therefore, that the work of Professor Roemer be extended further toward the treatment of pneumococcic infections of the eye according to the types of organisms found.

The number of organisms procured from the eye in these infections is often insufficient to obtain proper growth on culture media. The time consumed in securing the proper growth and by inoculation of the mouse and awaiting its death for the determination of the type, makes it impracticable to await the ultimate diagnosis of type infection in eye conditions, because serious injury may result to the orbit if immediate treatment is not instituted, more especially so in ulcers, hypopyon, and panophthalmitis. In order to overcome this difficulty, however, it appears logical to add equal quantities of the serums of all types and to use this mixed treatment, as it were, in order to reach the prevalent type. In lobar pneumonia, Type I serum has given the most encouraging results. Type II serum has proved less effective and types III and IV the least favorable. It seems advisable therefore to begin the use of serum therapy of pneumococcic eye infections with the serums giving the best results. The Pneumonia Commission has therefore prepared ampules of serum of types I and II in equal quantities for use in eye cases.

The rationality of antipneumococcus serum in the eye is based solely on the properties of the various serums to agglutinate the organisms of their respective types. The eye merely acts as the test tube and the serum instilled agglutinates and renders inactive the organisms present. It is precisely the same reaction which takes place in the Widal test for typhoid and the agglutination test for cholera. The determination of the type of pneumococcus is therefore not immediately essential and the "mixed treatment" can be continued until the type has been diagnosed by the proper laboratory tests when the specific serum can be administered. While we are waiting for the laboratory to study the types found in the eye we proceed to continue the use of the mixed serums. Local instillation in the cul de sacs of the infected eye can only be relied upon in the superficial infections of the globe, since contact of the serum with the organisms in the deeper layers of the cornea and in the chambers of the eye could not take place readily. In such fulminating inflammations of the eye where the deeper structures are involved, it is advisable to use the serum intravenously as in the case of lobar pneumonia. The frequency of the injections will depend entirely upon the nature and seriousness of the infection and the procedure will follow along the same course as in pulmonary infections.

The advantages to be derived from local serum therapy in the severe pneumococcic infections over the present methods of treatment are the immediate destruction of the invading organisms and the preservation of the eyesight. Corneal ulcers are most frequently caused by the pneumococcus and scarring is a common sequel of these infections, leaving the vision more or less permanently impaired. It is for the prevention of this partial blindness that serum therapy is especially advocated and for the possible prevention of total blindness resulting from complete infection of the globe. If only one case of blindness or partial blindness can be averted by the serum therapy advocated it is worth every effort to perfect its use. Its use at the Wills Eye Hospital has been very encouraging, but its true value can only be determined after many trials have been made.

CITY HALL.

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*Read before the Section in Ophthalmology, College of Physicians and Surgeons, Philadelphia, April 19, 1917.

FEMINA ADOMESTICA.

By Davina Waterson,
El Paso, Texas.

The town physician of today is confronted by the same difficulties as the animal doctor who deals with the denizens of a zoo, for he has to treat those who are removed from their natural surroundings, associations, and food. The inadequacy of town lodgings and boarding houses to supply what is lost is emphasized by the inductory phrases landladies use, such as, "A home from home," "Home comforts," etc., in addition to the mendacious one of "h. and c. laid on," this only being true with regard to the "c." Perhaps the most difficult patient to treat is the *Femina adomestica,* or Woman without a Home. She is worse off than lodgers in the zoo, for they at least get free board and lodging and, being unreasoning, are neither regretful for what has been or melancholy concerning that which may be.

Even as the wild beasts have exchanged a wide stretch of country, society of their kind, a missionary or plump beast for dinner, and absolute freedom for a ten foot square den and stale joints for food, so the woman comes into town from a country or suburban home where she had the freedom of the house, food plain but plentiful, young friends, liberty to entertain her "boy," now all left to live in one dingy room or airless "apartment," where a male visitor is improper and where no one knows or cares whether she is out or in or down and out. Her dining room is a cheap restaurant with twice cooked food, her garden a porch or none at all, her library a Carnegie, her pictures shuddery enlargements of a landlady's dead relatives, violent oleographs or nonsequential Bible texts hung up by fraying ribbons. Other people's children are the vicarious objects of her philogenitive instinct and imaginary lovers take the place of the lad who haunted the parlor and country lane at home.

All this can no more sustain normality in a woman than captivity for the lion and tiger, and the doctor can only prescribe mere palliatives for functional disease in a working woman, because gaining a livelihood necessitates her being and doing everything which makes for disordered health. She usually comes to him after a long fight with "indigestion," treated with patent medicines, drastic remedies such as mother used to give, or prescriptions borrowed from friends which had done them "a world of good." Tired of restaurant food and regarding the stomach as a worrying organ requiring to be filled, she drifts into giving it that purely feminine "little bit of something" carried home from the delicatessen store in a paper bag and eaten up in her bedroom with pickles to stir up an appetite. Sometimes, the tired feeling at the end of a morning's work tempts her to take a vicious substitute for lunch in the form of ice cream or coco cola. The working girl is always supposed to be hungry, hence the repellent forms of food provided in any lunch rooms in which philanthropy plays at cooking. "A good plain meal at twenty cents," coarse crockery, many dishes, but little in 'em, no tablecloth, paper serviette which floats off your knee or goes to pulp when used, soiled menu card, and all this when the woman needs something to tempt her to eat, something in the form of lamb cutlets and new peas served on fine china, which the philanthropists are taking as their own second square meal.

One source of indigestion and constipation is the lack of toilet accommodation in the ordinary rooming house and office. Every lodger knows how the roomers, towel and soap in hand, lurk in shady corners ready to run into the bathroom when the last washer comes out. They often have to hurry to work with Nature's demands unsatisfied, and the toilet at the office or store is often so situated, or the work so continuous, that a false modesty or fear of leaving their post prevents them from getting relief. They compromise by taking calomel or salts on Sunday, a proceeding which does not make the day more festive, and accounts for much apparent backsliding in church attendance lamented by the minister. "Anyway," growls the lodger, "I have to stay in and mend my stockings and wash my waists, so I may as well take the medicine."

Constipation leads to the usual headache, drowziness, despondency, ill temper and bad appetite and creates a stormy, nagging atmosphere. There may be splendid efforts at selfcontrol, supplemented by recourse to the little array of medicine bottles which the neurasthenic keeps in her desk along with her face powder and comb; but an introspective, unhealthy condition always becomes dominant. There is confusion of thought, sparks before the eyes, neuralgic pains; all creating a fear of illness or losing work and driving the cruel nail of torturing dread of this more deeply into the hypersensitive mind. Then comes a morbid suspicion that her companions are noticing failings. What they say and do seems to have special reference to herself. She complains to the boss of being insulted: that so and so is "always picking" at her, and naturally, her coworkers do notice her more, because she is "so queer"; and she construes their glances into increased animosity. Kindly offers of help when work presses are thought to be a mean intention of supplanting her, so she jealously guards her own province and slaves away harder than ever. One form of morbidity is to imagine herself admired: a kind of one sided Platonic attachment. She will stop when working; get an absent minded look and have imaginary conversations with the man she admires. It is often the boss, and on him is effulged all the wifely, maternal instinct which has no healthy outlet. The harder he works her, the more she is pleased; in fact, she would do the work of the others on the staff rather than have them necessary to him. She beams all over when he comes in, and a frown or abrupt word reduces her to melancholia, though his mood has probably no reference to herself and may be caused by worry or indigestion. In the same unreasonable way she will mentally chew the cud of imagined insults, particularly at night. She rehearses the incidents of the day, thinking what she might have said or done more effectually to crush her enemies. She will "love without measure and hate without reason," be enthusiastic and overjoyed one day and needlessly depressed the next.

Real disease may be engendered from what were, at first, purely functional or nervous disturbances, whereas, if such women went from work to a home, even a poor one, they would be comforted or chaffed into a more wholesome state of mind, or at any rate be freed from morbid introspection. The worst of it is that the neurotic condition offers little chance of cure after forty years of age when the woman can least stand worry. Exhaustion occurs in tissues which have lost their recuperative powers, and the spinster becomes a rudderless ship on a stormy sea of emotion. It is really to the suppression of these emotions and sexual instinct that most of the mental ills are due. The younger roomers who flirt and run around after business hours are healthier, physically, than the woman who, through pride or lack of opportunity, has no men friends and expends the wifely instinct in imaginary love scenes and the maternal in loving another woman's boys and girls. As for those who disdainfully say, "All men are beasts," or they "detest children," they too, are often a production of the homeless life or sufferers from a misplaced attachment.

Another type is the woman with a small annuity —just enough to exist on, nothing for amusements, journeys, illness; no incentive to work unless she is of energetic disposition. She is found living alone in lodgings or in the kind of small boarding house which always smells of soup; has limp, dusty curtains at the windows and gossiping women rocking eternally on the porch, dressed in aprons and curlers until 4 p. m. when they appear in frilly frocks or antiquated evening dress. The mental horizon has a one mile radius; only local news gets attention in the papers, or she neglects the dailies altogether because "it's no use reading about things you can't help." In such a woman, her pet topic is herself, or sometimes if poor and proud she has pride in what she calls "keeping myself to myself," resenting any little friendliness shown. This spinster, if religious, generally has some form of Christian Science in which the Deity gets every name save "God' and the ego is omnipotent. If orthodox, she haunts the minister's study lamenting sins she has no inclination to quit, or propounding questions concerning Biblical truths which she has no intention of seriously studying. If physical symptoms alone worry her, she plagues the doctor, especially over the telephone, with some new sign of disease, and never fails to tell him when she feels better. generally phoning that interesting information when he is at table, which causes him to use language as he hangs up the receiver and returns to his hurried meal.

Her greatest joy is to have an operation. It takes the place of a love affair with other women. A hundred times she pictures the details, collecting the opinions of her women friends as to her wise choice of a surgeon, then, when it is over, "my operation" is the great topic, the depth of incision, her feelings when being anesthetized and how serious her case was considered. Such patients love to take away their appendix in a bottle, or have the silver sutures made into a pin.

Half a dozen children or a cheque for $5,000 is what the doctor would like to prescribe; failing this, he can only give a tonic to the patient who is "all nerves"—and all imagination—whose mind is starved, and whose physical and spiritual food ferment within her because no use is made of the strength they engender. Often the solitary life is made worse by an unconfessed fear of becoming a victim of hereditary disease—cancer, tuberculosis, insanity—just as "poor Aunt Jane" or "poor Cousin Sam went." She is ashamed to tell the doctor of her dread, but watches his face anxiously as she gives other symptoms, thinking he too, notes such disease in her. So, the pitiful story of obsession, hallucination, morbid scrupulosity which undermine her life is untold until imaginary evils crystallize into reality.

Such conditions, fostered by loneliness, often land these women in sanatorium or asylum, whereas, money to enable them to live at home, to take a real holiday, to buy suitable glasses which would cure the insistent headache, to buy teeth to aid in mastication and drive out sad eyed Dyspepsia would convert them into healthy women. Even the clergy now join issue with the doctors and recognize these remedies as often the real cure for the "lack of faith," "evil thoughts," etc., of which faltering confession is made to them in the study. "Sinful thoughts" not seldom originate in tired, not wicked, hearts, and on the other hand morbid introspection, with the small annunity women can be cured by the minister widening the horizon and finding some useful work for them in his parish.

It may be urged that such women have always existed long before the solitary working life became general. Yes, but they were in the minority: times were different, no fiendish hurry, telephoneless, less mechanical. It was not "the thing" for girls to live alone in big cities, nor were so many doing man's work. Husbands and sons have been in every kind of labor for thousands of years; woman has only emerged from domestic and farm life during the last sixty. She is doing marvelously well, but at tremendous cost to a mind and body not yet toughened to masculine calibre and comparatively only recently uprooted from old environment.

When the zoo animals pine away they are "put out of their misery." The moral law condemns the human being to tread the dreary way of seminivalidism right on to the end, dependent on such help as relations can give, or partly supporting herself by not wanted odds and ends of work invented by friends. Sometimes the journey ends quickly, disease encountering no resistance in the overworked body, but, long or short, no one misses the battered tent on the mighty camping ground by Life's Highway, because in ever increasing thousands, there are *Feminæ adomesticæ* pulling up the tent pegs. For the last time, they are really going Home.

Herpes Zoster in Tabes and Paresis.—Samuel L. Immerman (*Journal A. M. A.*, June 2, 1917) reports two paretics and one tabetic in whom herpes zoster developed, reviews the literature, and discusses the relationship between the diseases. He expresses the belief that in such cases the herpes is part of the specific process, being due to the localized action of either the spirochetes or their toxins on the ganglia.

Our Readers' Monthly Prize Discussions

Twenty-Five Dollars Is Awarded for the Most Satisfactory Paper

All persons, whether subscribers or not, are invited to compete for the prize of $25 offered for the reply deemed best by the editors to the following questions:

CLXXXIV.—How do you correct bad spelling and forgetting in children? (*Closed.*)

CLXXXV.—How do you treat acute tonsillar infections? (*Answers due not later than August 15.*)

CLXXXVI.—How do you treat varicose veins in the leg? (*Answers due not later than September 15.*)

The award will be based solely on the value of the information contained in the answer. No importance will be attached to literary style. Answers should preferably contain not more than six hundred words, and should be written on one side of the paper only. All papers submitted become the property of the JOURNAL, and should bear the full name and address of the author for publication. The prize will not be awarded to the same person more than once within a year.

The prize of $25 for the best answer to Question CLXXXIII has been awarded to Dr. Samuel Axilbund, of Philadelphia, whose paper appears below.

PRIZE QUESTION CLXXXIII.

TREATMENT OF EXCESSIVE MENSTRUATION IN THE UNMARRIED.

By SAMUEL AXILBUND, M. D.,
Philadelphia.

During the establishment of the menstrual function, irregularities in the amount and periodicity of the flow frequently occur. This, however, is purely functional and is due to definite physiological changes. With this in mind and the fact that menorrhagia in the unmarried may also be due to constitutional and reflex disturbances, rather than the presence of any local pathological process, one may approach the treatment of this condition. A careful history is very essential especially as it compares with that of other members of the family and their tendency in this direction. Some causative factors to be kept in mind, however, are disturbances in the secretions of the ductless glands in particular, diseases of the hematopoietic organs, incipient tuberculosis, syphilis, malaria, and cardiac diseases. Of the reflex causes, nonpelvic in origin, may be mentioned the various psychoses and the various emotions that young unmarried women are subject to. Changes in altitude and climates may also act as causative factors.

The successful treatment of this condition must therefore be aimed at the underlying causes, and above all, conservatism should constitute the *sine qua non* in the management of these cases. Absolute mental and physical rest at the time of the period, or better still, one or two days before is absolutely essential. When the flow is established the foot of the bed should be raised eight to ten inches. The bowels should be properly regulated and a mild, nonstimulating, nutritious diet allowed. Medicinally, organotherapy has gained considerable recognition in recent years in these cases, and where indicated, the dried extracts of the thyroid, ovarian, and adrenal glands alone or in combination have given most gratifying results. A combination found very useful in these cases is the following:

Strychninæ sulphas,	gr. ss
Stypticin,	gr. xii
Hydrastininæ hydrochloræ,	gr. vi
Acidi gallici,	ʒi

Mis. et ft. cap. No. xii.
Sig.—One four times a day.

In hysterical and emotional patients fifteen to thirty grains sodium bromide with thirty or forty drops fluidextract viburnum prunifolium in a teaspoonful of simple elixir every two or three hours is very useful.

Between periods an effort should be made to eradicate any underlying cause and to build up the patient with such general tonics as the elixir of iron, quinine, and strychinine, with 0.01 grain of arsenious acid to the teaspoonful three or four times a day. If excessive bleeding occurs from month to month and no tangible results are obtained from conservative measures, then, and not until then, we are justified in requesting an internal examination. The patient being under a general anesthetic, the physician should be prepared to proceed with any surgical measure that the condition at the time of the examination calls for. A simple curettement, however, usually gives excellent results.

Dr. J. E. Smith, of New York, writes:

The physiology of the menstrual function in the human female is very imperfectly understood. When it is stated that it is a vital function which includes the processes of ovulation, tumescence of the uterine mucosa, and a series of changes preparing the female for impregnation and childbearing, the explanation is hidden in the connotations of the term vital. Thus physiologists speak of the vital action of the cardiac muscle, of the vital function of the renal epithelium, etc., etc., and when a dynamic physiology attempts to reduce these "vital" processes to some formulation in terms of units of energy, the whole business breaks down. The "wish in the heart of man," Schopenhauer's "will to power," Freud's "libido." the "soul" of the philosopher, cannot yet be measured in concrete terms of energy transmission, yet without an energic concept all physiology and all medicine is a hopeless morass of inconsequential happenings and accidental coincidences. We thus are still in an animistic phase of interpretation of the disorders of menstruation, largely because we focus our attention more on the description of the structural mechanism and less upon the dynamics of the functional activity. If the energic concept of living matter is the most useful one in physiology then it becomes important to see that structure is nothing more than an index of function. Structure simply permits energy to be used in this or that manner. Energy becomes structuralized in an organ in order to make a function concrete, and inasmuch as man is a social animal, one who has come to be what he is by following out herd control principles, it becomes worth while to note what principle of principles he has been conserving in order to function more fully.

Zoology and geology demonstrate that sexual reproduction permits greater capacity for utilization of the energy of the environment, and hence has replaced asexual reproduction in all higher animals. Common sense shows us that without the race propagation "instinct" the individual would cease to be. Hence the structuralization of function which we term the reproductive organs. The gradual evolution of these organs is represented by the successive intaking of ways of handling the energy interchange—termed the "instinct"; thus building up the structures, the periodic flow being one of the parts of the structure rather than one of the functions. The function is the desire to carry on the race, a tabloid of energy as structuralized in the ovum and spermatozoon, filled with billions of foot pounds of energy in potential captivity. Hence speaking in these terms, excessive menstruation means overactivity of the unconscious instinctive striving, in which one must seek for the results, not as purely uterine, but as a combined activity of the human body. Way down deep, set apart from all trivial, confusing, and conflicting conscious knowledge, more correctly termed medical misinformation, there exists a dynamic must which overactivates the entire preparatory process. Probably every organ of the body participates in this conspiracy to perpetuate the race. This is the only way known to the particular individuals to get the will to power over. Accessory energy outlet channels are blocked or unused in the mechanism, and thus throw too much energy over to the specialized structure chiefly concerned in the concrete performance of the function, although it must be remembered that creative capacity is an attribute of all parts of the body and such ability to create constitutes the accessory energy outlet channels.

We thus get back to the "whole of wo-man" that Galen told us we should study. Not her endocrinous glands alone, nor her small uterus, nor her defective vascular apparatus, nor her syphilitic constitutionally affected structures, or what not, no matter how bad they are—and this of course should not be overlooked—they nevertheless are trying to do a definite job, good or as bad as they are. This job must be seen in the large, i. e., in the unconscious, the instinctive striving, and if Bergson is right when he says our past, meaning all of the racial past, uterine as well as other organs, is made manifest to us in "impulse," it is felt in the form of "tendency"; whereas only a small part is known as idea. If this small part known as idea can be reached, then the individual reasons for the disturbed function which exist in the unconscious of the affected individual can be found out. Without this fundamental comprehension all of the rest is haphazard. Not that all haphazard is bad, but it remains accidental guessing. Improve the structure in every way available, yes! but do not for a moment imagine that the difficulty is solved. The opposite side of the coin must be scrutinized—namely, hunt for what the individual is trying to do with the structure. The psychology of the unconscious offers hope in the treatment of intractable, excessive, frequent, and painful menstruations.

Transperitoneal Sigmoidotomy for the Removal of Tumors in the Mucous Membrane.—William J. Mayo (*Annals of Surgery*, July, 1917) says that multiple adenomas, known as polyposis of the rectum, multiple papillomas or intestinal warts, and an infectious type in which small mucoid growths develop as the result of an inflammatory process in the mucous membrane, form well defined clinical groups. Many patients become extremely cachectic as a result of the hemorrhages and exhausting discharges caused by these growths. For relief it occasionally becomes necessary to do a colectomy as far as the lower sigmoid. Later, by means of a snare, the cautery, fulguration, or radium, the remaining growths are removed from the rectum and rectosigmoid. In the frankly infectious cases in which mucoid growths develop, the infection will subside following an ileostomy (Brown) whereby the entire large intestine is put at rest for six months or more. Occasionally this method of treatment will prove efficacious and result in cure in polyposis. A complete ileostomy gives less annoyance than a colostomy; the stool soon becomes semisolid, is easily caught in a suitable container, and is nearly free from odor. Single polypi and localized papillomatous growths, when pedunculated, can be removed through the sigmoidoscope by the cold wire. Patients with such growths have blood, mucus, and purulent discharges from the rectum and a sense of uneasiness and gas in the lower sigmoid, signs and symptoms which call for careful sigmoidoscopic examination. Attempts to remove sessile tumors located in the lower sigmoid through the sigmoidoscope are not unattended with danger, and perforation with death from septic peritonitis as the result of such more or less blind procedures has been reported. They may be malignant and ineffectual removal may spread the disease. We have found transperitoneal sigmoidotomy a simple, safe, and satisfactory procedure for the removal of these tumors. The technic for removing such growths by transperitoneal sigmoidotomy is quite simple. The abdomen is opened in the midline, suprapubically, and a Balfour selfretaining speculum adjusted. The sigmoid is opened on the anterior longitudinal band as nearly opposite the tumor as possible and the tumor is exposed, drawn through, and double clamped. The growth is removed with the cautery and the defect closed from the mucous side by continuous sutures of chromic catgut after the method devised by Pilcher for the excision of hemorrhoids and covered on the peritoneal side with a few interrupted silk sutures. The incision in the sigmoid is then closed with continuous catgut and interrupted fine silk and a rubber drain introduced into the rectum through the anus to prevent gas pressure.

Medicine and Surgery in the Army and Navy

THE LOBAR PNEUMONIA PROBLEM IN THE ARMY.

*From the Viewpoint of the Recent Differentiation of Types of Pneumococci.**

By Henry J. Nichols, M. D.,
Major, Medical Corps, U. S. Army.
(*From U. S. Army Southern Department Laboratory No. 2, El Paso, Tex.*)

Lobar pneumonia is not usually regarded as an especially important disease among soldiers, although there is considerable statistical evidence to support such a view. The most emphasis in military medicine, in this country at least, is usually placed on intestinal and insect borne diseases. There are several reasons for this emphasis. In the first place, our recent mobilizations, including that of the Spanish War, have occurred in the warmer months when, for example, the typhoid group of infections is most apt to occur. In the second place, our tropical service has resulted in many cases of dysentery, yellow fever, and malaria, and in relatively few cases of pneumonia. Furthermore, while the means of preventing intestinal and insect born diseases are comparatively simple and effective, the prevention of pneumonia up until very recently has seemed rather a hopeless task. As Rosenau says, "As long as we are ignorant of the fundamental factors concerned in the etiology and pathogenesis of the disease, our preventive measures must lack precision."

The fact remains, however, that, if camps are maintained during the winter months, epidemic lobar pneumonia must be reckoned with, as has recently been shown anew both abroad and at home. Of course other infections acquired through the nose and mouth, such as measles, mumps, diphtheria and meningitis, will also demand attention, but pneumonia in point of morbidity and mortality rates will nearly always head the list. As a partial indication of what may be expected in future large camps, the infectious disease record of the mobilization camp at El Paso, Texas, may be briefly reviewed. In El Paso, a command of about 8,000 regulars and 35,000 militiamen passed safely through the summer months from July on, with exception of a short but sharp epidemic of about 150 cases of amebic dysentery which has been reported on by Major Craig as due to transmission by flies. The typhoid group of infections was practically negligible, there were only eight cases of typhoid, one of paratyphoid A, and one of paratyphoid B, owing chiefly to the typhoid prophylaxis and to a special paratyphoid vaccination which was given on recommendation of Colonel Stark, chief surgeon, on account of the prevalence of paratyphoid A among the troops in Mexico and at other points along the border. It was anticipated that, during the winter, diphtheria and meningitis might cause trouble; but up to April 1st, only ten cases of diphtheria occurred and only twenty-two cases of sporadic meningitis, chiefly among the Georgia and Ohio troops who are believed to have brought the infection with them. Measles and mumps were also expected, especially among recruits, and occurred in epidemic form with 362 cases of mumps and 578 cases of measles with five per cent. mortality from complications, chiefly bronchopneumonia. Respiratory infections were also naturally expected, but it was hardly anticipated that an epidemic of lobar pneumonia with over 400 cases and twenty per cent. of deaths would prevail.

If the epidemic had been foreseen, little could have been done to make much impression on it according to our previous knowledge on the subject. Some suggestions of progress were reached, however, as a result of recent work on the differentiation of types of pneumococci. This work has made revolutionary changes in our views on the etiology, diagnosis, prognosis, treatment, and prevention of the disease and in the future the handling of epidemic pneumonia in the army should be considerably improved on the basis of this advance in our knowledge. Differentiation of the types of pneumococci apparently began with Neufeld, but its full development is due to Cole, Dochez, and their associates of the Rockefeller Institute and to Lister of South Africa.

Types of pneumococci.—In brief, this work consists in the establishment by biological methods of different types or strains of pneumococci which have different clinical and epidemiological equivalents. Evidence has been presented to show that the majority of cases of lobar pneumonia are not due, as has heretofore been held, to the pneumococci normally present in over fifty per cent. of normal mouths, but are due to the introduction from without of epidemic types of the organism. In this country the two main epidemic types seem to be I and II. These two types differ somewhat in mortality rate and especially in relation to specific serums. The diagnosis of lobar pneumonia by physical signs is, therefore, not complete without a determination by laboratory methods of the type of organism concerned. The treatment of Type I infections by specific serum has produced a remarkable fall in death rate and there is also some encouragement in the specific treatment of Type II infections. New light has been thrown on the heretofore baffling questions of epidemiology. It is now possible to trace the spread of infection by types and to detect infected contacts and carriers. Finally the question of preventive inoculation can be approached with some confidence in the reliability of type immune reactions.

An epidemic of lobar pneumonia.—As is shown in the chart (see Fig.) the epidemic began in November and extended into April, reaching its highest point in the last of February after the return of the troops from Mexico. The weekly number of troops is shown on the upper line and the admissions to hospital on the lower line. No separation of regulars and militia has been made, as figures compiled by Major R. B. Miller, in the chief surgeon's office, show that the

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rate per thousand was practically the same for both kinds of troops. As will be shown later, the cases were not evenly distributed in the different regiments. The chart simply gives a general idea of the situation.

As soon as it was evident that an epidemic was under way, we determined to try out the newer procedures at the department laboratory and base hospital. Colonel Straub authorized Captain Lambie to extend serum treatment, which had already been begun on a small scale. Major Craig secured agglutinating serums through the kindness of Doctor Flexner and Doctor Cole, of the Rockefeller Institute, and of Doctor Wadsworth, of the New York State Board of Health. Doctor Wadsworth also supplied nearly ten litres of Type I serum, and additional agglutinating serums when required, white mice were ordered, and, pending their arrival, determination of type was made when possible by blood cultures, pleural fluid cultures, and autopsy material. Any extensive work on this subject centres around sputum cultures made by the use of white mice and our work, especially in epidemiology, was considerably handicapped at times by the difficulty of keeping sufficient white mice on hand, but enough has been accomplished to indicate the value of the new methods.

With the assistance of Captain Hill the writer has determined types in over 150 cases of lobar pneumonia and in forty additional positive cases of various kinds such as conjunctivitis, nose and throat infections, contacts, etc. The technical details are largely omitted from this paper. The sputum culture method in the mouse followed closely the directions given by Doctor Cole and Doctor Wadsworth, and nearly 250 mice were used.

TABLE I.
TIME AND METHOD OF DIAGNOSIS.

	I	II	III	IV	Streptococcus.
Correct in twenty-four hours by mouse agglutination	58%	62	50	10	21
Correct in forty-eight hours by broth agglutination	42	25	50	47	72
Change necessary from preliminary to final report	0	13	0	43	7

The table shows that correct diagnoses were given in twenty-four hours in about sixty per cent. of I and II cases, but in only ten per cent. of IV cases. In Type IV cases, experience shows it is better not to make a preliminary report in twenty-four hours but to wait until the second agglutination is made, otherwise changes of diagnosis, which are always disconcerting, may be necessary. With more practice one increases his number of early diagnoses, but the above results worked out fairly well with the practice of giving a polyvalent serum on admission.

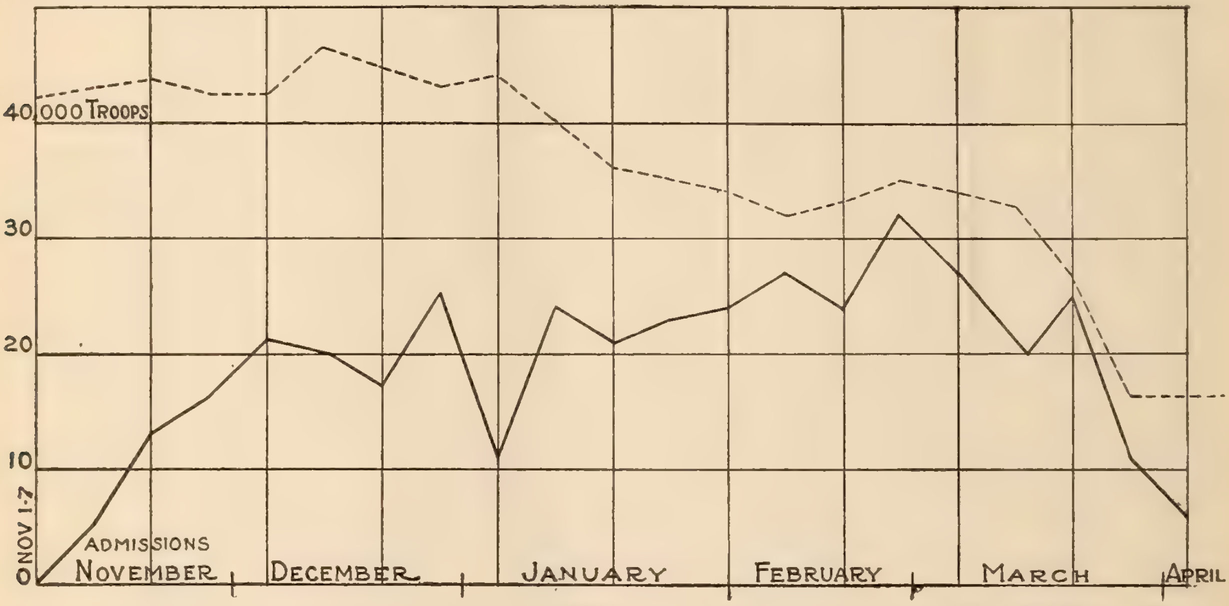

FIG.—Chart showing weekly numbers of troops and admission to hospital for pneumonia, beginning November 1, 1916.

The reliability of the sputum culture method is indicated by the following facts: In six cases the same type of organism was found at autopsy in the lung as had been found by sputum culture; in four cases the same type was found in the pleural fluid as in the sputum, and in five cases repetition of sputum culture gave the same result. In no case was a different type found in the tissues or body fluids from that found in the sputum. One case first reported as a Type IV in a sputum culture showed a Type I in the lung; on reexamining the retained culture it was found to be really a Type I which showed slow agglutination. Contamination of the sputum culture by mouth pneumococci seems to be avoided by the technic followed, and mixed infections with different types seem to be rare.

Relative prevalence of types.—Determination of types was begun about the middle of the epidemic and continued until the end with the following results:

TABLE II.

	Number.	Per cent.	Per cent. mortality for all kinds of treatment.
I.	84	56	14.8
II.	33	22	30.00
III.	3	2	33.00
IV.	30	20	13.3
Total	150		

In addition there were seventeen cases of lobar pneumonia in which pneumococci were not found on one examination; the principal other organism found was the streptococcus. As will be seen Type I and II cases made over seventy-five per cent. of the total—while the types found in the normal mouth, III and IV, gave less than twenty-five per cent. of cases—thus conforming closely to percentages obtained elsewhere. The percentage of Type I was higher than the average of Cole's years' experience in New York but not higher than the ratio for a single year. Whether this ratio is accidental or whether it would be maintained for this class of men or in this locality can be determined only by another year's experience. In South Africa Lister found a fifth group the most prevalent of all, hence locality may have something to do with relative prevalence. Again Type I may have more spreading power than Type II in camps. In view of the results of serum treatment the ratio of Type I to Type II cases must be considered a fortunate one in this epidemic.

Serum treatment.—In the past there has been little conclusive evidence of the value of specific serum treatment in pneumonia on account of our lack of knowledge of the types concerned in the manufacture of the serum and in the disease of the patient. We have been in the position of using unlabelled bottles of tetanus antitoxin, diphtheria antitoxin, and meningitis serum indiscriminately to cure any one of these diseases. Since it is now possible to prepare and give a type serum for a type infection the death rate in Type I cases has been reduced from over thirty per cent. to less than five per cent. This method of treatment has passed the experimental stage and no patient with Type I infection who dies without the early intravenous administration of large doses of Type I serum can be said to have received the best treatment. In Type II cases the results have not been so good in general, but have been worth while in our experience. At present there is no indication for the use of serum in III and IV cases.

A full report on the results of treatment in the present epidemic will be made by Captain Lambie. His table for serum treatment is as follows:

TABLE III.

	Cases treated with serum.	Died.	Per cent.	Cases not treated with serum.	Died.	Per cent.
I.	63	5	8.	18	7	39
II.	23	5	21.7	7	4	57
III.	3	1	33	0	0	0
IV.	24	4	16.6	6	0	0

According to these results the use of serum saved, out of every 100 cases, twenty-five men who would otherwise have died; in economic terms, out of 400 cases, 100 men can be saved at less than the cost of burying them. The routine adopted by Captain Lambie was to give 100 c.c. of polyvalent serum intravenously on admission and to follow it up in twenty-four hours by Type I serum if indicated, or if the type was not determined in time or if the case was Type II, by a second injection of polyvalent serum. The serum from one manufacturer gave a good titre of agglutination against Type I and a fairly good titre to Type II. Another commercial serum gave practically no agglutination against either type. The New York Type I serum, kindly supplied by Doctor Wadsworth, gave the highest titre for agglutination.

The writer agrees that a first injection of polyvalent types I and II serum should be given as soon as possible after clinical diagnosis is made. The laboratory diagnosis, however, should be made as soon as possible. and subsequent injections should be governed by the laboratory findings. It is evident that only reliable serums should be used and tests for agglutination should be made on each manufacturer's supply and on different lots from the same manufacturer.

Epidemiology.—While in the past there has been some clinical evidence of the contagiousness of pneumonia, evidence based on the determination of types concerned is much more convincing. This aspect of the question therefore, early attracted attention. Camp life produces peculiar conditions of association and unusual opportunities for the study of this subject. At the outset of the epidemic there was little evidence of connection between cases. A large number of cases occurred singly in different companies and regiments without apparent connection. After two cases began to occur in the same company, they were not found to have come from the same squad or tent. The fact that seventy-five per cent. of cases were due to types I and II argued that there was a connection between cases and of course there were innumerable opportunities for contact but at first it was difficult to demonstrate the connection, partly because the type of early cases had not been determined.

However, about the time the work on types was well started, eight regiments arrived from Mexico and in some of these organizations definite evidence of contagion by type was obtained. (Table IV.) The Sixth, Sixteenth, and Seventeenth regiments Infantry arrived in El Paso, February 7th and 8th, with a record of but few cases of pneumonia in Mexico. The Sixteenth Infantry developed but one case of Type I pneumonia, the Seventeenth Infantry, February 17th-March 17th, had a small epidemic of fourteen cases of Type I and the Sixth Infantry five cases of Type I. The cavalry regiments, which camped in a different place, had more cases of Type II.

On March 1st, Private C and Private K of M Company, Seventeenth Infantry, were admitted with Type I infection, both men from the same tent. Private K had been in the guardhouse for two weeks and on release on February 27th went to quarters with a rise of temperature. He slept in Private C's bunk part of the time and in two days Private C had a chill and both men were sent to hospital with lobar pneumonia. The four other men in the tent were examined; the saliva of one man was free from pneumococci, the second man showed Type IV, the third Type III, and the fourth Type I. This man remained well and ten days later a culture of his saliva was negative for Type I. From the same company, Private A and Private W were admitted to hospital on March 15th and March 16th respectively, with Type I; both men came from the same tent and had been in the company only a month. In the machine gun company, Private L was admitted on March 7th and Sergeant D on March 17th from the same tent, both with Type I infection. Further examination of contacts was interrupted by the sudden departure of the regiment for the East. Several more cases of pneumonia occurred en route. The other Type I cases were as follows: one from K Company, February 7th; one from D Company, February 21st; one from I Company, March 1st; one from L Company, March 3d; one from A Company, March 5th and one March 10th—men from A Company in separate tents; one from Headquarters Company, March 7th; one from Supply Company, March 17th; one from D Company, March 16th—bronchitis.

TABLE IV.

SHOWING ALL CASES BY TYPES IN EIGHT REGIMENTS—FEBRUARY 7TH TO APRIL 1ST.

Organization.	Headquarters.	A	B	C	D	E	F	G	H	I	K	L	M	Machine gun.	Supply.	Medical department.	Total.
Seventeenth Infantry	I	II	..	..	I	..	..	..	..	I	I	I	..	II	II	..	14, I 1, IV 3, II
	..	IV	..	..	..	..	..	..	..	..	..	II	II II	II	I	..	
Sixteenth Infantry...	..	..	..	..	..	..	..	..	..	..	..	..	..	I	..	..	1, I
Sixth Infantry.......	I	IV	..	I	..	III	..	I	I	I	..	II	..	I	..	..	6, I 1, II 1, III 1, IV
																	21, I 4, II 1, III 2, IV
Fifth Cavalry.......	..	..	..	IV	..	I	..	..	I	II II	..	..	II	..	..	..	2, I 3, II 1, IV
Seventh Cavalry.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	I	1, I
Thirteenth Cavalry...	..	..	..	..	..	..	..	..	II II	..	I	II II	..	..	I	..	2, I 4, II
Eleventh Cavalry....	..	..	..	..	II	..	..	II	..	..	I	..	..	I	..	..	2, I 2, II
Fourth Field Artillery	I	..	I	..	..	..	..	..	..	..	..	..	..	..	..	..	2, I
																	9, I 9, II 1, IV

As will be seen in Table IV the other cases by type in this regiment were one of IV, and three of II. The Sixth Infantry had five Type I cases, one Type II, one Type III, and one Type IV. Six tent contacts of a Type I case gave the following results: three negative, one Type I, one Type III, and one Type IV. In the Thirteenth Cavalry, Sergeant M was admitted from H Troop February 7th, with Type II infection, and died; Sergeant W of the same troop, but not from the same tent, was admitted on March 3d with Type II. Private C of L Troop was admitted on March 1st with Type II, and Private D from an adjoining tent, who frequently visited the tent of Private C, was admitted on March 3d with bronchitis and later acquired pneumonia, Type II. Tent mates of these two men were examined and the saliva showed the following organisms: Three had Type III, one Type I, and one Type II, while four men's mouths were free from pneumococci. In each of three sets of tent contacts, one man was found carrying the same type of organism as caused the original case. None of these carriers acquired the disease.

The Seventeenth Infantry showed direct evidence of squad, company, and regimental Type I contagion. The Sixth Infantry showed evidence of regimental Type I contagion, while the Sixteenth Infantry was practically free from infection or contagion. The Fifth, Eleventh, and Thirteenth Cavalry Regiments showed some evidence of troop and regimental Type II contagion, while the Seventh Cavalry remained free.

The writer will not attempt to discuss the possible predisposing factors which have been mentioned in connection with this epidemic. These include exposure, colds, altitude, dryness, dust, alcohol, overcrowding, state of discipline, activity of medical officers, origin of troops, etc. While some of these factors undoubtedly played a part, the specific cause of epidemic pneumonia was present and some direct evidence of contagion has been demonstrated. That the general conditions were favorable for the pneumococci is shown by the occurrence of epidemic of conjunctivitis due to Type IV and also of a number of Type IV infections of the nose and throat, the same general conditions probably favored the activity of the epidemic types.

Among twenty-seven normal soldiers examined, all necessarily more or less contacts of cases, the types were as follows:

TABLE V.

	Cases.	Per cent.
I.	3	15
II.	1	
III.	6	37
IV.	4	
None	13	48

Prevention.—In the light of our present knowledge pneumonia must be placed in the list of contagious diseases whose cause can be found in the nose, throat, and mouth along with meningitis and diphtheria. The method of transmission of the known virus from actual cases and from carriers is the same in all three diseases and the problem of prevention is also the same. While the recognition of the type contagiousness of pneumonia is an advance, the practical side of the question remains partly unsolved, as in the case of diphtheria and meningitis, not to mention other diseases whose cause is not so easily demonstrated. In general, there are two methods of attacking the problem in these diseases; one is by isolation and the other is by vaccination. To use a comparison, the first method deals with combustible material and means constant inspection and many fire calls and false alarms; the second method deals with fireproof construction and can afford to disregard small dangers. If the second method is effective, it is by all odds the best thing for the military service. The work of vaccination can be done thoroughly in advance of trouble and without any serious interference with military routine, while the work of isolation during an epidemic is disorganizing and in large camps is often of doubtful results. The practice of scattering men in small groups which was advocated for the miners in South Africa would undoubtedly lessen the chances of infection, but this practice is not always feasible in the army.

Theoretically, each case of pneumonia could be isolated, the contacts in the same tent and company could be temporarily isolated and examined, and carriers could be permanently isolated, and probably in this way some cases could be prevented. But can a large epidemic actually be stopped by these measures? We cannot say definitely because these measures have never been carried out thoroughly. The chances, however, are against the success of such measures. In the first place the work involved would be enormous in a large camp, and, although the future may be different from the past, up to the present time our laboratory facilities have never been large enough to handle such a situation in a radical way. In the second place, strictly military duties would have to be practically suspended. This last consideration is of crucial importance because the army does not exist for its health but to accomplish a purpose. Exposure to infection and hardships which will result in deaths from pneumonia may be just as necessary as going into action with resulting deaths from gunshot wounds. While everything consistent with the efficiency of the command as a fighting force should be done to preserve health, the continual isolation of squads and companies for various diseases is not as good a line of approach as vaccination if that is effective. A similar problem exists in the case of meningitis. It is estimated that the number of carriers of meningococcus is ten times the actual number of cases, and the method of detection and isolation of these men with a view to actually stopping an epidemic does not commend itself as much as the possibilities of vaccination which has been so successful in the case of smallpox, typhoid, and paratyphoid. Now that we have the knowledge of types of pneumococci the problem is not so hopeless as it was, especially in view of the work of Lister in South Africa. He has shown that appreciable immune bodies develop only by the use of large doses of the specific types involved and that these large doses are not seriously toxic. Some advantage was demonstrable from vaccination in the old haphazard way and much more is to be expected by the use of specific epidemic types for vaccination. If large camps are maintained in this country next winter, the writer believes that a mixed vaccine of I and II should be used in large doses in order to give this possibly important measure a fair trial.

The vaccine should not be given until the beginning of the pneumonia season in order to secure the benefit of a possibly short immunity, and careful determination of such types as occur should be made. It is often stated that there is little immunity in pneumonia and one attack favors another, but we do know that these second attacks are due to the same type. Vaccination, if even partially successful, would meet the military indication better than an incomplete and disrupting sanitary method. In addition, provision should be made for meningococcus vaccination, which could be given at the same time if indicated. In case of diphtheria the Schick test has shown that fifty to eighty per cent. of persons of military age are immune already, so that the alarm sometimes evident as a result of a few cases of diphtheria among soldiers is not altogether well founded. Moreover, the avirulence of the bacilli in a certain number of carriers is also to be taken into consideration.

RECOMMENDATIONS.

If large camps are maintained during the winter months, preparation to handle epidemic pneumonia should be made: 1. By outfitting a base laboratory with personnel and equipment, agglutination serums, mice, etc., for the determination of types of pneumococci in cases and when possible in contacts. 2. By supplying the hospital with reliable serum and proper apparatus for treatment. 3. By vaccinating the command with a pneumococcus I and II vaccine, combined, if indicated, with meningococcus vaccine.

SUMMARY.

1. Epidemic lobar pneumonia is to be expected in large camps in the winter months.

2. The disease is principally due to types I and II.

3. Serum treatment has produced excellent results in reducing mortality.

4. Direct evidence of tent, company, and regimental contagion has been obtained.

5. Vaccination is considered a more promising measure of prevention than isolation.

MEDICAL NOTES FROM THE FRONT.

Nerve Lesions in the Arm—Postseric Tetanus—Wound Disinfection—Twenty-four Primary Syphilitic Chancres in One Patient.

GENEVA, *June 30, 1917.*

A large number of soldiers wounded in the hand, forearm or arm present lesions of the peripheral nerves, lesions which are permanent if something is not done for their cure. The nerve lesions in arms show themselves principally in the form of a motor paralysis of a nerve or one of its branches. The paralysis may be distinctly limited to a single branch, even when the lesion is seated in the main trunk. The motor forms of nerve lesions are the most common, while the painful types are rather rare. Paralyses and disturbances of the subjective and objective sensibility are by no means in proportion to the gravity of the lesion. In this respect, each nerve of the arm reacts in a special way, but all things being equal, the radial reacts by gross paralytic disturbances, mild anesthetic troubles—usually there is no hypesthesia—and infrequently by pain. The ulnar nerve reacts by incomplete paralytic disturbances, marked anesthesia, and painful phenomena of medium intensity. The median nerve may be the seat of a complete or dissociated paralysis, but painful paralysis with minute motor disturbance, intense paroxysmal painful seizures, and cutaneous hyperesthesia is peculiar to this nerve. When formulating the diagnosis, it is essential to take the purely psychical paralyses into consideration and thus one will often come across a symptomatology which denotes a hystero-organic association. Medical treatment is essential when the syndrome of complete nerve interruption is absent and a partial return of motility indicating a tendency to functional improvement. Surgical treatment may be recommended in the intensely painful form of lesions of the median nerve and it may be laid down as a fairly general rule that when the motility does not improve or when a progressive aggravation follows upon a period of amelioration, surgical interference is indicated. There was, in the beginning, too great a desire to operate on nerve lesions, but at present with all the acquired knowledge that has been offered by the war, we are gradually learning when not to operate. Of course I do not refer to immediate suture of completely cut nerve trunks in an aseptic wound, for the rule is to expose the nerve ends and stitch them together at once. But complete section of nerves is far more uncommon than was generally supposed, and when the nerve is cut down upon what is usually found is that the nerve is embedded in fibrous tissue formation which compresses and strangles it progressively. Electrization *in situ* of the nerve trunk during the interference, according to the method taught by Marie and Meige, allows one to study the physiological value still preserved by the nerve and thus permits the operator to interfere in a general way according to the rule which is now almost unanimously adopted, namely, free the nerve but do not resect. Mechanotherapy, electrotherapy, and massage are the necessary compliments of the surgical cure.

It is, of course, as yet premature to speak of results, as much time must elapse before a sure conclusion can be reached, but I think from what I have been told in conversation with my French confrères and from personal observation of some cases, that the outlook is encouraging. Some operators have thought that they had obtained motor recuperation, but this was unfortunately only illusory, since the improvement was not due to the muscles supplied by the sutured nerve, but to the antagonistic muscles. Therefore, I can but advise the coming military surgeon to maintain a resolutely conservative attitude in wounds of the nerves. In statistics of 100 cases compiled by Claude and Vigouroux, the results of interferences attempted in complete section of the nerve or compression of the trunk gives eighty-seven per cent. improvements, and such men as Quénu, Routier, Delbet, and Reynier are of about the same opinion.

The postoperative treatment consists in mobilizing the limb as soon as possible after the intervention, and instituting an electric treatment with the galvanic current. It is likewise well to correct flexure of the hand in cases of paralysis of the radial, as also the "ulnar claw" in cases of lesion of the ulnar nerve. Massage is also distinctly indicated in all postoperative treatment. One point I would make here is that after suture or freeing of a peripheral nerve, the area of anesthesia or hypesthesia diminishes in extent by restricting its limits to the direction given by the nerve involved and, picturesquely speaking, the anesthesia withdraws like the ocean from the sands when the tide is ebbing away.

Dr. A. Lumière, the well known scientist of Lyons, has been able to observe and follow the majority of cases of tetanus which have occurred in the numerous hospitals of that surgical centre, the patients having previously been given a prophylactic dose of serum. To these cases he applies the apt term of postseric tetanus. The number of postseric tetanus cases observed by him totalled fifty-four, and these he divides into three classes, according to difference in symptomatology from that offered in an ordinary case of the affection, namely, trismus. In these fifty-four patients who had received a preventive injection, and in whom, nevertheless, the disease developed, trismus was absent in fifteen; in thirteen it occurred late in the progress of the affection or was greatly attenuated, while in twenty-six cases this cardinal symptom was present from the beginning with quite the same intensity as in a case in which no prophylactic injection had been administered. These cases also bring up the question as to the time limit of action of antitetanic serum, and Lumière comes to the conclusion that a prophylactic dose does not possess any absolute and unlimited time of action. The duration of absolute immunity conferred by the serum cannot be defined, as it depends upon the relative proportions of the toxin and serum which are in conflict within the organism. The cases of postseric tetanus appear to result from the following two principal factors: 1, an excessive secretion of toxin out of all proportion to the dose of serum injected—this Lumière calls early postseric tetanus; 2, the liberation of the spores of the bacillus of Nicolaïer which up to the time of the eclosion of the affection have been living a latent life. The factor of their liberation is a surgical operation or a trauma occurring at a time when the activity of the antitoxin is spent. This is late postseric tetanus. Early postseric tetanus may, in the majority of cases, be avoided by freely opening up all infected wounds and carefully removing all foreign bodies which they contain, followed by free drainage and repeating the injection of serum once or several times. The late postseric tetanus is also avoidable in about fifty per cent. of the cases if a new dose of the serum is injected before secondary surgical interference is to be undertaken.

Prophylactic serotherapy often imparts peculiar characters to postseric tetanus, disguising, or, perhaps it were better said, deforming the symptomatology and clinical aspects of the disease. In a certain number of cases of postseric tetanus—about twenty per cent.—the antitoxin injected was the means of preventing the fixation of the microbic poison in the central nervous system, its action being limited to the motor nerves of the wounded limb. These instances of localized tetanus in which trismus does not occur are far less serious than the other forms of the affection. In some cases, roughly speaking about twenty-five per cent., the bulbomedullary centres are only partially protected by the prophylactic injection, and in such patients a late appearing or incomplete trismus arises, accompanied by local contraction, and the prognosis is not so good. When the antitoxin has not been the means of protecting the central nervous system, a postseric tetanus with trismus from the start is present. This has been the most frequently observed, occurring in nearly fifty per cent. of the cases. The outlook is bad and a very reserved prognosis is given.

The best treatment of postseric tetanus appears to be the earliest possible exhibition of the serum in large doses, but it may be said that as yet no cure has been found and the best we can do is to combat the symptomatic manifestations as they appear. Chloral and morphine have to be resorted to in large doses, and I know many surgeons who have pushed chloral to twenty to twenty-five grains in divided doses, in twenty-four hours. Injections of magnesium sulphate or sodium persulphate are efficacious, the latter drug being perhaps preferable on account of its low toxicity. Carbolic acid in injections, following Baccelli's indications, are not to be ignored, as this treatment has unquestionably given some good results.

During the recent offensive on the Somme, I am informed that at one automobile ambulance more than 1,200 severe injuries were treated, and the surgeon in charge, Doctor Guillaume-Louis, carried out the following treatment of the wounds. As soon as the patients arrived, the wounds were freely opened up, all foreign bodies were removed, the necrosed tissues were cut away, and disinfection obtained with pure ether or ether to which a certain quantity of gomenol had been added. Later on, after various trials with other antiseptics, it was found that magnesium chloride seemed superior to all others, and drainage was done away with as well. When necessary, gauze moistened in a solution of the magnesium was lightly inserted in the wounds and the surface dressings were the same. The dressings were changed every twenty-four hours with all due aseptic precaution, and under the influence of the drug the wounds cleaned up, the suppuration ceased, or at all events was very trifling, and the number of bacteria diminished. At the end of a few days disinfection was sufficient to permit an attempt to obtain secondary union.

Not long ago, Duchesne advised the use of the following prescription for the dressing of wounds, and since the fluid is very diffusible it penetrates in all the small recesses and at the same time prevents the dressings from adhering to the tissues. It also hastens cicatrization. It is composed as follows:

Camphor,	5.0;
Gomenol,	25.0;
Balsam of Peru,	10.0;
Sulphuric ether, Olei vaselini, ..	āā..500.0.

Another disinfectant for wounds in war highly commended by Vincent as a prophylactic for wound infection is one part of chlorinated lime and nine parts of boric acid, dry and finely powdered. The wounded surface is freely covered with this powder and is said by many to give excellent results. It does not give rise to any pain in the parts. I would also say that the general use of tincture of iodine as a disinfectant seems to be less at the beginning of the war, at least among the French surgeons, and I even know of one or two men connected with ambulances at the front who have discarded all antiseptics, employing only asepsis in their work. Their results have been excellent, particularly in immediate resections of the large joints, especially of the knee.

In concluding these remarks I would say that last March, Butte and Simon showed a patient at the Société médicale des Hôpitaux who was the happy possessor of twenty-four primary syphilitic chancres. The initial lesions were scattered over the internal aspect of the prepuce and glans penis, while others formed a mosaic, so to speak, on the pubis.

CHARLES GREENE CUMSTON.

MEDICAL NEWS FROM WASHINGTON.

Vacancies in the Medical Service—Precautions Against Epidemics in Naval Service—New Method of Compiling Statistics—Bill to Define Numbers and Personnel of Medical Department—Plans for Thirty-two New Army Hospitals—Plans for Hospitals in Camps—Examination of Recruits by Specialists.

WASHINGTON, *July 30, 1917.*

Major General William C. Gorgas, surgeon general of the army, has authorized the statement that in spite of the numerous responses to the call for physicians and surgeons for the military service there are many vacancies, both in the Medical Corps and in the reserve. General Gorgas urges upon the profession the necessity of enrolling more physicians and surgeons in time to secure ample training in the studies of the military surgeon and sanitarian. Those entering the reserve do so with the expectation that they will serve during the war, and those that enter the regular service form a more permanent connection with the army. Examinations for admission to the Medical Corps of the regular army are held on the first Monday of every month, and applications should be made directly to the surgeon general of the army.

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Arrangements have been made by the surgeon general of the navy to extend the scope of the work of the new sanitation branch of his office. Already that branch is supervising sanitary inspections at the naval stations and camps and in the civilian communities in their vicinity, as an aid to the identification and prevention of the spread of disease. Now, as a further check upon the spread of epidemics in the naval service, it has been arranged, through the cooperation of the Public Health Service, to obtain accurate reports of the prevalence of epidemics in the civilian communities from which naval recruits are drawn. It is proposed to identify the localities that are apt to be the foci of such diseases and to take precautionary measures in the first instance to prevent their introduction into the service. It is believed that this will prevent the troubles that have occurred to some extent at the naval training stations and on board ship by reason of the admission to the service of so many young men from all sections of the country. In connection with this, there has been inaugurated in the Bureau of Medicine and Surgery a new method of compiling statistics by means of counting machines. Data obtained from the health records are placed on cards and sent to the bureau where the information, numerically designated, is transferred to a slip by means of a punching machine. These punctures under headings can be placed in a record and sorting machine, and the results in the way of classified statistics covering a wide range of subjects may be produced at the rate of 325 cards a minute with a vast saving of time and a contribution to accuracy as well.

* * * *

Senator Owen, of Oklahoma, has introduced an amendment to a pending Senate bill that aims to amend the national defense act with respect to the personnel of the Medical Department of the army. The amendment provides that hereafter the commissioned officers of the Medical Corps of the regular army shall be distributed in the several grades as follows: major generals, 0.25 per cent.; brigadier generals, 0.25 per cent.; colonels, four per cent.; lieutenant colonels, eight per cent.; majors, 23.5 per cent.; captains, thirty-two per cent., and first lieutenants thirty-two per cent. It is provided also that, when called into service, the numbers of the officers of the Medical Reserve Corps shall be seven to the thousand men in the national guard and national army, and the relative grades of the officers of the Medical Reserve Corps shall be the same as the grades of the regular army. The President shall have authority to appoint officers of either the regular or reserve corps as consultants with the duty of acting in the advisory capacity, making inspections and reports on medical, surgical, and sanitary questions, and such other duties as may be required by the chief of the Medical Department.

Senator Owen, in explaining his amendment, stated that the secretary of war has strenuously urged upon Congress legislation to give the army equalization of rank in the higher grades with that of the navy on the ground that otherwise the detrimental effect on the army would be too clear to require more than a statement. "This argument of the secretary of war applies with precisely the same force to the organization of the Medical Department, which should not be put in the position of subordination in the field for which it is responsible. It should have a commanding position of dignity and responsibility, and when the recommendation is overruled it should be overruled by an officer of equal rank in the line for military purposes only, and then that officer should be personally responsible for the consequences, and, if he errs, should be subject to immediate court martial." There also was submitted a comparison table of the percentage composition of the Medical Corps of the army, existent and proposed, as compared with the principal foreign armies and the United States navy showing that the navy already has the proportions in the pending amendment and with the percentage of major generals proposed is surpassed by the Italian, French, British, Austrian, and Japanese armies, and that Italy, France, Great Britain, Austria, and Japan all have officers of the rank of lieutenant general under their medical departments, while the United States has none.

* * * *

The Medical Department of the Army has announced that $14,500,000 would be expended in the construction of thirty-two new army hospitals. Hospital provision will be made in the United States for five per cent. of the enlisted force by the early fall, and this will be gradually extended to ten per cent. Facilities will be provided in Europe for twenty per cent. of any expeditionary force which may be sent over. At the cantonments in the United States, hospitals will be provided to care for three per cent. of the troops to be assigned to each camp. The standard adopted will be a one thousand bed hospital. Such a hospital with its various subsidiary buildings will require sixty acres and will cost about $500,000, inclusive of heating plants.

Each hospital will have equipment equal to that of the best institutions in the country, although the construction of the buildings will be of much cheaper quality. One type is being used for all the construction work. All the buildings are twenty-four feet wide, the length varying to meet the needs. The wards are usually 157 feet long, which is the size needed for thirty-two beds.

There will be a diet kitchen for each ward, a porch on one side and end of each ward, and a corridor connecting with the buildings on either side, which will be covered in the case of northern cantonments. About seventy buildings will be comprised in each cantonment hospital on the 1,000 bed basis. In some cases two wards are joined, reducing the actual number of separate buildings, but the number of buildings will reach about seventy, counting each ward as a building.

Each hospital will have a laboratory for bacteriological and pathological work. Some special blood tests will be made at the department hospitals, which will take care of any work that the divisional hospitals at the camps cannot attend to. There will also be an infirmary for each regiment. There men not needing to be confined in hospital will report, when any condition appears which demands watching and vaccination will be done, and the typhoid and paratyphoid preventive treatments administered.

There will be nearly 400,000 men in the National Guard camps and 500,000 in the national army cantonments—an army of nearly 1,000,000 exclusive of the regulars. Plans have been made for enlarging some of thirty hospitals used in connection with the officers' training camps. Two general hospitals at ports are being taken over by the army. Two other general hospitals are being enlarged behind these and a number of general hospitals are being taken over or built for special treatment work. Plans for the latter phase of the work are not complete. It is announced that steps were being taken to work out plans for reconstruction hospitals where artificial limbs will be made and fitted, repair surgery done, and the reeducation of cripples begun to enable them to use the artificial limbs.

* * * *

Each man in the new armies will have the equivalent of six or more examinations by specialists, in addition to the regular examinations as to general health and condition. Leading specialists are now working out plans and personnel for the special examination work at each hospital. Every man will be examined for tuberculosis, affections of the heart, foot trouble, ear, throat, and nose diseases, hookworm and other intestinal infections, and for typhoid, paratyphoid, and other disease carriers.

Editorial Notes and Comments

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EDITORS
CHARLES E. DE M. SAJOUS, M.D., LL.D., Sc. D.
Philadelphia,
SMITH ELY JELLIFFE, A. M., M. D., Ph. D.,
New York.

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PHYSICAL CLASSIFICATION OF RECRUITS.

The United States enters the war under advantageous conditions in at least one respect. It has before it the experience of the other nations now fighting as a guide, not only what to do and how to do it, but also what not to do. We should carefully study the experience of England, since the conditions in the United States more closely simulate those in England than in any other country. Both nations entered the war with a very small standing army and without any reserves, either of men or materials, to draw on. Both nations have been compelled to improvise methods, to manufacture material, and to raise and train an army. Probably the most costly error made by Great Britain was the attempt to carry on the war by a volunteer force. This led to the acceptance of men who would have been more serviceable in civilian life than in the ranks, and above all it led to the acceptance of men who were physically unfit for the severe ordeals which modern war imposes upon the individual soldier. The laxity shown in the medical examinations in the early stages of the war in Great Britain is reflected in an enormous pension list of soldiers disabled even before their actual entry into war service. These conditions have been mended, however, and every examining board of the British Army now includes four or more physicians, and generally several specialists. These cooperate so that when a man is accepted by a British army medical board, the government may feel assured that he will not be an immediate candidate for retirement on a pension.

One feature of the medical examination as conducted in the British forces might well be adopted by our own Government in the examination and rating of the men called to the colors through the draft act. This feature is the physical classification of the men. Many men, for instance, quite fit for clerical duties at home, are physically unfit for work in the trenches. The British divide their candidates into eight classes according to their physical fitness for different forms of military service as follows: general service; garrison duty abroad; labor work abroad; clerical duty abroad; garrison duty at home; labor work at home; clerical duty at home; totally rejected. Each man examined is furnished with a card, dated and signed by the president of the medical examining board and by the man himself, who is required to keep this in his possession at all times. Every man of military age in England is required to have such a card. When called to active service in his particular class, he may improve in physique and be promoted to a higher class, or he may deteriorate under the pressure of war service, so that he will be demoted. The thorough examination given originally by the medical examining board furnishes valuable data regarding the fitness of the man for military duty, and when supplemented by careful subsequent inspection, offers a safeguard to the government against an undue increase in the pension list. It is not yet too late to have some such graded qualifications reported by our own boards of medical examiners who will pass on the physical fitness of the men called out under the draft act.

SYMPTOMS OF EYE STRAIN DUE TO PRESSURE IN THE NOSE.

"Who among us has not been baffled and exasperated with numerous patients suffering from more or less constant pain in the eyes and head, which is increased with the slightest effort at accommodation, or on exposure to even moderate light, and who have gone from optician to oculist, and from one oculist to another for relief, each prescribing glasses of negligible strength differing slightly from the one before, and still the symptoms persist?" asks Fred Stauffer in a recent number of the *Annals of Ophthalmology*. He reports a number of cases in which he discovered the cause to be pressure between the middle turbinate and the septum, has given relief by the removal of this pressure, and complains of the paucity of the literature on this subject, even in the most recent textbooks. Yet he has discovered nothing new. A search through current medical literature since 1886, when the late Dr. Emil Gruening called attention to the importance of this condition, will reveal occasional papers in which cases are reported which seem to be almost duplicates of those just recorded by Stauffer, and treated in the same way with excellent results. Many years ago Ziegler dubbed the area about the tubercle of the septum "the eyespot of the nose," and cases have been reported in which the pain from an operation in this region was felt exclusively in the eye. The subject is also dealt with in some recent American textbooks and translations, but he is right in considering it not a matter of common knowledge or investigation.

In a patient who presents the ordinary symptoms of eye strain, which do not disappear after correction of such refractive and muscular faults as may be present, those symptoms very probably depend on a fault in some other organ of the body causing reflex asthenopia. The cause in many such patients is a pressure between the middle turbinate and the septum, and these patients are said to have nasal asthenopia. They are not uncommon. They wander about, as Stauffer says, they accumulate glasses, they submit to operations on their eyes, they are befogged, bemazed, bewildered, yet without relief, though they have spent money freely. Chance may bring them to an oculist who listens to their history —and inspects the nose. Why is not such an examination made more commonly? We are certainly aware that there is such a thing as reflex pain. The otologist does not hesitate to attribute an aching healthy ear to a carious tooth. Then why should an eye surgeon fiddle around and make inconsequential changes in the prescription of another surgeon just as competent as he is when the latter has failed to relieve the symptoms? That is not the scientific way to relieve suffering for which the patient is paying his money.

Perhaps it may be because the training of eye specialists has been so narrow as to lead them to expect to find the cause of every eye strain in the eyes themselves. These specialists are trained in the large eye clinics, in few if any of which is a suggestion of possible reflex trouble ever heard. The patients are furnished with the obvious correction of such ocular faults as they may have, and if they have the ill grace to continue to complain of their symptoms after such correction, so much the worse for them. They had better seek the aid of some general practitioner to find out what is the matter. Rarely is there even a thought of a possible intranasal pressure. It seems to be a rank heresy to think of examining a nose in an eye clinic. If the possibility is thought of and there is a nose and throat clinic in the next room, there is difficulty and delay in obtaining an examination. The patient must be entered anew and caused to wait his turn again, unless accompanied by a persistent eye surgeon, who has abandoned everything else to this one thing, and forces a break in the routine and an examination out of turn. Then he faces the selfcomplacent rhinologist who knows that there is no connection between the nose and the eye. Such patients do not consult him because their respiration is unimpaired and they do not connect their suffering with the nose. "There is nothing in it, nothing in it whatever," said a prominent selfsufficient professor of rhinology concerning nasal asthenopia a very few years ago. But there is something in it; there is plenty of suffering. If the ophthalmic student is not to be taught how to examine the nose in search of the reflex cause of pain in the eye, the way should be made easy for him to obtain a proper examination for his patient. The rhinologist in turn should concede that the organ to which he is devoted may be the seat of reflex pain elsewhere, even in the eye, and should be willing to extend his examination farther back than the tip of the middle turbinate so as to explore the area whence this reflex pain is most likely to come. That would permit of a truly scientific search for one of the numerous causes of the symptoms of eye strain, and allow us to hope that the practice of the students, after they have become practitioners, will be more scientific and less casual.

WAR, COMMERCIAL ECONOMY, AND THE PEOPLE'S HEALTH.

In the face of the storm the oak grows strong. Whipped by the gale, battling for its right to stand, the tree gathers its forces to resist and thus it waxes greatest of trees. This is nature's law of growth and power. The American people, filled with an ease and comfort beyond that of the ordinary measure of the world, have set their teeth to the gale. They have turned to face the storm. Much that is but superfluous luxury, which is in fact weighing us down upon the side of indolence and unproductiveness, will be swept away. What is variously called pleasure loving, selfseeking, infantile aim rather than firm adult purpose spends individual and national forces along the path of indifference and carelessness, a slipshod case in supplying material necessities and comforts and in higher satisfactions as well. These are such small things, many of them, that in the time of ordinary methodical consideration they would hardly be pruned away. The storm of war, however, cannot suffer them in its path. It performs its own service for the health of the people. And the nation must bend and writhe, perhaps, but nevertheless, braving it, hold itself stronger for being thus swept clear, and learn that conservation of its strength, which is the putting of it forth in a new endeavor, counts in the actual progress of civilization. Such girding up is health.

Thus a problem of mental and bodily wellbeing as well as a matter of commercial economy is involved in the plea issued by Ida M. Tarbell and the Commercial Economy Board of the Council of National Defense for a reform in a simple and practical matter. This is the more careful concentrated ordering on the part of housewives and other retail purchasers to simplify the delivery of goods, and the willingness even to carry them home oneself. It will not, to be sure, appear so simple a concern when men and equipment are to be released for war service. It becomes therefore in a twofold way another of the chastening experiences by which the people are to awaken to the seriousness of the present task and to the stern discipline to which the storm is to bend individual and national strength. There is room here as elsewhere for that hysteria of zeal which forgets or never considers wherein efficiency really lies. The productive worker who would dissipate time and strength from other necessary or useful work to fulfill the letter of the suggestion would learn no efficiency from the times nor present any economy of resource to the country's service. The message, however, has no such significance. It comes to remind us that there is great need of reform in the affairs of daily life, household management, personal shopping, for directed purposefulness instead of selfindulgent thoughlessness and even selfish inconsiderateness of true business economy to which our luxuriant systems have directly catered. Personal economy and thoughtfulness here at the price of some inconvenience and actual physical effort will awaken a new value not only of things to be bought and sold, but of the whole economic system of convenience and facility of purchase. These will come to be not things appraised at their own intrinsic worth, but merely a part of a greater efficiency which is the servant of higher things, toward which our better awakened self stands in very nature pledged.

This lies just now in the international task undertaken. This very task, with its sacrifices, even such lesser ones than this, will toss and rend us before it is done, but the strength that will grow from it must be greater because a clearer and more surely directed one. For the task of "creative evolution," that is of life, in its constant progress in this conscious directing of all the forces within which make the desires toward what is external, and of all the outward forces as well. They are all to serve the individual purpose which at its highest and best is thus applied to a ceaselessly forward shifting goal of progress. Such the war works for, such from its sacrifices and disciplines we shall more surely learn. This tends to all that is sound and effectual strength. It takes control of psychical and bodily forces and keeps them well in useful effort. Therefore this practical recommendation is a matter again of individual and national health in time of need.

TOO MANY MEDICAL SOCIETIES.

P. G. Wodehouse once said there are so many newspapers in New York that if an Esquimau, recently arrived on Broadway, should feel the want of congenial literature, he would no doubt find a *Blubber Gazette* where he could at once get the latest news from the Land of the Gumdrop. In like manner we have often thought that medical societies were proportionately just as profuse. For example, the average, medium sized American town has its local medical society, its surgical society, its ophthalmological society, its orthopedic society—in short, its society for every specialty. In addition, if there is a medical school nearby, the town will have a society named after it; groups of friends are apt to form small societies which they name after some famous physician; thus there will be an Hippocrates society, a Galen society, a John Hunter society, and so on. What is the effect of all this? One result is that the meetings of the main local society, usually a branch of the American Medical Association, are poorly attended. The neurologist, when he can spare the time, goes to a meeting of the local neurological society and neglects the general medical society, and the same is true of members of other specialties. Thus the specialists get more out of touch with general medicine, the general practitioner fails to appreciate the aims of the specialist, and both are harmed thereby.

There is little or no excuse for the average special society in the average American city. Let us take the example already quoted, neurology. In a city of fifty thousand inhabitants there are not likely more than five men at the outside who specialize in this branch. Besides them there will be perhaps ten general practitioners who have a liking for study of mental diseases; these fifteen will form an organization with the imposing name of The Boomville Society for Nervous and Mental Diseases. This society will meet once a month with an attendance of from five to ten. After the first few months the secretary of the society will begin to beg and implore the members for papers. As a result, the neurologists will give highly technical presentations of rare nervous diseases and the other members will give elementary presentations of such subjects as tabes, paresis, and multiple sclerosis. Both sections of the society will be immeasurably bored but will not admit it and will continue to attend a reasonable percentage of the meetings lest it should be said of them that they are losing interest or getting behind the times. After a few years of such a society, the problem of obtaining material for its programs becomes stupendous. Now and then a new member appears upon the horizon and interjects a few fresh points of view and reads a few papers which are something of a change, but ordinarily the poor secretary spends hours calling up Smith, Jones, and Brown, begging them to cast about in their practices to find some neurological case to present, or to dig up some paper they wrote years ago and furbish it up for one of the meetings.

The same thing goes on in other special societies. The lesser general medical societies in the town, founded, as they so frequently are, on a social rather than a professional basis—although this fact may not be appreciated by the members themselves—are apt to be more entertaining. A bright, amusing paper is read, refreshments are served, a few lively anecdotes, growing more and more lively as the evening progresses, are told, and the members depart, feeling that, in the words of the bucolic journalist, "a pleasant evening was had by all." There is no real objection to a society of this kind except that it masquerades as a medical society when it would perhaps be better to admit frankly that its cardinal purpose is social.

It would be a great gain, then, if all the little special societies in a small city were amalgamated into the large medical society. That organization could and in fact should have symposiums throughout the year when the specialist would be in his element. Then, too, there would be no objection to papers being read from time to time dealing with special subjects, particularly in their bearing on general medicine. Take, for example, the hypothetical neurological society mentioned above. How much better for one of its members to present before an audience made up of his fellow practitioners a case of early multiple sclerosis, showing how easily it might have been called hysteria and bringing out the diagnostic points, than to discuss the same thing before five or six men who know it as well as he does. In the former case many of the physicians present will be actually benefited by the exposition and the neurologist will be able to demonstrate his own value to the community while in the latter case we have boredom, ennui, somnolence—and nothing gained. The specialist would lose nothing by such a procedure, for he either takes or has access to one or more magazines devoted to his specialty, and in that manner is able to keep abreast of progress in his line of work. He gains a broader outlook upon medicine, a closer touch with his fellow workers in the great field of humanitarianism and—a material gain, but none the less deserving of mention—the mutual benefit of sharing with the general practitioners of the city consultation work which might otherwise be neglected. As illustrating this we remember one evening last winter hearing a physician say: "I would like to be there, but honestly I have a medical meeting on every night next week." This was said with what appeared to be rather a feeling of pride, and indeed this may be one of the reasons for the wealth of societies. If so, it is another argument for reducing their number. At any rate our efforts should be concentrated rather than dissipated. Let there be one good, live society, rather than twenty anemic ones. Such a system should be given an honest trial for a few years.

EXEMPTION FOR MEDICAL STUDENTS AND DOCTORS.

Notwithstanding the fact that medical students have been advised to continue their courses of study so as to provide more surgeons for the army, the first man accepted in the National Army in the city of New York was a medical student. The policy of the Government seems to have been to avoid exemptions by classes, leaving individuals to make claim for exemption to be passed upon by the exemption boards. This will undoubtedly lead to inequity and to variations in the rulings, since every exemption board may take a different view of the same claim. Moreover, it places upon the man the onus of asking for exemption. If he is not aware that medical students are desired to continue their course of study he may not ask for exemption. Indeed, some of the younger students might prefer to enter service immediately as privates rather than to complete their course of study with a possible chance of active service as officers later on. We have been told with much blowing of trumpets and beating of drums that we were to have a selective draft. If one may judge from the rather scanty reports published as to the character of the instructions given to the exemption boards, the term selective draft is not at all applicable to the law as being carried out. There seems to have been much unnecessary work saddled on the medical examining boards in requiring them to make their examinations before the question of exemption was passed upon. The authorities themselves reckon that at least fifty per cent. of the men called will be exempted for one cause or another, and we cannot see any adequate reason for examining 100 men physically when we know that only fifty of them will be called.

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News Items

Japanese Surgeons to Aid Rumanians.—According to the cabled despatches, Japan is to send one hundred surgeons to the field hospitals along the Rumanian front. They will be sent to Europe during the month of September. These surgeons, who have been selected for their exceptional ability, will be attached to the field hospital corps of the Rumanian army.

Eleven Thousand Commissions Offered, Five Thousand Accepted.—According to the Council of National Defense, approximately eleven thousand commissions have been offered in the Medical Reserve Corps, of which only about five thousand have been accepted. The medical section of the Council is undertaking an investigation of the cause of this condition of affairs.

$300,000 for Armenian and Syrian Relief.—For relief of civilian populations, Christian and Moslem, in Asia Minor and adjoining regions, the Red Cross war council has appropriated $300,000 to be expended this month by the American commission for Armenian and Syrian relief, and will make similar allowances monthly for the rest of the year, if the Turkish government does not hamper the committee's work seriously.

Selective Draft for Doctors.—A petition requesting Congress to provide for a selective draft for American doctors for military service has been circulated for signature among the doctors attached to the various New York City hospitals. The petition emanates from the medical section of the Council for National Defense and urges a selective draft for doctors between twenty-one and forty-five years to act as medical officers, and to exempt them from service in the national army as privates to the effect of the draft act.

The Occupation Must Be Stated in Death Certificates.—The Director of the Bureau of the Census calls attention to the fact that it is most important that definite statements regarding the occupation of the decedents should form a part of death certificates. Until this is done, the statistics of mortality by occupations will continue to be unsatisfactory. The bureau is now planning to issue a monograph on tuberculosis, and it particularly urges all physicians to be definite regarding the occupations of all persons dying of tuberculosis.

A Police Surgeon's Auxiliary Medical Corps.—The committee of the Women's War Auxiliary of the New York Hospital has undertaken to raise and equip an auxiliary medical corps for the police and fire departments comprising three hundred surgeons. The corps is under the command of Dr. Edward T. Higgins, chief surgeon of the police department, with the following chiefs for the several boroughs: Manhattan, Dr. Harold Barclay; Bronx, Dr. Alvin E. Munson; Brooklyn, Dr. Walter A. Sherwood; Queens, Dr. William T. Scoville; Richmond, Dr. Alfred H. Thomas.

Personal.—Dr. Paul Ely McChesney, assistant editor of the NEW YORK MEDICAL JOURNAL, has received his commission as lieutenant in the Medical Officers' Reserve Corps, U. S. Army, and has been ordered to Boston for a course of intensive training in the psychopathic hospital, with a view to acting as special psychopathic expert in the examination of recruits for the national army.

Dr. Michael J. Thornton, assistant superintendent of Bellevue Hospital, has been appointed an assistant surgeon in the Medical Corps of the U. S. Army, with the rank of captain. He is under orders to report for active duty at Governor's Island.

Typhus Fever in Austro-Hungary.—During the period from October 22d to December 17, 1916, 2,371 cases of typhus fever were reported in Austria, the greatest prevalence being in the Province of Galicia with 809 cases, Bohemia with 634 cases, and Styria with 243 cases. From February 19th to March 25, 1917, there were notified in Hungary 1,381 cases of typhus fever, of which 83 occurred at Budapest and 12 in seven other urban communities, the remainder being distributed in eleven counties.

Another Red Cross Unit for Richmond.—Dr. Stuart McGuire, now acting as aide on the staff of Surgeon General Gorgas, has been authorized to organize a base hospital unit for the medical college of Virginia, for service in France. In Doctor McGuire's absence the work of organization is going forward rapidly in Richmond. He is expected to return after a two weeks' tour on duty in Washington. The unit is expected to comprise about 360 men and women. Doctor McGuire will also organize an ambulance company in Richmond independently of the base unit.

A Red Cross Mission to Italy.—The fourth Red Cross commission to be sent to Europe by the American Red Cross Society is to go to Italy, according to an announcement made by Mr. Henry T. Davison, chairman of the Red Cross War Council. It will be headed by Mr. George F. Baker, Jr., of New York, and its membership will include John R. Morron, president of the Atlas Portland Cement Company; Dr. T. W. Huntington, of California, president of the American Surgical Association; Dr. Victor G. Heiser, of the United States Public Health Service, and Nicholas F. Brady, of New York. Professor Chandler R. Post, of Harvard University, a noted authority on Italy, accompanies the commission.

Government Health Chiefs Discuss Sanitation Work.—A general symposium on sanitation problems affecting not only the army and navy but the public health as well was held on Saturday, July 28th, by the general medical board of the Council for National Defense. Papers were read by Colonel Edward L. Munson, appointed by the Surgeon General of the Army to take charge of sanitation in training camps, and by Colonel Frederick P. Reynolds, also of the Army Medical Service.

Surgeons Richmond C. Holcomb and Earle Phelps spoke on the organization of the Navy Health Service. Surgeons General Gorgas and Braisted were both present, and Admiral Braisted spoke briefly on the new problems of sanitation facing the navy. Assistant Surgeon General Rucker, of the Public Health Service, read a report on the work being done to take care of sanitation problems in the districts in the neighborhood of cantonments.

Tuberculosis Hospitals in New York State.—With a view to mobilizing all resources which will assist the counties of the State in carrying out the provisions of the recently enacted law requiring the construction of tuberculosis hospitals in counties of 35,000 population or more, Dr. Hermann M. Biggs, State commissioner of health, has appointed two committees which are to take entire charge of the tuberculosis situation in the State. The first committee, which is headed by Dr. John A. Smith, secretary of the department, will have general supervision of sites, plans, construction and equipment of tuberculosis hospitals, and will carry on the antituberculosis campaign in the State. The second committee, which is composed of some of the foremost authorities on the subject in the State, will act as an advisory board.

With Dr. John A. Smith on the first committee will be Dr. O. R. Eichel, as vice-chairman; Dr. E. S. McSweeney, as secretary; George J. Nelbach, of the State Charities Aid Association; C. A. Holmquist, as engineering expert; Frederick Sprenger, as construction expert; J. D. Burt, as architect, with Dr. Matthias Nicoll, Jr., deputy commissioner of health, as a member of the committee ex officio.

The advisory committee consists of Dr. Albert H. Garvin, superintendent of the New York State Hospital at Raybrook; Dr. John S. Billings, of New York city, medical director of the New York Telephone Company; Dr. Charles Stover, of Amsterdam, president of the board of managers of the Montgomery County Tuberculosis Hospital; Dr. Horace J. Howk, physician in charge of the Metropolitan Life Insurance Hospital at Mt. McGregor, and Dr. Lawrason Brown, of Saranac Lake.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

THE USE OF INEXPENSIVE DRUGS IN PRACTICE.

By Louis T. de M. Sajous, B. S., M. D.,
Philadelphia.

The drugs acting as stimulants to the circulation having already been discussed in this series of articles, we are next led to a consideration of the agents exerting opposite effects, viz., circulatory depressants. From the standpoint of high blood pressure due to excessive contraction of the vessel walls, the group of drugs acting most directly is that of the nitrites. In general, the nitrites have undergone only a moderate increase in price since before the war. Amyl nitrite, however, now costs about forty per cent. more than in September, 1914. Spirit of nitrous ether has increased in value about twenty per cent. In the case of nitroglycerin, in the customary one per cent. alcoholic solution, the price has also risen somewhat in accordance with military explosive requirements, while in that of sodium nitrite little or no increase in cost seems to have taken place. Comparing now the different nitrites from the standpoint of cost by dose, we may note that they naturally fall into two groups. In the less expensive group are nitroglycerin and sodium nitrite, which are about equal in cost in doses of one minim of the official one per cent. solution and one grain of the salt respectively. In the other group are amyl nitrite and spirit of nitrous ether, likewise practically equal in cost in doses of three minims and thirty minims, respectively, and both about five times as expensive as nitroglycerin or sodium nitrite. Erythrol tetranitrate, an unofficial drug sometimes used clinically, is much more costly than any of the official nitrates, being about fifteen times as expensive as amyl nitrite and seventy-five times as expensive as nitroglycerin. Comparing the nitrites with the circulatory stimulants discussed in previous installments, we note that even the cheapest nitrites are more costly than many of the commonly used stimulants, strychnine by hypodermic injection, for example, entailing only about one fourth the cost of nitroglycerin or sodium nitrite.

The problem of expense reduction in the use of the nitrites resolves itself into an inquiry as to the possibilities of substitution of the less for the more costly remedies of the group, and in connection herewith the relative rapidity of action of these agents is an important consideration, the quality of their effects being otherwise almost the same. According to Wallace and Ringer, 1909, the action of inhaled amyl nitrite on the blood pressure begins in one minute, attains its maximum in three minutes, and passes off in seven minutes, whereas that of nitroglycerin, according to Matthew, 1909, while likewise beginning in one minute, reaches its maximum in five minutes and passes off only in half an hour. There is little doubt, to be sure, that under amyl nitrite the fall in pressure may at times begin in less than a minute. The depression caused by a two or three minim dose of spirit of glyceryl trinitrate is stated by Matthew as twenty-five to thirty millimetres Hg., and that from a three minim dose of amyl nitrite as fifteen millimetres Hg. (Wallace and Ringer). Experiments have shown that the duration of the action of the nitrites is less modified by changes in the doses used than is the extent of the reduction in blood pressure. The ethyl nitrite embodied in spirit of nitrous ether is also one of the more rapidly acting nitrites, though held not to act as strongly as nitroglycerin.

From what has been said it will be manifest that nitroglycerin is not far behind amyl nitrite in rapidity of action, while possessing the advantage of a much more prolonged effect. In disorders requiring prompt relief from nitrites, little or nothing would, in general, be lost in substituting nitroglycerin for the inhalation of amyl nitrite. The amount of the latter absorbed must necessarily vary, a considerable portion of the drug being lost by some patients in their attempts to inhale it. Wallace and Ringer, moreover, in a systematic clinical investigation of the various nitrites, witnessed not infrequently a rise instead of a fall of blood pressure after amyl nitrite, where the dose given had been small. Nitroglycerin is known to be promptly absorbed when merely brought in contact with the oral mucosa,—e. g., when placed under the tongue (Cornwall, 1913)—and no rise in pressure after 1.5 minims of nitroglycerin solution is mentioned as having occurred in the experiments of Wallace and Ringer. Vaquez, Murrel, and others have specifically recommended nitroglycerin in angina pectoris.

For the relief of a weak, overburdened heart through artificial diminution of peripheral vascular resistance, the value of nitroglycerin has been widely appreciated, though perhaps too exclusively as a measure of last resort. In hemoptysis Braga, 1907, Grace-Calvert, 1908, v. Rzentkowski, 1908, and many others have deemed nitrites useful, though one should not forget the admitted difficulty of properly estimating therapeutic results in this condition. The experiments of Macht, 1914, who observed constriction of the pulmonary artery in animals after nitrites, have been held to confirm the clinical applicability of these drugs; here again, however, correct appreciation of the actual effect is not easy, as constriction of the pulmonary artery might mean increased pressure in the pulmonary circulation, thus perhaps defeating the hemostatic action in the lung in spite of any general vasodilatation induced. While Frey, 1909, experimentally observed a slight increase of pulmonary hemorrhage under the influence of nitrites, many have seen fit clinically to continue the use of amyl nitrite or nitroglycerin in hemoptysis. A rather widespread impression now seems to exist, that only large doses are useful in the condition. Thus, Squires, 1909, advises the employment of ten or fifteen drops of amyl nitrite on a handkerchief, repeated if necessary several times a day; in abundant hemorrhage even larger doses, such as thirty to fifty minims, may be required. Undoubtedly in many cases nitroglycerin can be substituted for amyl nitrite. Flick, in cases with slow, moderate bleeding, uses two to four drop doses of spirit of glonoin at short intervals. Where hemorrhage is so severe that even the slightest delay in drug action is to be avoided, amyl nitrite should doubtless be used first, if at hand. Soon after, e. g., after an interval of about five minutes, the administration of nitroglycerin may be begun if it seems advisable to keep up the nitrite effect. Similar early substitution of nitroglycerin for amyl nitrite may be resorted to in all emergency cases in which an almost instantaneous effect is required. In other acute cases, nitroglycerin would seem a satisfactory and even advantageous substitute for amyl nitrite from the start.

(*To be continued.*)

Psychical Isolation in the Treatment of So Called Functional Nervous Disturbances. — Landau (*Bulletin de l'Académie de médicine,* May 29, 1917) asserts that in recent military practice such therapeutic procedures as hypnotic suggestion, gentle but firm persuasion, as practised by Déjérine, mental orthopedics according to Dubois's method, and ordinary isolation, have proved failures in the majority of cases. The more successful method resorted to by the author consists essentially in an exchange of views and reflections between the physician and patient, so ordered as to demonstrate to the latter that the condition he believes he suffers from is without foundation and impossible. The patient with the functional disorder is placed, among other subjects suffering from similar, but organic and real disturbances. Thus, if the case is one of functional causalgia, the physician summarizes for the patient the course, cause, and distinctive signs of this condition. In the case of functional paralysis of a peripheral nerve, a brief explanation of the diagnostic electrical modalities is given before the whole group of patients and the electrical examination of the case in hand then proceeded with, with simultaneous examination of a case organic in origin. After a few sittings and at times even on the first day, the attitude of the functionally affected patient before his comrades is weakened and undermined. While the physician's remonstrances have no effect on him, the remarks of his companions between times at length break down his aboulic resistance. A species of psychical isolation is set up by this procedure, the patient being maintained the while in an environment calculated to influence his mental attitude and overcome illusions bearing on his condition. About fifty patients, among them some of the most rebellious type were thus treated in Déjérine's service, nearly always with prompt and very manifest results. Three cases are described illustrating the procedure. An essential point is never to treat the subject harshly. He must, moreover, always be provided with some loophole which will enable him to cast off his functional disorder honorably and without shame.

Resection of the Hip Joint for Septic Osteoarthritis.—Guénard (*Presse médicale,* May 17, 1917) reports eight cases, with recovery in all. The time elapsing between reception of the wound and the hip resection varied from three days to several months. The men subjected to the operation late had previously had an arthrotomy, which though apparently promising at first, had eventually failed. In three cases the femoral head and the neck, partly or wholly, were alone resected. In four the great trochanter above the surgical neck had also to be taken out, and in a fifth, the less trochanter as well. The joint was always exposed by the posterior route. This route had already in most cases been opened by the missile itself or by the previous arthrotomy. The anterior route should only exceptionally be used in such cases. From the standpoint of drainage it is of advantage to resect a vertical segment of the joint capsule. The periosteum around the synovial membrane should also be removed, to prevent subsequent formation of bony outgrowths as obstacles to complete closure of the "disinfection chambre." Complete immobilization with a plaster apparatus from leg to pelvis was always imposed in Guénard's cases, but he warns against maintaining it too long, in view of a possible stiffening of the knee or sloughing of tissues. All the patients with the shortening of the limb, compensated for by a suitable shoe were eventually able to walk without a cane, sit down, and put on their shoes, with the exception of one man whose knee remained stiff.

Revaccination against Typhoid Fever and Asiatic Cholera.—Santoliquido (*Office international d'hygiene publique,* April, 1917) points out that, in the present state of our knowledge, immunity induced by vaccines against bacteria cannot be held to last over a year. In general, protective inoculation should be repeated at yearly intervals, but since there is apparently a sharp decrease in the degree of immunity in the second six months after vaccination, protection should not be held adequate beyond six months among subjects exposed to special risks of infection. Even at the end of a year, however, there remains a distinct resistance to toxic products, and careful inquiry among the Italian troops showed that the local and general reaction after revaccination is much less marked and lasting than after the first vaccination. Most of the soldiers revaccinated were able to stay on duty, and in the ten per cent. of cases exhibiting a more marked reaction, the latter consisted merely of transitory fever not exceeding 38° C. with a little headache and lassitude. Since the first two prophylactic injections in the initial series of three antityphoid inoculations are intended simply to prepare the organism for the third more powerfully protective injection, the first two injections in the revaccination may be omitted. In the same way, the first of the two anticholera injections may be left out. The single dose given should be somewhat larger than the third dose of the initial series, especially in the case of anticholera revaccination. The proper season for revaccination is winter in the case of typhoid and paratyphoid fevers and spring in the case of cholera.

Dangers of Arsenobenzol in Nervous Parasyphilis.—Jean Lépine (*Bulletin de l'Académie de médecine,* May 8, 1917) points out that whereas in the last two decades tabes seems to have diminished in frequency and severity, presumably as a result of the introduction of the mercurial injection method in the treatment of syphilis and incipient tabes, in the last three years, on the contrary, tabes has appeared to be more frequent and severe and to follow more promptly the initial infection. Several severe and rapidly progressive cases of tabes recently encountered by the author had been treated with arsenobenzol from the time of infection. Possibly the increased severity of tabes is due to the unprecedented physical and mental strain of war conditions, but at any rate it is a fact that early sterilization of syphilis with arsenobenzol fails to protect the individual against tabes or general paralysis. Special attention must be paid to the cases of brain concussion resulting from artillery combats, in which for weeks and months, the exact image of a depressive general paralysis, without the preliminary stage of delirium, is presented. In such cases the slow and puerile speech of paresis, the lack of facial expression, the fibrillary twitchings of the facial muscles, the pupillary inequality, the tremor of the tongue, the gallop rhythm of the heart, and the exaggerated reflexes are all noted. If a diagnostic lumbar puncture is resorted to, the customary lymphocytosis and hyperalbuminosis of concussion cases only serves to augment the confusion with paresis. Too often, under these conditions, an injection of arsenobenzol has been administered, than which nothing could be more prejudicial in a concussion patient, whose disturbances are above all of a congestive nature and can only be rendered worse by a superadded artificial congestion.

Electrical Treatment of the Wounded.—W. J. Turrell (*American Journal of Electrotherapeutics and Radiology,* May, 1917) states that at the Radcliffe Infirmary, Oxford, ionization is extensively employed. A two per cent. solution of sodium chloride is used, except in the treatment of actual wounds or of mucous membranes. Large pads, strong currents, and long séances are the rule, and the cases thus treated include subacute and chronic rheumatism, some instances of neuritis, impetigo, sycosis, septic and indolent wounds, and stiff joints. In joint stiffness due to fibrous bands or adhesions, massage and manipulation immediately follow the ionization. In indolent wounds and ulcers zinc ionization gives excellent results, though after two or three treatments Turrell changes to ultraviolet radiation from the tungsten arc. In foul sloughing wounds the chlorine ion quickly allays the odor and promotes healing with smooth flexible scars. In wounds with sinus formation, Turrell deems ionic medication more penetrating in its effect than the treatment with Dakin's tubes and solution. In nerve injuries he uses the rhythmically reversed faradic current where there is response to it; if not, rhythmically reversed galvanism to maintain muscular tone and remove waste products while the nerve is undergoing regeneration. Diathermy finds its chief indication in severe pain, e. g., relieving that of trench foot when other means have failed. An early instance of Volkmann's ischemic contracture was checked by diathermy, and muscular relaxation secured in two cases of local tetanus. In sciatica, neuritis, and lumbago this agent also proved of great value. Essential points in its use are a slow current, applied in the right direction over the right area, continued for at least fifteen or twenty minutes, with a suitable size of pad and electrode, and the greatest heating effect consistent with safety. The static machine is held indispensable owing to the high voltage and vigorous muscular contractions it affords. With the Morton wave current, even muscular fibres involved in scar tissue can be freed by the force of their own contraction, and the machine can be used as an electrical arthromoteur for the movement of stiff joints in the hands and feet and as a means of breaking down slight adhesions, e. g., those persisting in trench foot after subsidence of the acute symptoms. Recent sprains and synovitis of the knee joint are also rapidly improved by this type of treatment.

Primary Suture and Union of Bladder Operation Wounds.—A. Ralph Thompson's technic (*Lancet,* May 26, 1917) for primary closure of bladder wounds, after removal of the disease for which the operation was performed, consists in control of all hemorrhage by filling the viscus with gauze sponges saturated with boric acid solution at 120° F., removal of the sponges, and introduction of liquor hammamelidis at the same temperature. This is allowed to remain while a coudé catheter is passed through the urethra. The wound is covered with cyanide gauze during this part of the procedure to prevent contamination. The tip of the catheter is placed about one third up the vertical height of the bladder and marked at the meatus. The bladder wound is exposed, its ends secured by Lane's forceps, the edges slightly everted, and it is sutured with fine catgut placed through the muscle as close to the mucosa as possible. Each suture is tied as soon as passed, the ends being left long for traction until the opening is closed. The suture line is carefully palpated and holes are closed if found. Thicker catgut sutures are used to close the fibrous and outer muscular coats, inserted in Lembert's style. The space of Retzius is washed with boric acid and a gauze wick is inserted. The peritoneum is then replaced over the bladder and the abdomen is closed with two rows of catgut sutures, one superficial suture being placed below the gauze wick. Aftertreatment is begun at once by irrigating the bladder at slowly lengthening intervals with hot normal sodium citrate solution until the washings are permanently free from blood. This is usually on about the third day. Only four ounces of solution are run in at once and between irrigations the catheter is connected with a long drainage tube. Then boric acid replaces the citrate for irrigation and is continued for two or three days. The gauze wick is removed on the second day, the catheter at about the tenth day, and the sutures after two weeks. Spinal anesthesia is employed. Contraindications to this method of primary closure are marked cystitis, renal insufficiency, difficulty in checking hemorrhage at the time of operation, and too severe damage to the bladder.

Direct Transfusion of Blood.—Andrew Fullerton, Georges Dreyer, and H. C. Bazett (*Lancet,* May 12, 1917) describe a simplified method for the direct transfusion of blood from donor to recipient with the minimum opportunity for changes to take place and the most simple apparatus. It consists in connecting the radial artery of the donor with a suitable vein of the recipient by means of a small, transparent, thin walled rubber tube and two small silver cannulas. The tube and cannulas are connected up and coated inside and out with a mixture of equal parts of soft and hard paraffin at a temperature of 130° C. The amount of blood passed is determined by the appearance of symptoms of blood loss in the donor and of improvement in the recipient. The authors have not found it necessary to make preliminary tests of the compatibility of the bloods, since such tests are not very trustworthy and the occurrence of serious accidents from incompatibility is very infrequent. The indications for transfusion are severe secondary anemia; hemoglobin below forty per cent. in cases with sepsis, to aid in the recovery and introduce normal protective substances; and in some cases prior to operations. Where there is severe secondary anemia in the presence of severe sepsis, the latter dominating the clinical picture, transfusion is not likely to be of any value, at least immediately, though in some cases it has seemed to turn the tide in favor of final recovery from both conditions.

Treatment of Burns.—P. Alglave (*Presse médicale,* June 14, 1917) deems superior to the paraffin and ambrine treatment in severe burns, the use of what he terms taffeta chiffon in conjunction with a ten per cent. solution of gomenol in oil. The taffeta chiffon is obtainable commercially. and is made by causing a thin layer of linseed oil to adhere to fine tarlatan. This material which protects the area without adhering to it, prevents not only pain and bleeding at the dressings but likewise the pain caused between times by movements of the part when a material adhering to the tissues has been used. The gomenol has analgesic, antiseptic and deodorant properties. In recent burns, the oily solution of this agent is first dropped or sprayed on the part in sufficient amount to cover it completely in a thin layer. A sheet of taffeta chiffon, previously boiled for four or five minutes and projecting several centimetres beyond all margins of the burned area is next applied. Then over it is placed a layer of sterile gauze and one of absorbent cotton, the whole held by a bandage. In burns of the fingers small squares of the material are placed between them. Redressings are painless and are done daily. The gomenol prevents all fermentation in the discharges, and the foul odor noticed where ambrine is used is disguised by it. When the dressing is removed the wound itself is gently washed with boiled tepid water, and the surrounding zone with ether. Dressings should at first be performed rapidly, as the desiccation attending exposure to air becomes painful in a few minutes. Later, however, exposure is painless and seems to favor epidermal repair. Burns of the second and third degrees heal satisfactorily in two to four weeks under this method, and deeper burns likewise progress rapidly.

Oil of Chenopodium and Chloroform as Anthelmintics.—Maurice C. Hall and Winthrop D. Foster (*Journal A. M. A.,* June 30, 1917) find, as the result of an extensive series of experiments, that oil of chenopodium is the most effective of all drugs against the ascarides. It should be given on an empty stomach with castor oil and should be followed by castor oil. Under these conditions of administration it is quite safe as far as the host is concerned and most effective against the parasites. Since chenopodium depresses the musculature of the intestine as well as that of the worms large doses of castor oil are necessary to overcome the effect and protect the host against the absorption of the drug with resulting poisoning. Further, the anthelmintic action of chenopodium seems to be increased by the castor oil. Against hookworms chloroform is more effective than either thymol or chenopodium, and can be given with safety in a dose of two to three mils dissolved in castor oil. The drug should not be repeated within three weeks, as its absorption is likely to cause some slight damage to the liver, kidneys, and heart from which it takes several weeks to recover completely. In certain cases with lesions of these organs or in persons with greatly reduced vitality chloroform should not be given.

The Use of Dichloramin-T in Infected Wounds.—H. D. Dakin and his associates (*Journal A. M. A.,* July 7, 1917) state that the perfect germicide should kill all parasitic life without causing harm to the cells of the living body. Such an ideal has long been sought and has been approached in the case of the hypochlorites. These, however, do injure the living cells, specially the skin, and it is necessary to follow an elaborate and difficult technic to avoid doing serious damage by them. Chlorine reacts to form chloramines when brought into contact with the body fluids in wounds and these substances are highly bactericidal but not irritating. It is a simple matter to prepare them synthetically and experiments have led to the selection of the compound, tolueneparasulphondichioramin, or dichloramin-T. This substance can be used in strengths varying from five to ten per cent. dissolved in chlorinated eucalyptol and liquid petrolatum. In this form it is stable if kept in a colored bottle and retains its germicidal efficiency for eighteen to twenty-four hours in infected wounds. It is free from marked irritant properties and is several times more efficient than the hypochlorites. An infected wound should first be thoroughly cleansed and all dead tissues and foci of infection removed surgically. Then the solution of the dichloramin-T should be applied, either by spraying it on the surface, or by filling the wound cavity with it. Over the wound a very thin dressing should be laid and the application of the antiseptic repeated at intervals of eighteen to twenty-four hours. This method has reduced the average healing time of infected wounds by sixteen per cent. below that for the hypochlorites, which was, itself, only one third of the average time required by other methods. The chlorine in the preparation has the property of dissolving dead tissues so that special care must be taken to ligate all vessels which may have been severed in the wound, or secondary hemorrhage may follow.

Reconstruction of the Pylorus and Pyloric Antrum.—Alfred A. Strauss (*Journal A. M. A.*, May 12, 1917) describes and illustrates a method which accomplishes both of these ends through the use of two superimposed fascial transplants. The method is especially designed for cases of pyloric ulcer and permits of the complete excision of the ulcer with a perfect restoration of the normal functions of both the pylorus and its antrum. The method is absolutely safe, as proved by three years' practice. It gives complete cure of the ulcer, and the operation requires far less surgical skill than a simple gastroenterostomy with less shock and consumption of time.

Operative Treatment of Abdominal Aneurysm.—W. I. de C. Wheeler (*Lancet*, April 7, 1917) reports his results from the treatment of three cases of abdominal aneurysm by means of wiring with Colt's apparatus. One of the patients died a week after the operation from rupture of the aneurysm during the course of an intestinal obstruction. Each of the other two patients were cured, one being still alive and doing hard manual work, the other having died five years after operation from a small rupture at the base of the sac, following violent exertion. At necropsy in this patient the original sac was found to be about the size of the fetal head and to be filled with a clot of stony hardness. The rupture seemed to arise in a secondary aneurysm of the aorta below the original.

Treatment of Cancer of the Rectum.—George B. Evans (*Ohio State Journal of Medicine*, June, 1917) from a study of the subject concludes that cancer of the rectum is on the increase. Notwithstanding the improved operative technic and asepsis, the mortality has not been decreased. If the prostate and bladder are involved in the male and the vagina, Douglas's pouch, and the peritoneum in the female, operative intervention is contraindicated. It is also contraindicated if the kidneys are defective and especially if there is sugar in abundance. The Kraske method is to be condemned. The perineal abdominal operation as laid down by Tuttle should supplant it. It may be done in one or two stages. The transplantation of the levator ani to the gut to produce the third sphincter after the removal of the tumor is a step in advance in rectal surgery.

Conservative Management of Gonorrheal Pyosalpinx.—William Kerwin (*Journal of the Missouri State Medical Association*, June, 1917) concludes that acute cases of ascending gonorrhea should be treated by rest in bed and ice bags to the lower abdomen, and after the fever has subsided conservative nonsurgical treatment should be instituted. The most efficient method is the application of high degrees of heat over the abdomen by means of an electric light cabinet which generates heat of 200° F. and is used for one hour daily while the patient drinks large quantities of water to wash away the liberated toxins; this light bath is followed by a protracted vaginal douche of water at 115° F. If this conservative treatment is unsuccessful or if the patient is unable or unwilling to spend the required time, then operation is indicated. If operation must be done, the indication is to do a radical one; panhysterectomy gives the best results.

Tuberculin Therapy.—J. A. M. Ladron de Guevara (*La Cronica medica*, March 25, 1917) gives the indications for tuberculin therapy as follows: recent onset with slight involvement, general good condition, and normal temperature; latent or larval forms; slowly advancing cases of bilateral disease which have improved under general hygienic treatment; chronic fibrocaseous phthisis. Contraindications are acute cases; extensive involvement with poor general condition; cases with multiple visceral foci; tachycardia above 120; mixed infections; high fever; and cardiac lesions.

Autogenous Defibrinated Blood in the Treatment of Bronchial Asthma.—Morris H. Kahn and H. W. Emsheimer (*Medical Review of Reviews*, May, 1917) believe that bronchial asthma is due to sensitization by a foreign protein, and that autogenous defibrinated blood, obtained preferably during the attacks of asthma, serves as antigen for treatment by active immunization. They report six cases thus treated which showed improvement through a diminution in the severity and frequency of the attacks, a gain in weight, an increased ability to work, and improved subjective symptoms.

Intravenous Injection of Quinine.—E. Jeanselme and A. Manaud (*Presse médicale*, May 31, 1917) point out that if one injects a ten per cent. or even a two per cent. solution of the basic hydrochloride of quinine, induration of the vein is almost certain to follow. To reduce the chances of induration, the solution must be diluted to one per cent., which necessitates the use of a funnel and rubber tube in giving the injections, instead of a syringe. The solution must, moreover, be administered very slowly, and should be filtered through a little gauze in a short glass segment about twenty centimetres above the end of the rubber tube and also through another bit of gauze at the junction of the tube and needle. After dissolving the quinine salt in 100 grams of 0.75 per cent. saline solution in a sterile funnel, with 0.5 per cent. of urethane, the authors place the whole apparatus in hot water, to prevent crystallization of the quinine salt. The vein chosen for injection is not the largest, but that most firmly fixed in the tissues, and the needle is plunged into it, not from above, but from the side. With the funnel eighty centimetres above the patient's arm the injection, through an ordinary hypodermic needle, occupies about fifteen minutes. Such a slow injection minimizes the toxic quinine symptoms during the procedure, besides reducing the chances and severity of venous induration. Complete freedom from induration is obtainable, however, only by substituting quinine dihydrochloride in one per cent. solution for the basic hydrochloride. Tests showed that both salts, but far more the basic than the acid salt, produce a crystalline precipitate when injected into the blood. Injection of a ten per cent. solution of the basic salt into a section of vein between two ligatures, and likewise of a one per cent. solution into the buttock, was followed by copious deposition of crystals, while in similar tests with the dihydrochloride no crystals were formed. Substitution of the dihydrochloride for the basic salt must therefore be considered advantageous both for intravenous and intramuscular injection.

Proceedings of Local and National Societies

AMERICAN GYNECOLOGICAL SOCIETY.

Forty-second Annual Meeting, Held at Pittsburgh, Pa., May 31 and June 1, 1917.

The President, Dr. FRANK FARROW SIMPSON, Pittsburgh, Pa., in the Chair.

(*Continued from page 192.*)

SYMPOSIUM ON RADIUM THERAPY.

Radium Treatment of Uterine Hemorrhage Due to Other Causes Than Malignancy.—Dr. HOWARD A. KELLY, of Baltimore, presented a report by Dr. Curtis F. Burnam and himself on 100 cases of uterine hemorrhages treated with radium and radium emanation. He pointed out how frequently doctors were consulted for this troublesome symptom and how weak the therapeusis had been in that so many patients were subjected to hysterectomy when curettage failed. Radium therapy here was as simple and as safe as a dilatation of the cervix, and consisted in nothing more than introducing a uterine sound with a hollow tip containing 500 millecuries of emanation and applying it successively to some eight different points in the uterus fifteen minutes at each point. This practically always cut short the menstrual function, and so simply obviated the need for a hysterectomy. In young women, as shown by several cases reported, the menstruation could sometimes be modified without even suspending it. In one case pregnancy and delivery of a healthy child followed the treatment. In seven of the 100 cases cited there was heart disease, in two epilepsy, in two insanity, and in others Bright's disease and tuberculosis, manifestly bad risks for hysterectomy. No serious sequelæ followed the radium treatment. Also practically in all cases of fibroid tumors, radium had checked the monthly flow completely when desired. In young women it had been possible in some instances to cause the tumor to disappear without stopping menstruation permanently.

Radium in the Treatment of Uterine Hemorrhage and Fibroid Tumors.—Dr. C. JEFF MILLER, of New Orleans, stated that, while it had been shown that the early extravagant claims as to the curative powers of radium in cancerous lesions had not been verified by subsequent analysis of case reports, it had developed that its effect in the treatment of uterine bleeding from various causes was almost that of a specific. Its most striking effect was its certain control of uterine bleeding due to the metropathies, or aberrant ovarian function. Aggravated cases of the menopause, usually relieved by hysterectomy, could be controlled by a single application of radium. Similar results were obtained in bleeding complicating fibroids of the uterus and certain types of fibroids might disappear or markedly shrink. Radium would not supersede surgery in the treatment of fibroids. Large growths giving rise to pressure symptoms, or presenting evidences of degeneration, as well as submucous tumors, should be treated surgically if operation was not contraindicated. When desirable to preserve the function of the generative organs in young women, surgery should be considered the more conservative procedure, since it permitted myomectomy.

Its effect in controlling bleeding associated with chronic metritis and polypoid endometritis was equally satisfactory, and when the dose and screening were carefully measured, it might be used as a last resort in excessive bleeding in young girls without causing cessation of the menses. Itching associated with kraurosis of the vulva, as well as pruritus, could often be promptly allayed by radium. Statistics to show the primary and ultimate results were necessary to prove its real therapeutic value. Its use during a period of three years showed that the primary results in controlling uterine bleeding were obtained in nearly 100 per cent. of cases, the ultimate results varying according to the times and number of exposures.

Radiotherapy in Uterine Hemorrhage of Benign Origin.—Dr. JOHN G. CLARK, of Philadelphia, said that in cases of hemorrhage of the uterus of benign origin, such as that from small myomata or myopathic change, particularly in women over thirty-eight years of age, radium in small doses was one of the most effective remedies, relieving practically all of the cases from even the slight hazard to a major surgical operation. The hemorrhages in such cases stopped promptly and with rare exceptions permanently without untoward effects incident to the use of radium. Analysis of cases according to age indicated that those near the menopause responded best. Cases in former years, in which even repeated curettages failed to alleviate the hemorrhage, were promptly terminated after the application of fifty milligrams of radium for twenty-four hours. In over 100 cases there had been but one failure to relieve the hemorrhagic symptoms.

Radium in Uterine Cancer.—Dr. HAROLD C. BAILEY, of New York, discussed the present status of radium in the treatment of uterine cancer, followed by a detailed description of the technic used at the Memorial Hospital in 1915-16, and gave the account of a new method or adaptation for filtering the rays which had been gradually developed and had been adopted as the regular technic since January 1, 1917. The platinum applicators holding large amounts of radium emanation were placed in an iron capsule containing mercury. This mercury "bomb" offered efficient protection to the normal tissues and permitted the entire lower part of the pelvis being swept with a sufficient dose in a period of usually not more than four or five hours. In addition, heavy applications were made over the lower part of the abdomen in three areas and directed toward the upper part of the pelvis. In this manner, from the standpoint of the amount of radiation, three or four times the dose possible with the ordinary technic could be directed into the pelvis without subsequent irritation. He gave a general description of 125 cases treated since January, 1915, the accessory treatments, the amounts of radium used, and the results to date.

Dr. FRANCIS CARTER WOOD, of New York, said that he had had but little personal experience with the use of radium in the treatment of uterine hemorrhage. Cases he had seen had suggested the necessity of an accurate preliminary diagnosis of the condition of the endometrium by the thorough microscopical study of curettings removed with care so as to obtain as large fragments as possible and promptly preserved. Without such precautions in obtaining the material, a satisfactory study was often impossible. He had seen a few cases treated in which the radium did not cause a cessation of the hemorrhage until such doses had been administered as to cause atrophy of the ovaries. As to the treatment of fibroids, he felt from his pathological experience that only a moderate percentage could be properly handled by radiation. It must be remembered that after extensive radiation hysterectomy, should it prove necessary, might be very difficult, owing to the cartilaginous fibrosis of the parametria.

Dr. HERMAN J. BOLDT, of New York, referring to hemorrhages from benign causes, said that while radium had certain advantages, he had failed to hear the final results from its use. Similar results might be obtained from the proper intrauterine application of chloride of zinc. The advantage of radium was that less applications might be necessary. One might obtain a result after one or two treatments which might require a dozen treatments by chloride of zinc. Radium might cause less pain than chloride of zinc, but the proper application of a fifty per cent. solution of chloride of zinc in the form of an intrauterine tamponade would bring about a result equally as good as that by radium so far as the cessation of hemorrhage was concerned.

Dr. ERNEST C. SAMUEL, of New Orleans, stated that when the hemoglobin was low, he had found that a smaller dosage of radium spread over a long period of time produced less toxic symptoms than a large dose over a short length of time. He was glad to hear the statement that only two or three per cent. of toxic symptoms had been found as the result of radium applications. That had not been his experience. Almost ninety per cent. of patients upon whom he made intrauterine or cervix applications manifested a distressing nausea and vomiting and some elevation of temperature.

Dr. HENRY SCHMITZ, of Chicago, believed that the use of small amounts of radium gave as good results as the use of larger amounts. In benign conditions he used fewer milligrams of radium, and the physical condition of the patients was much better than in malignant conditions. A malignant case very frequently showed advanced cachexia and anemia. The patients' resistance was materially lowered, and in such cases it was necessary to use larger amounts of radium rays than in nonmalignant conditions.

Dr. WILLIAM P. GRAVES, of Boston, said that the successful reaction of the cancer cells to radium depended to a great extent upon the histological structure of the cancer. Cancers that were purely squamous in type, starting from the portio vaginalis, were much more favorable to the treatment. Those cases which originated in the endocervix, that was, adenocarcinoma of the cervix, did not respond in the same way.

Etiological Study of Vulvar Carcinoma.—Dr. FREDERICK J. TAUSSIG, of St. Louis, stated that the fifteen cases upon which his paper was based were observed, with but one exception, at the Barnard Free Skin and Cancer Hospital in the services of Doctor Gellhorn and himself. Eight of their patients received deep x ray treatment, four of them with the Coolidge tube, but in none was there more than a very temporary improvement. They had come to the conclusion that the x ray could only be considered as an auxiliary to surgical measures in vulvar cancer. They had no radium to use, but it was difficult to see how its results could have been any better in view of the early and extensive involvement of the lymphatic system in these patients. There remained, therefore, only radical surgical removal as a therapeutic agent. It was difficult to work out a definite style of operation for a condition that was encountered so rarely as cancer of the vulva. However, through various untoward results, such as frequent glandular recurrences in the femoral ring, extensive postoperative necrosis of the vulva, inguinal infections, and local implantation metastases, he had recently adopted the following two stage operation technic:

1. Dissection of the entire superficial and deep inguinal and femoral lymphatic chain by the method of Basset. As seen this method consisted of an incision opening the entire inguinal canal and subperitoneal spaces in the iliac fossa superior to the external iliac vessels. After this chain had been lifted out and attached to the round ligament, the femoral glands were dissected out around the saphenous and femoral vessels. Now came the point of special value. Poupart's ligament was cut across over the femoral ring and the deep gland situated beneath it freed with its attendant fat and lymph vessels. The round ligament was then tied off at its entrance into the peritoneal cavity and the entire lymph gland mass excised. The deep epigastric vessels had to be ligated close to their point of origin in order to permit of a clean dissection. The femoral ring was closed by suturing the internal oblique to the femoral fascia, Poupart's ligament was then sutured over this, and a small drain placed in the deeper subperitoneal space. In all instances both sides should be cleaned out by a separate incision in this radical manner. The primary tumor of the vulva was kept away from the operative field in the inguinal region during and after this first operation. Only a sterilizing dose with the Coolidge tube and ordinary antiseptic treatment were employed to keep it clean.

2. Two weeks later the inguinal wounds had healed, usually by first intention. He then proceeded to an excision of the vulva, using neither scalpel nor scissors, but only the cautery knife. No attempt was made afterward to close the wound entirely by a dissection of flaps. Instead, a half dozen silkworm gut sutures alone were used to approximate the skin edges. Thus a considerable surface was left denuded. No dressing was kept on the wound after the patient was back in bed. Under the open air treatment, with the occasional assist-

ance of dry heat and the frequent irrigation of the vulva wound with Dakin's solution, he had obtained rapid granulation, and none of the necrosis and infection that otherwise in his experience had been uniformly associated with these extensive vulvar excisions in old women. He believed this method of operation had distinct advantages.

Adenomyoma of the Rectovaginal Septum.—Dr. Thomas Cullen, of Baltimore, said that these growths were usually situated in the vaginal vault directly behind the cervix. They soon became adherent to the rectum and later might spread out into the broad ligaments. Histologically, they consisted of nonstriped muscle and fibrous tissue. Scattered through the growth were islands of uterine mucosa. He referred briefly to his previous papers on the subject and then reported two cases. The first tumor was small and situated in the usual position. The second case was unique. Posterior to the cervix several small polypi projected into the vagina. On histological examination they were found to be typical adenomyomata covered by vaginal mucosa. Both broad ligaments were boardlike and at each period the patient had pain in both renal regions. At operation both broad ligaments were also found involved by the adenomyoma. The ureters were timetre in diameter. Where they passed through the broad ligaments they were markedly narrowed by the adenomyomatous growth. Near the bladder they were of nearly normal calibre. The pain in the kidney regions at the periods was undoubtedly due to the increased compression on the ureters by the adenomyomatous tissue that naturally swelled at the time of menstruation. The ureters were liberated and the uterus with a portion of the vagina was removed. A portion of the growth was left attached to the rectum and in both broad ligaments. The patient was later treated with radium.

Gastrointestinal Conditions in Women.—Dr. Charles A. L. Reed, of Cincinnati, stated that the chief distortions of etiological and pathological significance to which he invited attention had occurred under his observation in approximately 3,000 cases during the last eleven years. They were mentioned in their relative order of frequency as confirmed by both physical examination, x ray records, and surgical exploration. The colon, ptotic, retardatively angulated, sometimes redundant, occasionally adherent, was the most frequently observed seat of distortion. Next was the cecum, dilated, flabby, hypermobile, often adherent, but more frequently covered with highly organized exudate. The ileum was often ptotic, angulated near its cecal end, dilated back of the angulation, and the seat of marked stasis. Adhesions of the terminal ileum were of frequent occurrence, while Lane's kink was occasionally encountered. He recently had four in succession. The ileocecal valve was sometimes incompetent. The duodenum, always dilated in the presence of constrictions or angulations at the terminal ileum, was also frequently enveloped in a highly organized exudate and frequently adherent. The sigmoid or pelvic colon was often redundant and was sometimes the seat of constrictive narrowing at its juncture with the descending colon. The vermiform appendix was generally normal, but was sometimes either adherent, atrophied or distended, only occasionally being the seat of active mischief. Chronic intussusception with adhesions of invaginated surface had been encountered. Diverticula and neoplasms, both benign and malignant, of the intestinal wall had been observed. The fat often really lipomatous omentum often found in these cases had a demonstrated etiological relationship to displacement of the colon and stomach. The stomach was generally found vertical to the left side, often of the fishhook type, sometimes extremely ptotic, and not infrequently the seat of adhesions to the mesocolon. Pyloric insufficiency, occasionally with active ulceration of the pylorus or duodenum or both, was encountered. Another condition of great importance, but really secondary to the distortions mentioned, was that of general visceral cyanosis in which the veins, more especially of the mesocolon and the mesentery, were greatly dilated and filled with very dark blood showing circulatory stasis with resulting dangerous deoxygenation of the considerable quantity of blood thus impounded. It was to be understood that these conditions were rarely, if ever, found singly just as it would be obviously improbable that all of them should exist in the same case at the same time. It was also to be remembered that certain of these conditions, as for instance a more or less marked ptosis of the colon, certain adhesions, or even marked redundancies, might exist without producing symptoms. It was only when marked symptoms did exist and when they were logically and obviously referable to the conditions enumerated or to any of them, that the latter were to be recognized and treated as pathological within themselves and etiological with reference to secondary or other sequential phenomena. In any event the conditions enumerated were sufficient to show that there was abundant pathology in the cases under consideration.

As to treatment, it was essential to remember that the practical problem, so far as it was presented in the course of gynecological practice, was distinctly threefold; namely, the intestinal condition, the constitutional state, and the gynecological sequelæ or complications. As to the intestinal condition, it should be carefully determined in the routine diagnosis of every case; it should be recognized as an initial pathology and should be treated in accordance with its specific indications. This did not mean that every case should be remanded for operation. Other methods of treatment should be recognized as available in certain of the milder cases in which the ptosis was not pronounced or of long standing, or in which the constitutional conditions were not yet severe. The constipation, or its sequel, demanded first attention mild solvent laxatives and a diet poor in protein and rich in cellulose, with intestinal antisepsis, associated with alkaline lavage of the large bowel were indicated. The most important treatment of this class of cases was prolonged rest in bed with passive exercise and forced nutrition with a balanced dietary. If the intestinal distortions were marked, and especially if they were associated with adhesions, surgical intervention was demanded. Surgery should always be adapted to the specific indication presented, and it should always be applied on the principle of the minimum of surgery with which to meet the object in view. Acting on this principle, he had had occasion to break up adhesions, to relieve angulations, to remove redundancies, and to extirpate functionally dead segments of the intestine. The procedures involved had embraced appendicectomy, appendicostomy, cecostomy, parietal implantation of the colon, resection of redundant transverse colons, resection of redundant sigmoids, removal of the right colon with end-to-end anastomosis, ileosigmoidoscopy, with colon exclusion, and ileosigmoidoscopy with secondary colonectomy. In certain cases shortening of the mesocolon and the mesentery was done by peritoneal plication.

SYMPOSIUM ON THE RELATION OF THE GLANDS OF INTERNAL SECRETION TO GYNECOLOGY AND OBSTETRICS.

Relation of Pituitary Gland to Female Generative Organs.—Dr. Emil Goetsch, of Baltimore, drew the following conclusions: 1. There was a close interrelationship in function between the pituitary and sex glands, a fact supported by abundant experimental evidence and by numerous observations on pituitary disturbances in the human subject. 2. Overfunction of the pituitary anterior lobe was associated with overactivity of the sex glands. 3. Deficiency of pituitary secretion in the individual was followed by underdevelopment and genital aplasia in the young and by sexual inactivity and retrogression in the adult. 3. Primary alterations in the function of the sex glands, as in pregnancy and after castration, were followed by pituitary hypertrophy and hyperplasia. 5. The specific action of posterior lobe extract—pituitrin, pituitary liquid—upon the smooth musculature of the uterus and bowel had led to the wide usage of this drug in obstetrical practice and in the treatment of intestinal paresis following abdominal and pelvic operations. 6. The administration of pituitary extracts was of distinct benefit in clinical states of pituitary underfunction.

Pineal Gland Influence upon Growth and Differentiation.—Dr. Carey Pratt McCord, of Detroit, said that from the lack of unanimity in the literature any conclusions as to the details of pineal gland function must be made flexible rather than dogmatic. A survey of available data led to the following summary as representing the present status of the pineal gland as an organ of internal secretion: A clinical syndrome was to be associated with disturbances of the functions of the pineal gland. Because of the involution of the pineal at puberty, the constitutional manifestations of pineal pathology appeared to be confined to prepubertal years. The essential characteristics, apart from pressure and neighborhood manifestations, were early sexual development, precocious mental development, and general overgrowth of body to the extent that a child of six or seven years might have the appearance of a child near puberty. The experimental extirpation of the pineal gland was surgically possible. The gland was not essential for the maintenance of life. The early symptoms following pinealectomy were attributable to the severe brain injury. No changes attended the removal of the gland in adult animals. As to the effects of pinealectomy in young animals, Sarteschi, Foa, and Horrax respectively stated that the removal of the gland led to precocity of development. Exner and Boese and Dandy reported no changes after pinealectomy. The administration of pineal substance to young mammals was reported to hasten growth and sexual maturity. In unicellular organisms, paramœcia, pineal extracts increased the rate of reproduction to more than double that of controls. In larval forms, ranidæ, both growth and differentiation were hastened as a result of pineal feeding. The inference was allowable that the pineal gland was an organ of internal secretion whose functions, however, were of minor significance in the activities of the endocrinous system.

Physiological and Pathological Importance of Parathyroid Gland from the Experimental Aspect.—Dr. Carl Voegtlin, of Washington, D. C., drew the following conclusions: The parathyroid gland had a definite physiological function which is still incompletely understood. The presence of a minimum of parathyroid tissue in the body was essential for life and the continuation of normal metabolism. Parathyroid insufficiency seemed to be characterized by an increased irritability of the nervous system to the galvanic current, which might be due to the withdrawal of soluble calcium salts from the blood and tissues. Parathyroid insufficiency led to an alkalosis which was converted into an acidosis as a result of active tetany. Definite metabolic changes took place in animals after complete parathyroidectomy. Pregnancy puts an extra strain on the functions of the parathyroid, as evidenced by the appearance of tetany during this period in partially parathyroidectomized animals. Tetany had been observed during lactation in animals with parathyroid insufficiency. Interruption of lactation was followed by recovery. The offspring of partially parathyroidectomized animals exhibited a marked increase in nerve irritability. An intravenous injection of soluble calcium or strontium salts or hydrochloric acid almost instantly removed the symptoms of tetany. However, tetany might reappear after this treatment and the life of such animals could not be saved by the continued administration of calcium. The injection of parathyroid extract seemed to have a temporary curative effect on tetany animals. Isotransplantation of parathyroid into animals with parathyroid insufficiency was usually successful. The spontaneous recovery from tetany in experimental animals was probably due to changes in their metabolism (acidosis) caused by the hyperactivity of the skeletal muscles during tetany. The experimental facts did not support the theory that eclampsia was due to hypoparathyroidism. A condition which might justly be termed hyperparathyroidism was unknown at present.

Possible Bearing of the Thymus Gland upon the Female Genital Tract.—Dr. Alwin M. Pappenheimer, of New York, stated that the fundamental problems of thymus physiology remained unsolved, and the established facts, which concerned chiefly the normal and abnormal structure of the gland, did not lend themselves to clinical application.

(To be continued.)

Letters to the Editors

THE PROBLEM OF THE STAMMERER.

Los Angeles, Cal., *April 23, 1917.*

To the Editor:

In connection with Doctor Clairborne's article, Stuttering Relieved by Reversal of Manual Dexterity, published in your issue of March 31, 1917, both the doctor and your other readers will undoubtedly be interested in a notable investigation of the same subject by J. E. Wallace Wallin. The preliminary report may be found in *School and Society* for February 5, 1916, page 213, under the heading, A Census of Speech Defectives Among 89,057 Public School Pupils. Mr. Wallin refers to Ballard's often quoted statistics in favor of the dextrosinistralis causation theory of stammering (P. B. Ballard: Sinistrality and Speech, *Journal of Experimental Pedagogy,* 1912, p. 298) but does not find confirmation of them. The reader is referred to the report for the figures. The conclusions are as follows: "Our own results corroborate only mildly, if at all, Ballard's conclusions. The above figures show that the vast majority of our left handed pupils (90.6 per cent.) who had been taught to write with the right hand had not developed any speech defects. Ballard found that speech disorders were especially prevalent among mentally deficient dextrosinistrals. We do not find a significant difference among the pupils in the regular grades and in the special schools. It is evident that our own results do not justify the widespread fear that training left handed children to write with the right hand will cause the development of speech defects."

The situation here presented, diametrically opposite views in regard to the effect of dextrosinistralis, is typical of the stammering situation, apparently irreconcilable confusion, and perhaps typical of the cause, which is, lack of knowledge of the latest developments of the subject. Let us give some even more recent developments, and endeavor to reconcile all of the views presented. Our guiding principle should be to hold every opinion in abeyance until it is proved. Therefore, we will consider that the effects of dextrosinistralis are an open question. We must have a basis for our discussion; and we have good reasons for taking the speech interference theory. It seems to have been propounded first by Dr. Albert Liebmann, of Berlin, than whom we can have not better authority. It is old enough to have had some consideration, yet it is so new that many speech specialists in America seem to know nothing about it. However, we will begin with this as if it was one of the hundreds of theories that have had to be discarded; that is, we will consider it strictly on its merits.

The salient propositions of the speech interference theory are: 1. A child suffers an accidental or incidental interruption to its speech. 2. He makes a conscious effort to overcome the interruption. 3. Since speech is largely automatic, the conscious effort is misdirected and constitutes an impediment. 4. The child continues the conscious effort in order to overcome the impediment, not realizing that the effort makes the impediment. Let us connect these propositions in a typical history. A child learns to talk sufficiently for its words to run ahead of its thoughts. He forms the habit of repeating the last spoken words while he is thinking of the next one; that is, he acquires the habit of stuttering. A companion notices the habit, and laughs at the child's speech. The child makes a conscious effort to say the words. To utter a word beginning with, say, *b,* he closes his lips and holds them closed. But he can not talk with his mouth shut. His companion laughs still more. The poor child increases its efforts to talk and thereby increases the interruption of its speech.

How shall we test this basis for our discussion? How shall we find whether this is the truth? Sir John Herschel said: "The grand and indeed only character of truth is its capability of enduring the test of universal experience and coming unchanged out of every form of fair discussion." Time will be needed for the discussion test; but we may try the universal experience test. Let us try the theory on the unexplained and insufficiently explained phenomena of stammering. It is a universal experience that stammering can be caused by sickness, injury, extreme exhaustion, imitation, extreme emotion, etc. How can these divergent causes be reconciled? Imitation is itself temporary interruption to speech. The other causes induce fainting or less marked debility resulting in temporarily broken speech, so, a temporary speech interruption is the inducing cause. The causes of stammering have never before been harmonized.

It is a universal experience that females stammer less than males, especially in adult life. According to the speech interference theory the girl, living in the home more than the boy, experiences less inclination to stammer, and even that inclination is discouraged by prohibition of the defective speech, so the girl generally recovers. The boy goes out where he meets embarrassment, and is not restrained in indulging in his misdirected speech efforts, consequently he generally continues to stammer. Rudolf Denhardt's testimony to this recovery of the girls is significant. He says: "At times a spontaneous retrogression of stammering is observed to the extent of disappearance even in youthful age. Sometimes I have treated stammerers from whom I learned that the impediment had afflicted their sisters, but after a time, and with no outside treatment, has left them free again." (*Das Stottern eine Psychose,* p. 130.) Conradi says in regard to the sex ratio, "Gutzmann gives 2:1 for children but 9:1 for adults and says with girls it is more apt to disappear than with boys." Two significant conclusions to be drawn from this quotation seem to have been overlooked. One is that if the statistics had been taken at a sufficiently early age they might have shown a ratio of 1: 1; indeed, some of the German school statistics do show that ratio, and even a preponderance of stammering among the very little girls. The other conclusion is that these two ratios given by Gutzmann shows a recovery of 77 per cent. of the girls, at least. But the percentage is really higher, because we know that some of the boys also recover.

It is a universal experience that the stammerer can talk or read in concert. Because he knows his voice will not be missed therefore he experiences no fear, and consequently does not make the conscious effort which would impede his speech. A similar explanation holds for his fluency in solitude. But let him think of his stammering in solitude, and forthwith he will make the conscious effort and stammer.

It is universal experience that a stammerer can sing. Singing is generally done in concert, in which case he could even talk, so he acquires confidence in his ability to sing, and therefore does not make the misdirected efforts. Also, most of the elements of singing discourage spasmodic effort. This is evident from the almost universal practice of incorporating those elements—measure, accented vowel, continuity, etc.—in exercises for stammerers. The improvement brought about by these exercises is ever pronounced "wonderful" by those who do not know that in practically every case the relapse to a worse condition than the first is even more wonderful.

It is a universal experience that a stammerer has difficulty when you ask him to repeat a word which he has said fluently. When he said the word fluently his stammering was off his mind. Your question awoke the fear of stammering, and that fear induced the obstructive conscious effort.

There are innumerable other universal experiences with stammering which this theory satisfies, such as the ability of a stammering preacher to preach; the ability of a stammerer to talk fluently when in great anger or great fright, whereas less of either emotion would increase his impediment; the ability of a stammerer to say voluntarily and fluently a word which has caused him great difficulty, etc. Indeed, if there is any phenomenon of stammering which this theory does not satisfy, that phenomenon has not been presented.

Now, let any advocate of any other theory show its universal application as that of the interference theory has been shown. We have many theories, aphasia, poor visualization, suppressed libidinous desires, neurosis, psychosis, etc. Let the advocate give the mechanism of his theory, follow through a typical history, and then reasonably explain every phenomenon of stammering by his mechanism. Who will do it? We need not wait long for an answer. The aphasia theory utterly fails to account for stammering contracted by imitation: Bluemel, the leading exponent of the aphasia belief, admits this. The statement holds for poor visualization and suppressed libidinous desires: what is there in the mere imitation of a dialect which would "knock out" visualization or "knock in" libidinous desires? Take the case cited by Fletcher of the child who became a stammerer by attempting to show his mother how a clown had stammered in a circus. What occurred in the time between his going to the circus and his returning to decrease his visualization or to increase his libidinous desires? It is safe to say that none of these theories will qualify as explanations of stammering; so the interference theory must be accepted as a working theory, at least, by any who make pretense to scientific procedure.

If the speech interference theory of stammering will explain every phenomenon of the disorder, it will explain the belief in the causation of stammering by dextrosinistralis. The explanation will be helped by consideration of a well established principle of coincidence. A sensational statement based on coincidence is selfperpetuating. Take the belief in the ill luck of the number thirteen. By coincidence there is an apparent connection. The coincidences which support the belief are reported and repeated; the others are not. Consequently this and similar beliefs continue in spite of advance in intelligence. One of the oldest beliefs was that stammering was a form of insanity. Insanity is sensational: it is mentioned in lowered tones. This old charge sticks to the stammerer in spite of all the evidence to the contrary. Even eminent speech specialists mention the stammerer's alleged "mental aberrations." Belief that the stammerer has a mental defect, of course, goes with insanity. Broca's centre is one of the popular scientific subjects. The Sunday supplement gives it frequent attention. That localizes the stammerer's defect near the third frontal convolution on the side opposite the skillful hand. What is more natural than to assume that to deprive that hand of some of its skillfulness would also deprive the motor centre of some of its virtue and consequently cause stammering? Then it would follow that some one or ones would seek for statistical verification of this theory.

Let us consider the conditions under which those statistics would be gathered. There would be the personal equation due to confirmed belief in a mental defect connected with the dextrous hand. There would be bonafide cases of stammering occurring coincidentally with change in dexterity; for that change is constantly going on among children, and contraction of stammering is constantly going on up to the age of twelve, and to some extent thereafter. There would be some bonafide recoveries and many apparent recoveries both of which might be connected with cessation of the change in dexterity. Those changes are generally spasmodic. The parents and teacher agree to break the child of left handedness, and yeoman work in that direction is done for a time. Then more important matters intervene, and the right handedness campaign lags. If the child happens to be one who is outgrowing stammering—a girl, for instance—the case is cited as evidence of the cessation of stammering coincident with the cessation of efforts to break up the left handedness. There would be the apparent recoveries due to the intermittence of stammering. Nothing is more deceptive than this intermittence. The hundreds of thousands of alleged cures and the hundreds of alleged remedies are traceable largely to mistaking that temporary disappearance for permanent disappearance. One may read in our popular magazines the "I-have-cured-thousands" advertisements of stammering institutions. Those advertisements are "founded on facts," as the novel says. The thousands appeared to be cured; and most of them remain as cured to those advertisers, for they pass out of the institution talking fluently and feel ashamed to report their relapse. When the relapses are reported, the practically negligible few who do recover are proudly pointed to as evidence that the relapsed ones failed to practise some of the numerous details of the method.

Statistics taken under such conditions will almost inevitably uphold what they were expected to uphold. Whereas, paradoxical as it may seem, any statement based on alleged recovery from stammering is by virtue of that statement a just subject for suspicion. The innumerable assertions of recovery are so overwhelmingly erroneous that no such statement is dependable. The theory or remedy which does not stand on something more dependable is badly off indeed. Therefore, statistics which show that stammering is corrected by allowing reversion to left handedness are untrustworthy; but it is proper to show, if it can be done, that stammering is caused by correction of left handedness. It is notable that the Wallin statistics fail to show that.

To sum up: We have cited the Wallin statistics and supported them by the speech interference theory of stammering to counteract the effect of the Ballard statistics and Doctor Claiborne's article. Both of the latter are backed up by extensive popular belief and a great array of more or less reliable articles from which that belief sprang. Have we done more than to place a clod in the way of the flood? Undoubtedly not. But what is the import of this torrent? It applies to only a very small fraction of the stammering, for the known causes, sicknesses, excessive emotions, injuries, stuttering, imitation, etc., still operate. Even if the remedy is efficacious, it is applicable only to an insignificant number of stammerers. The very basis of the belief is the assumption of a mental defect, which has very little in its favor and very much against it.

While science and medicine are devoting their attention to these academic discussions which do not lead to much if they lead to anything, except perhaps lack of confidence in such discussions, three facts stand out in ever increasing clearness: The first fact is that the laity is taking the medical profession seriously to task for its failure to help the stammerer. Captain Hughes' letter to the *Medical World,* quoted in the *Literary Digest* of January 30, 1915, and Professor Fletcher's article in the *Journal of the American Medical Association* of April 8, 1916, constitute a severe arraignment, especially taken in connection with Doctor Scripture's testimony of extreme neglect of the stammerer and Doctor Bryant's testimony of no practical advancement toward a specific remedy in 2,100 years. The second fact is that the remedy lies open before us, and has always so lain; that is, nonindulgence, either voluntary or enforced, in the inclination to stammer. This is helped by nonembarrassing environment and its efficiency is proportional to the promptness of its application. The sex ratios of stammering given by Gutzmann and quoted by Conradi show that recovery of nearly half of the stammerers is universally known; statistics show it; and inexhaustible testimony of it is obtainable for the asking, not to mention what may be found unobtrusively tucked away in the authorities. The third fact is that stammering is fostered, spread, and intensified on every side. Parents and friends reprove and scold; strangers stare, smile, or ridicule; teachers make the wretched stammering pupils—200,000 of them in our enlightened land—stand up and exhibit their infirmity to the school, spreading the disorder to the other pupils and confirming the stammerers in it.

Can there be a much more unfortunate situation than that indicated by the three facts just mentioned? Yes. It is that those conditions are traceable to commercialism. There is not a cent to be obtained by inducing parents and teachers to do what we want to do, to stop stammering, to prohibit the disorder at its first appearance. Indeed, it takes time and stationery to do that. But there is money, or other advantage to be obtained by continuance of the present conditions. The school treatment of the stammerers combined with the increasing speech requirements of civilization—stammering increases with culture—insures continuance of the disorder. That makes openings in the schools and out for those who profess to cure stammering. It also makes a demand for articles, essays, and books on the subject. These demands are generally filled by persons whose knowledge of the subject is so inadequate that their contributions only extend the confusion.

The medical profession can outdo even Hercules and clean this stable by merely inducing parents and teachers to prohibit the defective speech as soon as it appears. The whole disorder may be wiped out, even as approximately half of it is now, but in much quicker time, for the recovery now is largely accidental. The accomplishment involves no trouble and no cost, except a little for publicity—less cost than now goes into the dissemination of mistakes. The medical profession will be relieved of a sad commentary on its beliefs and its practices. The stammerers—the first slaves, and probably about the last—will be freed of the shackles that have bound them in cruel servitude since the race began to talk. Is the profession blind to this opportunity?

Ernest Tompkins, M. D.

ERRATA.

MINNEAPOLIS, MINN., *July 14, 1917.*

To the Editors:

The June 9th number of the JOURNAL, which you so kindly sent to me, reached me today. On page 1101 you have published an abstract of my chairmanship address before the Section in Diseases of Children. I am very sorry that through some error I am reported as making statements diametrically opposed to what I did say. The most important error is on lines 22 and 23, where I am quoted as follows: "Trouble lay in the quality rather than in the quantity of the milk." This should have read just the opposite: "The trouble lay in the quantity rather than the quality of the milk." On lines 13 and 14 the statement is made: "It had not been satisfactorily proved whether this could be aroused without pregnancy or not, but the premature infant was unable to stimulate the hormone." This was not my statement. It should read: "The premature infant was unable to stimulate the breast following the action of the hormone."

On lines 14, 15, and 16 the statement is made as follows: "Therefore in the work at the University of Minnesota no attempt was made at first to put the infant at the breast." This statement referred to premature infants only. Of course, other infants in the work at the University of Minnesota are put to the breast.

Yours very sincerely, J. P. SEDGWICK, M. D.

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Book Reviews

[*We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.*]

Blessures du crane et du cerveau. Formes cliniques traitement medico-chirurgical. Par CH. CHATELIN et T. DE MARTEL. Preface du Professeur Pierre Marie. Avec 98 figures et 2 planches hors texte. *Localisation et extraction de projectiles.* Par L. OMBREDANNE, Chirurgien des hôpitaux, professeur agrégé à la faculté de Paris, et R. LEDOUX-LEBARD, Chef de laboratoire de la radiologie des hôpitaux de Paris. Avec 225 figures dans le texte et 8 planches hors texte. *Les Fractures de la machoire inferieure.* Par MM. LEON IMBERT, Professeur à l'ecole médecine de Marseille, et PIERRE REAL, dentiste des hôpitaux de Paris. Preface de M. le médecin inspecteur general CH. FREVRIER. 97 figures et 5 planches hors texte. *La Prothès des amputés en chirurgie de guerre.* Par A. BROCA, Professeur d'anatomie topographique à la faculté de Paris et Ductroquet, Chirurgien orthopédiste de l'hôpital Rothschild. Avec 208 figures dans le texte. Collection horizon précis de médecine et de chirurgie de guerre. Paris: Masson et Cie., 1917. Pp. iv-349. (Prix 4 fr.)

The object of this collection of monographs on various practical subjects related to the surgery of war is to present in an abbreviated form the practical points that have been gained from the experience of the present war. They have not the scientific aim of the books that will be written after the war, but are essentially practical and intended for every day use in the present emergency. Those already appearing relate to the wounds of the cranium and brain, localization and extraction of projectiles, fractures of the lower jaw, and artificial limbs. The four monographs have been written by surgeons who have specialized in the various subjects taken up and represent the results of a wide experience at the front and in base hospitals. Each volume is filled with important technical matter, much of which has been evolved since the beginning of the war from the wealth of experience that has been the privilege of the various surgeon authors. The volumes on cranial injuries and fractures of the lower jaw are of special interest, as so much that is new in these lines has come out of this war in view of the frequency of injuries of the head in trench fighting. The volumes will be of great interest and value to the medical personnel of all armies, and it is to be hoped that they will soon be translated into English and other languages.

A Practical Treatise on Fractures and Dislocations. By LEWIS A. STIMSON, B. A., M. D., LL. D. (Yalen), Professor of Surgery in Cornell University Medical College, New York; Consulting Surgeon to New York and Bellevue Hospitals; Corresponding Member of the Société de Chirurgie of Paris. Eighth Edition, Revised and Enlarged. With 475 Illustrations and Thirty-nine Plates in Monotint. New York and Philadelphia: Lea & Febiger, 1917. Pp. xx-946. (Price $6.)

The appearance of the eighth edition of this standard book is most timely, as the great war has increased to a great extent the interest of the profession in the subject of fractures, especially their treatment. It is the latter that the author has had chiefly in mind in this edition, and his additions are of great interest, especially in view of the fact that he has been able to see the operation of the various new methods in the war hospitals of Europe. Never has the attention of surgeons abroad been fixed upon fractures to the extent that it has been during the past three years, and much practical value will come from the vast experience accumulated. The author has incorporated in this edition many interesting details of treatment and illustrations. In its present form the book will be found an intelligent and conservative guide to the surgeon in the treatment of all varieties of fractures, particulary by nonoperative methods. The latter are wisely given a subordinate place to the methods of immobilization by splints and other mechanical contrivances. Such methods of treatment of fractures of the femur and humerus have received special attention and the apparatus of Flint, Blake, and foreign surgeons have been described in detail. The author's original contributions to treatment, particularly that of fracture of the patella, Pott's fracture, and fracture of the elbow, are given in detail, and all who are confronted with these injuries should be familiar with them.

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After Office Hours

Scribner's for July has an interesting little sketch on Recruiting. The illustrations by George Wright are particularly good.

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The *Literary Digest* continues to give space to the doings of the Red Cross. In the July 28th number there are several articles dealing with aspects of this movement.

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Cleveland Moffett has another of his valuable articles on bringing up children in *McClure's* for July. Strange how this art used popularly to be supposed to be instinctive. Now it is no business for amateurs!

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Viereck's *Fatherland* has been rechristened the *American Weekly*, but is still owned by the Fatherland Corporation. The changing of the name of a corporation is not such a facile matter. George's views may be summed up in a sentence from his recent address at the Roycroft Chapel at East Aurora. "I am for the United States—first, last, and always, but I have not felt it incumbent upon me to include its Allies in my prayers."

* * *

The *Wide World* for August has only a little advertising, but it is a choice lot. We quote the following lines, each from a different advertisement: "Nuxated Iron to make new age of beautiful women and vigorous iron men." "Send 10c. for sample of our Beautiful Girls." "Marry! Be happy!" "Diamonds on credit." "Free—twenty complete lessons of course in drugless healing." "Constipation kills!" "Tobacco habit banished in forty-eight to seventy-two hours." "The shameful abuse of our stomachs."

* * *

A little knowledge is a dangerous thing. Magazine writers who pride themselves on being up to date have caught a little of the psychanalytic jargon and make a point of dragging it into their stories. Thus we are told in a recent short story that the heroine, who works as a stenographer all day long, and devotes her evenings and holidays to art, has found time to become so thoroughly conversant with Freud, Jung, *et al.*, that she argues skillfully with a psychologist whom she meets at a tea. Any one of us who has taken a dig at these neopsychologists, even though he is fortified with a knowledge of medicine and some knowledge of psychology and psychopathology knows what a tremendous job it is to master the principles of psychanalysis. The idea that any dilettante can do so in a few spare moments, so to speak, is absurd, and one immediately rejects the whole story.

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Mary Roberts Rinehart, the former nurse who has attained such literary heights, has one of her funny "Tish" stories in the *Saturday Evening Post* for July 28th. Mrs. Rinehart is one woman with a real sense of humor.

* * *

In an article called Englander Schwein, the title being taken from the favorite epithets hurled at the English prisoners by the German populace, a Canadian corporal tells of his experiences in several German prison camps. The starvation diet, the physical abuse, the horrible sanitation, and the lack of medical attention, all make a chapter of horrors which are all the more real for the plain, unvarnished sincerity with which they are told.

Official News

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending July 18, 1917:

Allen, A. F., Scientific Assistant. Directed to proceed to Petersburg, Va., on special temporary duty.

Applewhite, J. D., Assistant Surgeon. Directed to proceed to Petersburg, Va., on special temporary duty.

Banks, Charles E., Senior Surgeon. Directed to proceed to Madison, Wis., and if necessary to Turtle Lake, Wis., on special temporary duty.

Brown, B. W., Surgeon. Directed to proceed to Blue Ridge, N. C., to deliver an address on public health work before the Southern Sociological Congress.

Clark, Taliaferro, Surgeon. Granted twelve days' leave of absence on account of sickness, from July 2, 1917.

Collins, G. L., Surgeon. Relieved from duty at the Hygienic Laboratory, and directed to proceed to Philadelphia, Pa., and take charge of the Service operations at that port.

Foster, M. H., Surgeon. Relieved from duty at the Bureau and directed to proceed to Boston, Mass., for duty in the medical examination of arriving aliens.

Frost, W. H., Surgeon. Directed to proceed to Washington, D. C., for cooperation with the American Red Cross Society.

Gardner, C. H., Surgeon. Granted one day's leave of absence, July 22, 1917.

Glennan, K. R., Scientific Assistant. Directed to proceed to Louisville, Ky., on special temporary duty.

Grimm, R. M., Passed Assistant Surgeon. Directed to proceed to Little Rock, Ark., on special temporary duty.

Haralson, M. F., Scientific Assistant. Directed to proceed to Louisville, Ky., on special temporary duty.

Herring, R. A., Passed Assistant Surgeon. Granted seven days' leave enroute to station at Louisville, Ky.

Kempf, G. A., Passed Assistant Surgeon. Relieved from duty at Ellis Island, N. Y., and directed to assume temporary charge of pellagra hospital, Spartanburg, S. C.

Krulish, Emil, Passed Assistant Surgeon. Granted twenty days' leave of absence on account of sickness, from June 25, 1917.

Lee, F. S., Consulting Physiologist. Directed to proceed to Detroit, Mich.,for conference relative to the study of industrial fatigue

Magruder, G. M., Surgeon. Directed to proceed to American Lake and Vancouver Barracks in Washington on special temporary duty.

Motter, M. G., Technical Assistant. Directed to proceed to New York, N. Y., for conference on Drug Addiction, with committee of the Council of National Defense.

Olesen, Robert, Passed Assistant Surgeon. Directed to proceed to Louisville, Ky., on special temporary duty.

Phelps, Earle B., Professor. Directed to proceed to Cleveland, Ohio, for study of sewage disposal plans.

Robles, H. C., Scientific Assistant. Directed to proceed to Louisville, Ky., on special temporary duty.

Rush, P. L., Scientific Assistant. Directed to proceed to Louisville, Ky., on special temporary duty.

Sandidge, R. P., Assistant Surgeon. Directed to proceed to Louisville, Ky., on special temporary duty.

Saunders, Sam., Scientific Assistant. Directed to proceed to Louisville, Ky., on special temporary duty.

Simpson, Friench, Passed Assistant Surgeon. Directed to proceed to Columbia, S. C., for special temporary duty.

Thompson, W. R. P., Acting Assistant Surgeon. Directed to proceed to Biloxi, Miss., for inspection of the progress of the work on the new launch.

Trask, J. W., Assistant Surgeon General. Directed to proceed to Blue Ridge, N. C., to deliver an address on public health work before the Southern Sociological Congress.

Treadway, W. L., Assistant Surgeon. Directed to proceed to Annapolis Junction, Md., for inspection of the National Junior Republic.

Wagenbach, W. F., Assistant Surgeon. Granted four days' leave of absence on account of sickness from July 6, 1917.

Watkins, J. A., Passed Assistant Surgeon. Directed to proceed to Little Rock., Ark., on special temporary duty.

Wood, W. L., Scientific Assistant. Directed to proceed to Petersburg, Va., on special temporary duty.

Births, Marriages, and Deaths

Born.

Calder.—In Providence, R. I., on Wednesday, July 18th, to Dr. Harold G. Calder and Mrs. Calder, a daughter.

Married.

Ryan-Gates.—In Council Bluffs, Ia., on Monday, July 23d, Dr. Charles Ryan, of Des Moines, and Miss Nina Gates.

Tarry.—In Fremont, Neb., on Tuesday, July 10th, Dr. Edward Tarry, of Omaha, Neb., and Miss Alpha Fay Field, of Omaha.

Died.

Bassett.—In Richmond, Va., on Sunday, July 15th, Dr. Howard W. Bassett, aged fifty-six years.

Bushnell.—In Rochelle, Ill., on Tuesday, July 10th, Dr. George Bushnell, aged fifty-one years.

De Cou.—In Pontiac, Mich., on Monday, July 16th, Dr. Charles A. De Cou, aged fifty-four years.

Diehl.—In Philadelphia, Pa., on Saturday, July 14th, Dr. Oliver R. Diehl, aged twenty-seven years.

Ewing.—In Pittsburgh, Pa., on Tuesday, July 17th, Dr. William B. Ewing, aged fifty-one years.

Graveline.—In Nassau, N. Y., on Sunday, July 22d, Dr. Louis C. B. Graveline, aged seventy-nine years.

Graves.—In Jermyn, Pa., on Monday, July 16th, Dr. Isaac S. Graves, aged fifty-eight years.

Haskell.—In New York, on Saturday, July 28th, Dr. Harvey W. Haskell, aged fifty-two years.

James.—In Phoenix, Ariz., on Friday, July 20th, Dr. Harry J. James, aged thirty-three years.

Jeffers.—In Lindsay, Ont., on Tuesday, July 17th, Dr. Wellington Jeffers, aged seventy-one years.

Kilgour.—In Harrison, Ohio, on Monday, July 23d, Dr. John Coleman Kilgour, aged seventy-two years.

Loberg.—In Minneapolis, Minn., on Wednesday, July 18th, Dr. Adolph E. Loberg, aged forty-one years.

McDonald.—In Manchester, N. H., on Monday, July 23d, Dr. Joseph W. D. McDonald, aged sixty-six years.

Murphy.—In Ainesburg, Vt., on Thursday, July 19th, Dr. John C. Murphy, aged thirty-five years.

Nichols.—In New York, on Saturday, July 28th, Dr. James Allen Nichols, aged fifty-eight years.

Page.—In Lewiston,, Me., on Saturday, July 21st, Dr. Leslie T. Page, aged fifty-one years.

Perry.—In Broadwell, Ill., on Tuesday, July 17th, Dr. Lewis Marion Page, aged eighty-one years.

Scott.—In Troy, N. Y., on Sunday, July 22d, Dr. S. Walter Scott, aged seventy-one years.

Snyder.—In Columbus, Ohio, on Sunday, July 15th, Dr. Darlington J. Snyder, aged seventy-four years

New York Medical Journal

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Original Communications

PRESENT DAY ASPECTS OF LARYNGEAL TUBERCULOSIS.*

BY HUBERT ARROWSMITH, M. D.,
Brooklyn, N. Y.

In his inaugural address as first president of the American Laryngological Association, at its first annual meeting in 1879, Louis Elsberg enumerated by title all the laryngological publications of the American profession from the earliest times to that date, numbering 2,169. Up to 1861 or 1862, when the newly discovered laryngoscope began to be used by the progressive and enthusiastic few, among whom he was a pioneer, four papers had appeared which apparently had to do with tuberculosis of the upper air passages. From 1860 to 1879 twenty-two articles were published on this subject, mainly under the title of laryngeal or pharyngeal phthisis, or phthisical ulceration of various regions of the throat. At this same meeting Francke H. Bosworth presented a paper on Phthisical Ulceration of the Fauces. Since then papers dealing with every possible phase of tuberculous disease of the upper air tract have poured out in ever increasing volume until now an enumeration would involve more research than did Elsberg's compilation of the entire literature of American laryngology. I can offer nothing new or original, but I should like to present very cursorily our present day conception of laryngeal tuberculosis, particularly from the aspect of treatment, and the possibilities of treatment.

The attitude of the profession at large, both general practitioners and most laryngologists, toward tuberculous laryngeal disease, constitutes one of the greatest reproaches to which we have ever subjected ourselves in our history as medical men. If consumptive patients received a fraction of the attention that is given to those with typhoid fever or pneumonia by the internist, or to those with hay fever or ozena by the laryngologist, most of them could be saved. Fresh air, overfeeding, and then resignation to Providence is no more likely to succeed today than change of climate combined with codliver oil, the hypophosphites, and the same resignation two or three decades ago. This comment of course does not apply to clinicians who have made the study of general tuberculosis a definite part of their life work, nor to a small number of laryngologists who have striven earnestly to acquire some definite knowledge of the throat complications and their management.

As far as I am able to learn, in most of the sanatoriums, the private ones at all events, routine laryngeal treatment or even inspection, is not practised as a rule; indeed most of the private institutions decline patients who have obvious laryngeal involvement and at best the attention given them is purely perfunctory as is also the case when the patient is treated at home by the family physician. Getchel (1) discusses the plan of management of laryngeal patients in different State sanatoriums. In his personal experience at the Massachusetts State Sanatorium, he notes that the local condition usually goes hand in hand with the general. Though the symptoms are closely allied to those of syphilis, it should be remembered that the disease travels along the surface by contact in tuberculosis and local cleanliness thus becomes a more important part of the treatment. As to the operative treatment, he reminds us that the local manifestations are only part of a general disease and that their eradication by no means controls the process; that only in rare instances (sic) does an operation aid and then only in skilled hands. In sanatorium work he maintains that the routine throat examination and treatment can be better done as a part of general routine examinations by the resident physicians who by constant practice learn to recognize the finer shades of advancing tuberculosis better than the laryngologist can with no special training in this field. I have quoted Getchell thus fully because he has made several assertions of great importance which I wish to emphasize.

The mode of infection and the general pathology of laryngeal tuberculosis are those of tuberculous processes as a whole. It is conceded today that primary laryngeal tuberculosis probably never occurs and that most individuals who exhibit tuberculous manifestations in mature life have been infected in childhood or infancy, the infection remaining latent as a rule, until some adventitious stimulus spurs it into activity in any or all of its protean forms. On the other hand, the protracted presence of this latent focus may confer on its host a relative immunity to subsequent infections.

Park (2) in a paper read before the New York Academy of Medicine on Channels of Infection and Methods of Transmission of Tuberculosis, says: Two types of tubercle bacilli cause disease in man,

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*Read before the American Laryngological Association, May 28-30, 1917.

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the human type and the bovine type. The percentage of those infected by the one or the other depends on the use of raw milk in childhood and the amount of human tuberculosis that people come in contact with. He concludes that droplet infection is the most important method of transmission, conceding at the same time the responsibility of inhaled dust and ingested water, as well as direct transmission. Weber showed that in fifteen minutes after the inhalation of dust, bacilli could be found on the mucous membrane of the lower part of the trachea, in the descending bronchi, and in the lung adjacent to them. These bacilli may cause a local infection of the lung or they may be transmitted to the bronchial lymph nodes. At any time the primary infection may be spread by the blood and cause secondary foci.

Tuberculosis of the larynx is the most common of all the grave diseases affecting that organ, far more so than cancer or syphilis. Different statistics give a varying relative frequency of laryngeal involvement in patients with pulmonary tuberculosis, between three and twenty-five per cent. Even in sanatoriums where laryngeal cases are supposedly excluded, about six per cent. of the patients are found to have laryngeal lesions (Laub). As the frequency with which the larynx is involved increases with the duration of the pulmonary disease, post mortem examinations show the larynx to be implicated in forty-eight to fifty-two per cent. of fatal cases. Clinically, while infrequent in the first stages of the disease, laryngeal lesions are encountered in seventy-two per cent. of third stage cases of pulmonary tuberculosis (3). Fetterolf (4) tabulated the gross post mortem findings in 100 patients dying of pulmonary tuberculosis: eighty-three per cent. showed macroscopic laryngeal involvement —eleven per cent. more than Laub's figures. He says that it is quite probable that the remaining seventeen per cent., or most of them, would show distinct microscopical lesions, which, while undoubtedly true, is of no special clinical importance.

Topographically the epiglottis showed lesions in fifty-nine per cent., the aryepiglottic folds in fifty-eight; the ventricular bands in fifty-two; the vocal cords in forty-nine; the arytenoid cartilages in fifty-seven, and the interarytenoid space in fifty-one. His classification of the pathological appearances seems most practical. He describes: 1, infiltration; 2, infiltration with superficial ulceration; 3, infiltration with deep ulceration; 4, superficial ulceration; 5, deep ulceration; 6, tuberculomata.

An unusual type, which belongs in the category of infiltration greatly exaggerated, is described by Theisen (5) under the title Hypertrophic Laryngeal Tuberculosis. He encountered one case and refers to a very few similar ones in the literature. His patient was also seen by Gleitsmann, a laryngologist of the widest experience, particularly as to tuberculosis, and from his comments it was unique in his experience. Curiously enough my only observation of such a condition was made possible by the courtesy of Doctor Theisen, who last October referred to me a young woman twenty-three years old who had been under his care during her stay in Albany last summer.

Case.—The patient had had symptoms referable to the larynx for eighteen months, mainly hoarseness and difficulty in swallowing, without pain. Tubercle bacilli had been found in her sputum. Wassermann tests had been negative. She was unusually well nourished. There was a small area of infiltration in her right apex which seemed to be entirely quiescent, there was no disturbance of temperature, and she felt perfectly well except for the discomfort in her thoat. There was an enormous symmetrical thickening of both arytenoids, aryepiglottic folds, and epiglottis, the last being slightly eroded on its under surface. The vocal cords could not be seen and the laryngeal aperture was greatly diminished in size. The mucosa was intact except as described, grayish red in color, and the whole surface was extremely resistant to palpation and not sensitive. I advised hospital treatment, which she declined, and I did not see her again for more than two months, when she returned and asked to be admitted to my service. The obstruction to swallowing had become much greater and she had decided inspiratory dyspnea. No ulceration could be seen. I did a tracheotomy as a matter of expediency and deeply incised the infiltrated arytenoids on the chance of finding pus, but without result; nor had she had any constitutional symptoms which indicated its presence. On the fifth day after the tracheotomy she died suddenly and inexplicably. There was no autopsy.

Presumably under the head of infiltration Fetterolf includes also those cases of perichondritis with abscess formation and so on. At St. Anthony's Hospital, Brooklyn, in an ever changing service of nearly 400 beds, where practically all the patients are in an advanced second or third stage of pulmonary tuberculosis, I should say that at least ninety per cent. of those seen during the last two years, totalling over 3,000, showed gross evidences of laryngeal involvement. Their condition may be appreciated by the fact that thirty per cent. die within one month of admission and a large fraction of that thirty per cent. within ten days. My experience covering thirty years, leads me to believe that the above is characteristic of the type of patient and period of disease that is sent to laryngologists by the general practitioner for treatment. Most laryngologists see very little early laryngeal tuberculosis. Many of them, perhaps most of them, decline to see it, so by the time these unfortunates are sent to those of us who deal with this disease, their laryngeal lesions have become the preponderating factor in their trouble and then it is rather late to do for them what we might have been able to do at an earlier period. In private practice I have had the opportunity to direct the general as well as the local treatment of a large number of consumptives from almost the inception of their sickness and I have never seen a frank laryngeal tuberculosis develop in a patient who came at an early period and who systematically and persistently followed a course of cleansing and sedative applications to his laryngeal and tracheal mucous membrane. As Getchell well said: "It should be remembered that the disease travels along the surface by contact in tuberculosis and local cleanliness thus becomes a more important part of the treatment," for prophylaxis is the most important part of the treatment.

From this experience I am convinced that the laryngeal lesions originate almost invariably from surface contamination and very rarely by way of the blood and lymph streams. The occurrence of infiltrations without discernible erosions of the mucosa is no argument against this mode of infection for it is well known that the bacilli have the power to penetrate intact mucus membranes. Unfortunately the old belief in the incurability of laryngeal tuberculosis still persists in the minds of many practitioners. This pessimism has been justified to a certain extent because local treatment commenced at the usual late period can not overcome the results of delay or be brilliantly successful, but modern methods even in late stages enable us to do a great deal to palliate the patient's sufferings even if the thought of cure cannot be entertained.

The matter of local prophylactic treatment has been spoken of. Intralaryngeal and intratracheal injections as most enthusiastically employed by the late Doctor Gleitsmann and by Thompson, of Cincinnati, are invaluable, for by them not only the larynx and trachea but also a considerable portion of the bronchial tree can be very satisfactorily medicated. Yankauer, by devising his medicator for the patient's use, has provided a means of making these injections almost as effectively as they can be administered by an expert laryngologist. The medicaments should be used in a bland vegetable oil vehicle; hydrocarbon oils have no place in the therapy of the air passages. The active constituents may be whatever is appropriate to the condition we wish to relieve. Lockard is enthusiastic in his recommendation of local applications of formalin in solutions of different strengths, from one half to ten per cent., but less irritating agents have seemed to me equally effective and more manageable.

It is perhaps superfluous to refer to the necessity for removing all obstructions to normal nasal respiration. Freudenthal warns against the removal of the tonsils in subjects of well marked pulmonary disease, which he fears may be followed by serious pulmonary hemorrhage. I have done it repeatedly without any such experience and with benefit to the patient. In an adult tonsilectomized by Dr. George Richards in my service at St. Peter's Hospital, we found what has been rare in my experience, true histological tubercle of the tonsil. This patient convalesced as promptly as usual. As to the drug therapy of actual and extensive laryngeal tuberculosis, palliation is all we can hope for. Hastings, of Los Angeles, and Bonime, of New York, are doing work in tuberculin therapy which promises much for the future. For the relief of pain from tubercular ulcerations, the local anesthetics, orthoform, propaesin, anesthesin, etc., have great value especially in the form of emulsions so extensively used by Freudenthal. Quinine and urea hydrochloride has recently been lauded for this purpose as well as for blocking the superior laryngeal nerve according to the method of Hoffmann; alcohol for this purpose seems preferable. Scarlet red has been extolled for its effect on tubercular ulcerations.

After the outburst of enthusiasm caused by the work of Heryng and Krause and Moritz Schmidt in the surgery of the tuberculous larynx, a reaction set in and laryngologists, with a few notable exceptions, abandoned most kinds of surgical attack. In America Gleitsmann, Lockard, and a few others continued to work along these lines conservatively and scored many triumphs. External surgery has not been successful, except that thyrotomy and tracheotomy may occasionally be permissible as emergency measures. With the old methods there were many reasons for failure except in the hands of the most expert operators. While fundamentally sound in its conception the old endolaryngeal surgery did not appeal to most men because of the difficulty of unimanual attack, the inadequacy of indirect illumination by reflected light, the instability of the operative field by reason of the weakness and hyperesthesia of most of the patients, suffering agonies which cocaine did not control.

With the advent of the direct laryngoscope and particularly the suspension laryngoscope, there has been presented to us in laryngeal surgery an opportunity quite equal to that of the general surgeon or the orthopedist. Our field is now as accessible as the external surface of the body and we can do quietly and leisurely whatever we have planned under good illumination in an immobile territory and with the free use of both hands.

We owe a great deal to Lockard for having so consistently insisted on epiglottidectomy as the rational treatment for epiglottidean tuberculosis. The fact that the epiglottis could be spared without trouble was first noted by Enos (6), of Brooklyn, who in 1865 reported that on autopsying a patient dead from consumption he found that the epiglottis had been completely destroyed by ulceration. He stated as a very remarkable fact that during her lifetime she had no difficulty in swallowing. Porter (7) was apparently the first operator in this country deliberately to remove the epiglottis, which he did for malignancy. Emil Mayer has substantiated his claim of having done the first complete removal of the epiglottis under suspension, also for malignancy and I venture to claim the first epiglottidectomy under suspension laryngoscopy for tuberculosis. Both these operations were done within a week of each other and I had no knowledge of Mayer's exploit.

Amputation of the epiglottis under these conditions is in striking contrast to the old indirect way of extirpating it by punch forceps. I make an incision on each side as far down as possible then seizing the free border with forceps the snare is pushed well down and the wire naturally follows the lines of incision when upward traction is made by the forceps; the entire epiglottis is removed down to its ligamentous attachment. In scores of epiglottidectomies I have seen very little reaction, but once any considerable bleeding, and almost universally immediate relief of dysphagia and odynophagia, in the absence of ulcerative conditions in other locations.

In superficial ulcerations the galvanocautery accurately used, as is possible only under direct exposure, leaves nothing to be desired. I cannot imagine how any one after a single experience would ever revert to chemical caustics. Deep ulceration wherever situated can be unerringly reached, thoroughly curetted, and cauterized. Deep puncture with a fine cautery point has a most happy effect on infiltrated areas and is the ideal way of attacking abscesses occurring with perichondritis. Tuberculomata and infiltrated masses may be cleanly excised in an orderly surgical way. I have been surprised at the very slight degree of reaction which follows these procedures; it seems less than would be expected in normal tissues and I have never encountered the postoperative disturbances reported by some observers.

Slight or moderately extensive lesions can surely be cured by well considered surgical treatment with the aid of suspension exposure; the severer ones can be much ameliorated and the consumptive at least helped to die without the intolerable suffering which so often accompanies tuberculosis of the larynx. Suspension laryngoscopy has its greatest opportunity in this particular field. Its technic should be acquired by every one who assumes to treat diseases of the larynx.

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170 Clinton Street.

THE PRIMITIVE MEDICINE MAN'S VIRTUES.

His Knowledge and His Faith in Himself.

By Jonathan Wright, M. D.,
Pleasantville, N. Y.

(Concluded from page 202.)

Morality is the growth of wisdom from the experience we have gained in experimenting with social relations. We have to discount the social relations and the environment of primitive man and we have also, as much as we can, to discount our own environment. Doing this and getting down to pure professional ethics we find a wonderful similarity between the medicine man as he was and the medicine man as he is. Hear again how Livingstone (22) handles the relations he had with his dusky brother of the jungle when the patients were sick of complaints which seemed to surmount the skill of their own doctors. "I refrained from going to anyone unless his own doctor wished it or had given up the case. This led to my having a selection of the severer cases only, and prevented the doctors being offended at my taking their practice out of their hands. When attacked by fever myself, and wishing to ascertain what their practices were, I could safely intrust myself in their hands on account of their well known friendly feelings. . . . With the regular practitioners I always remained on the best terms by refraining from appearing to doubt their skill in the presence of their patients. Any explanation in private was thankfully received by them, and wrong treatment changed into something more reasonable with cordial good will if no one but the doctor and myself were present at the conversation." While Livingstone did not have a very high opinion of some of their therapy he was far from testifying that they were entirely devoid of skill in physic. From another writer, also of African practice, we learn that medicine men themselves do not always resort to magic or rely upon spirits and deities, and we may well believe that this is more frequent than the author permits us to infer, but we may be allowed to question the further statement that "they have a considerable knowledge of materia medica and treat diseases on purely scientific principles; that is to say they locate the seat of the disease and prescribe certain diet and medicines (11). Miss Werner (23) says: "Native doctors, both men and women, often have a very good knowledge of medicinal herbs." So numerous did she find these that there seemed some preventive for every ill likely to befall mankind. It cannot be imagined that the witch doctor ever really ignores or is ignorant of herbs in the treatment of the sick, however incidental they may seem in the apparently insignificant part they themselves play in the incantations and the ceremonials. In the heart of Africa, Stuhlmann (24) asserts, wizards, as such, play a great part in the treatment of disease, but they have, at least for the most part, also a knowledge of secret efficient remedies. In America (25) and in Persia (8) the wild tribes exhibit practically the same phenomenon.

It is repeatedly asserted that the savage rarely concerns himself with speculations as to the causes of things, but his critics entirely ignore his own conceptions of the causes of things. Into these he inquires sufficiently. Among the wild tribes in Mexico (12) "when a shaman is asked to cure a person of any complaint, real or imaginary, his first move is to find the cause of the trouble. According to his opinion illness is brought on either by the wind or by sorcery. From the former kind of disease nobody dies, although the heart, the liver, or the head may be attacked; but the other kind is serious. Sorcerers may put snakes into the legs, and such animals as centipedes, toads, larvæ, scorpions, or even small bears into the body of some unfortunate person, and these disturbers have to be drawn out at once or else they will eat the sick man's heart. The shaman therefore first feels the patient all over, to find if something—in other words, the disease bringing animal—is moving underneath the skin. Illness may also result from small stones, or the spine of the *nopal* placed in the body by the same agency."

It must be observed here that the symptoms are some indication for diagnosis to the savage mind, but these symptoms are different from ours. "When a heathen negro is sick, the first thing done, just as in civilized lands, is to call the 'doctor,' who is to find out what is the particular kind of spirit that, by invading the patient's body, has caused the sickness. This diagnosis is not made by an examination and comparison of the physical and mental symptoms, but by drum, dance, frenzied song, mirror, fumes of drugs, consultation of relics, and conversation with the spirit itself. Next must be decided the ceremony particular to that spirit, and the vegetable and mineral substances supposed to be either pleasing or offensive to it. If all those cannot be obtained, the patient must die; the assumption probably being that some unknown person is antagonizing the 'doctor' with arts of sorcery" (26).

Now what is wrong with all this? "Evil spirits" is such a vague term with us we might make it cover a multitude of factors. The typhoid bacillus or the tubercle bacillus is more concrete. So the savage has the advantage in the way of causation, though doubtless there was many a medicine man who thought he had as clear an idea in his head with his etiology as we do with ours. The premises, however, we will not quarrel about—it is the gap between them and the phenomena typhoid fever and tuberculosis, as diseases, which matters. We have every reason to believe we have filled that gap with a much better structure—though how incomplete it is we cannot guess—than primitive man did in his day, but we are handicapped, each of us by our theories, terribly the savage by his pantheism—not a little embarrassed we by our former purely bacterial conception of causation. I think now that we are in a position to meet the complaints of travelers of the medical profession or of religious faith who declare patients do not detail their symptoms. Why should they detail the symptoms, the slave of the bacterial etilology of disease, of the "crises" and "lyses," even those the Galenic school asks for? They are ready enough to do what they can for the medical attendant along pantheistic lines. The Reverend Mr. Weeks (2) after experience with the Congo cannibals said: "One of the greatest difficulties we encounter on the Congo is that of diagnosing a disease. The natives have never been in the habit of describing their symptoms, consequently when we commence medical work in any new district we are at a great disadvantage, and it takes long training before the people will clearly state the nature of their pains, or anything that will really help us to diagnose their complaints. While in the language we find the names of a large number of diseases, yet it is very poor in words describing symptoms, and this paucity of symptom words arises from the fact that for centuries the witch doctors in their own interests have fostered the belief that complaints are caused by evil spirits which they alone can drive out of them. Not only is there this lack of words describing symptoms, but there is a reticence on the part of the patient to explain his pain, etc., as he thinks that the 'doctor' who has any pretension to healing a person should certainly be able to discover what is wrong. Their witch doctors do not closely question their patients, but at once proceed to the cure; why, therefore, should the white man make so many inquiries?"

The reporter ignores the fact that perhaps he asked him about the nature and time of the pain in his head or the location of the abdominal pain, or whether he felt chilly first and then hot, or how his appetite was. What had all that to do with the devils that were seeking his life? Much more to the point was the conduct of the Abipone practitioner, which Dobrizhoffer (27) recounts with disgust, when he bustled in: "At his first coming, the physician overwhelms the sick man with a hundred questions: 'Where were you yesterday?' says he, 'What roads did you tread? Did you overturn the jug, and spill the drink prepared from maize? What? Have you imprudently given the flesh of a tortoise, stag, or boar, to be devoured by dogs?' Should the sick man confess to having done any of these things, 'It is well,' replies the physician, 'we have discovered the cause of your disorder. The soul of that beast having entered your body torments you even now, and is, alas! the origin of the pains you feel." The native doctors detail the symptoms to their Christian missionary medicine man consultants and they seem indeed very vague when, as among the Cherokees, (19) "their description of symptoms generally resolves itself into a statement that the patient has had bad dreams, looks black around the eyes, or feels tired, while the disease is assigned such names as 'when they dream of snakes,' 'when they dream of fish,' 'when ghosts trouble them,' 'when something is making something else eat them,' or 'when the food is changed,' i. e. when a witch causes it to sprout and grow in the body of the patient or transforms it into a lizard, frog, or sharpened stick." Or "as the Samoans (6) supposed diseases to be occasioned by the wrath of some particular deity, their principal desire, in any difficult case, was not for medicine, but to ascertain the cause of the calamity." There seems then plenty of symptoms sought. Nothing could be more modern. Our chief concern today is etiology. Sometimes, that once found, be it arteriosclerosis or dangerous devil inside, one knows how to proceed; sometimes not. Life is short, art long, and the end uncertain!

The question is very apt to arise and it is occasionally formulated by the reporters of primitive man's actions, as to how much medicine the savage medicine man knows. One must move with caution in forming an opinion of all matter pertaining to primitive man's mentality and psychology, but we must set up some standard of our own. From this he may vary. On the other hand one hundred and fifty years ago, Father Dobrizhoffer, whom we have noted anathematizing the doctor of the South American Indians, thus describes some practices which I suspect were introduced by the Spaniards themselves. At least one found a warm advocate in the good father. A woman was sorely wounded, and the white men thought she would surely die. "Mixed with the crowd came a juggler physician who gave the husband of the wounded woman a horn, desiring him to discharge his urine into it, and was immediately and plentifully obeyed. He gave the warm urine to the woman to drink, who made no hesitation, but swallowed it to the last drop. The juggling Hippocrates then turned to my companion and said, 'Do you know why I prescribed fresh urine? In order that the wounded woman may vomit up the blood trickling from the wound to the inmost parts of the body, which would otherwise putrefy, and cause the lungs and other parts to putrefy also.' The event verified his prediction. The woman was cleared by vomiting," and she evidently recovered. "The surgeons of our country will doubtless laugh at the application of hen's fat"—they need not; it was very orthodox treatment among Arabian physicians in the Middle Ages—"and perhaps question its efficacy in curing wounds; let them laugh, deride, doubt, and despise, with my hearty good will. I confidently oppose the experience of my own eyes to their doubts and laughter." By its means he recovered from an arrow wound. Later the white man says: "It would be endless to relate all the cures that have been worked with hen's fat" (27). Warm urine as well as hen's fat was well known in European practice before Columbus discovered America, but the former, at least, seems to have been an indigenous remedial agent in the New World. It was the hen's fat, however, which the missionary lauded though he did not despise the other, but warmly recommended it also. Evidently for modern readers we must seek some other standard by means of which to allow them to judge the question of empirical medicine, for it is hardly worth our while more than to remark that little or no knowledge of the structure and internal functions of the human body were known until long after the use of written historical records.

In later times, 1911, we find a publication dealing with these same Indians we have heard of from Dobrizhoffer, or their near neighbors. Among the Lengua Indians of the Paraguayan Chaco the traveler (28) is moved to say: "There is no doubt that these witch doctors have much more medical knowledge than they are generally credited with, and this incredulity as to their knowledge is owing, I think, to the fact that it is so mixed up with superstition. But it would require a medical man to study their methods, in order to estimate the real extent of their knowledge."

Very little has been done by the competent medical man to study the herbs and the medicines of primitive man in such a way as to identify them and to compare them with those in use in civilized countries. Such study as has been made has only led to discouragement. To continue making use of information drawn from the civilizations the Spaniards destroyed in America, we have ample evidence, whether or not the Mexican medicine and surgery was more in accord with our own than the Spanish, that the latter, being the conquerors, sometimes viewed with their customary arrogance and ridicule a system of medicine which was slightly different from, but in our ideas very little inferior to, European medicine at that time. Occasionally the downtrodden race, even in medical ranks, seems to have turned upon their tormentors.

In an edition of De Sahagún (29) the editor relates an anecdote—I do not know with what authority—which would illustrate this: There was a certain drug, the smelling of which they say caused nosebleed. The editor goes on to say: "A long time after the conquest they continued the use of these things, and even at the present there is preserved the memory of a celebrated medical man, a certain quack called Doctor Indio, of the Valladolid of Michoacan, who humiliated and confounded the pride of the chief physician of Mexico when he examined him in order to punish him for some empirical charlatanry and cure. The latter asked certain of the officers to smell a plant which produced profuse nosebleed, and then asked them if they would not try to stop it. But not being able to do so he gave them the powder of a certain other plant with which the flow of blood was stanched. 'I have here,' he told them, 'shown what my knowledge is of medicine, and the manner in which I cure the diseases of those who call me.' "

Garcilasso de la Vega (30) speaks of the knowledge of the Incas of his time thus: "The natural secrets of these things were not told me, nor did I make any inquiries, but I saw these practices in operation. They knew nothing of feeling the pulse, and less about looking at the urine. They recognized a fever by the heightened color of the body; and their purges and bleedings were more as preventives than as helps to recovery. When they had recognized that the disease was actually in full force, they gave no medicine whatever, they left nature to work its own cure, and merely regulated the diet. They did not understand the use of clysters, nor the application of plasters, nor ointments, except very few composed of very common things. The poor people treated diseases in a way differing little from the conduct of beasts." Their idea of the value of medicines seems to have been much in accord with modern doctrine. The repeated comment of the author on the fact that these benighted people were unacquainted with diagnosis of disease by means of urine inspection plainly indicated on how low a level he imagined them in medical matters, and it reveals his standard.

Ovalle (31), who died in 1651, says of the natives of Chile, the "doctors are not only esteemed by the Indians, but by the Spaniards themselves, who have recourse to them in the greatest extremities when the disease presses most." Now this may be so, but when the generous Spaniard tells the grounds on which this respect was based, our twentieth century prejudices destroy the effect. For instance, a man left for dead was nevertheless given medicine by a native, "the father resorting to the place where they laid him, to see if he was dead, he was found not only alive, but out of danger, and the sheet all full of blood, which the herb had caused him to void through the pores of his body, so as he remained perfectly well in a little time." In Australia (32) they also, according to a comparatively recent standard, excite the commendation of our orthodox doctors. "Matah suffered a good deal with constant pain in one knee; he was quite lame from it. He showed it to Bootha [a native doctress] one day. She sang a song to her spirits, then said: 'Too muchee water there; you steam him, put him on hot rag; you drink plenty cold water—all lite dat go.' As it happened a medical man was passing a few days afterward with an insurance agent. Matah consulted him. 'Hum! yes, yes, hot fomentations to the place affected, poultices, a cooling draught. There's a stoppage of fluid at the knee joint which must be dispersed.' I thought Bootha ought to have been called in consultation." The same author relates how by means of incantation wax was removed from the liver by Bootha during the night, and the patient rapidly recovered, owing, it was claimed by the witch to her subjugation of some vagrant disease spirits. These stories are not told by a black fellow, but by a white man who expects to be believed. Where was the truth as to "real knowledge"? The hot embrocations for water on the knee approved by the white medical man or the incantation and spirit story—told as a joke? The fact of the matter is that while most travelers testify to their belief that the savage knew much of empirical medicine of an effectual kind, it is the lack of a standard by which to measure its value which causes us trouble. At every epoch, nay almost in every decade, civilized man changes it to some extent, and as the records of the study of primitive man are spread over a number of generations now, it is difficult to know in our own terms just what the reporters mean when they say the savages had considerable "real knowledge" of therapy. This may sound like irony, but is not meant for it.

Much more satisfactory is the testimony as to the belief of the medicine man in himself. I do not intend to discuss it, but it will be well for the reader, according to his own temperament, to consider whether the modern medicine man believes in all his practices, therapeutical, medical, surgical. "If you ask me frankly whether I think these African witch doctors believe in themselves, I think I must say yes; or perhaps it would be safer to say they believe in the theory they work by, for of that there can be very little doubt. I do not fancy they ever claim invincible power over disease; they do their best according to their lights. It would be difficult to see why they should doubt their own methods, because, remember, all their patients do not die; the majority recover" (13b). I may be permitted to remark that this is what allows the medical man to exist, and this explains why it is so difficult to set up a standard for success in empirical therapy from modern practice. The Reverend Mr. Weeks, speaking of the same locality, says: "I think many of the medicine men thoroughly believe in themselves; and even those who assert that they see spirits or have performed such wonders as living under the water for seven days or making their spear shake and talk, relate the incident so often that they come to believe that they really did it. Many of the people before we went there had no faith in the medicine men; but they were afraid to oppose or ridicule them for fear of being charged with witchcraft, so they pretended to accept all that was said and done by them. Our presence inspired many with the courage to test the witch doctors, and finding them frauds they turned from them with contempt" (2). We remember the testimony of other missionaries who bitterly complained that their patients and converts when very sick escaped to the bush and the witch doctor and recovered. Most of those who report their contempt for the wild man's credulity suffer from similar charges on their native heath. Skepticism is always commendable, as long as it does not paralyze action, but skepticism concerning another's belief and implicit credulity as to one's own does not commend itself to us.

Another missionary (9), speaking of the Indian doctors of the far northwest America, says: "One might be curious to know whether they themselves believe in their supernatural powers or merely carry on a system of imposition. I believe that some are really convinced that they can do something at least to relieve the sick." It seems quite natural they should believe in themselves as devoutly as the white medical man does in himself. Another missionary (33) says that the South African "herbalists have acquired considerable skill in treating common ailments." Schoolcraft (16) says of the medicine man of our Indians: "He has a general knowledge of the most common disorders of the stomach and bowels. He knows the value of the most unremitting care and attention to the patient who is committed to his hands; and on this, so far as it relates to topical cases his success doubtless often depends," and then he, writing about the middle of the last century, commends his practice of bleeding in inflammation. "There is known to them," he says, "a forest materia medica and a pathology which regulates the practice."

From Australia (34) we learn the following: The Koonkie will not "confess to his trickery, and, indeed, from constant practice, at last deludes himself into a belief in his skillful surgery, which all the other natives have implicit faith in. And, indeed, the force of imagination is so strong in some cases that I have seen a native quite ill actually cry for the Koonkie, who, after his humbugging, appeared quite recovered. Should the Koonkie fail in his effort to relieve the sick, he is prepared with a ready excuse—some Koonkie of another tribe, possessing more skill, has stopped his power. When a Koonkie is ill he calls in the aid of another Koonkie to cure him." There can scarcely be a stronger test of sincerity than that.

Doctor Tylor, from whom ethnology has had the benefit of more shrewd and common sense discourse than from any other writer, is quoted by Crooke (35) in discussing this question for the tribes of northern India: "Are all these Ojhas and Baigas conscious hypocrites and swindlers? Doctor Tylor shrewdly remarks that 'the sorcerer generally learns his time honored profession in good faith, and retains the belief in it more or less from first to last. At once dupe and cheat, he combines the energy of a believer with the cunning of a hypocrite.' This coincides with the experience of most competent Indian observers. No one who consults a Syana and observes the confident way in which he asserts his mystic power, can doubt that he at least believes to a large extent in the sacredness of his mission. Captain Samuells, who repeatedly witnessed these performances, distinctly asserts that it is a mistake to suppose that there is always intentional deception."

Every mature modern physician will decide entirely, as he is governed by the interpretation his temperament places upon his own faith, whether this presentation of the faith of primitive man in himself differs from reality today. I will conclude this subject with a quotation from Miss Kingsley of an African story (13a): "There was a very great fetish doctor there, universally admired and trusted, who lived out on the land at the mouth of the Great River. One day he himself fell sick, and he made ju-ju against the sickness; but it held on, and he grew worse. He made more ju-ju of greater power, but again in vain, and then he made the greatest ju-ju man can make, and it availed nought, and he knew he was dying; and so, with his remaining strength, he broke up and dishonored and destroyed all the fetishes in which the spirits lived, and cast them out into the surf and died like a man." This admirable story cannot be too deeply pondered. It shows the brotherhood of primitive and civilized man. What medical man of middle age in our civilized life cannot match it out of his own experience? It must be confessed, however, that skepticism is too far advanced with the white layman to find a ready counterpart for what follows. "Then horror came upon the people when they knew he had done this, and they burnt his house and all things belonging to him, and cried upon the spirits not to forsake them, not to lay this one man's deadly sin at their doors."

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DIAGNOSIS OF EARLY CANCER OF THE STOMACH.*

By Anthony Bassler, M. D.,

New York,

Professor of Gastroenterology, New York Polyclinic Medical School and Hospital; Consulting Gastroenterologist, People's, Beth David, and Christ (N. J.) Hospitals.

It is practically and universally agreed that surgery offers the only possibility of cure of cancer. The only cases in which life is maintained years after are those in which malignant tissue has been totally removed. This is only possible when the disease is not advanced and is definitely local. Thus it is essential that a diagnosis be made as early in the course of the disease as possible.

Considerable criticism has arisen from surgeons that earlier diagnoses are not being made. This is not entirely justified because cancer begins as a small nidus and is not always preceded by an ulcer or any status of indigestion, and it is generally not until marked advance has taken place that the person comes under observation. The writer has lately seen three such cases in practicising physicians; if they are encountered in members of the profession, how can one expect more watchfulness from the laity? In one of my cases, the man had a large practice and was a surgical leader in his community and abreast with medical progress. He believed he was run down from work and went away for a rest and then took tonics because his rest had not benefited him and finally quinine, because he thought he had malaria. He happened to put his hand on his epigastrium one night and felt to his surprise a large mass—almost the entire stomach being involved. The criticism of delayed diagnosis is unfair, particularly when this has been met with in more than one instance. If it were not for the discharge, many uterine cancer cases would not come under observation, and the same is true with lumps in cancer of the breast and elsewhere.

There is, however, another side to this matter. Same cases that I have seen have been temporized with too long without a substantial diagnosis by some general practitioner. It sounds like a cheap cry of alarm, and one far too sweeping as a general policy for the general practitioner, to say that every case of "indigestion" in a person of cancer age should be diagnosed away from cancer if the symptoms have lasted a few weeks, even though they had apparently responded to treatment. Yet this disease is so insidious that it is impossible to differentiate unless one has made a policy of diagnosing away from cancer rather than trying too late to explain a stationary or downward course of the patient's health. A well schooled clinician recognizes what may be called an elasticity in diseases and conditions that are not progressive to fatality—a something that, while it may apparently be absent, nevertheless is an asset that can be built upon to restore health. This does not exist in cases of cancer and whatever the diagnosis of the condition or cause of the indigestion may be or whatever the treatment and the immediate result obtained, the foundation stones upon which health might be built are missing. It is only a question of time for this to be manifested to even the most casual observer. Because of the propaganda against cancer, and Bloodgood deserves much credit for recent work in this, and also a broadening interest in abdominal conditions, general practitioners everywhere are making better diagnoses, and not a few are well abreast of the subject. It is a very encouraging sign that this type of general practitioner is becoming more and more numerous. It augurs well for the future of American medicine and respect for the profession.

In a case of early cancer of the stomach, the diagnosis as far as indication for surgery is concerned is usually not difficult. Sufficient intelligent investigation is the most necessary factor in the vast majority of instances. Go after the diagnosis directly and diagnose away from cancer, rather than begin with a hazy idea of all of the abdominal troubles. It seems extreme, but it is wisest to suspect cancer in every patient over thirty-five years of age in whom symptoms have persisted for a few weeks. Take a positive attitude as a basis of departure. In Anglo-Saxon countries an arrested person is innocent of a crime and must be proved guilty by prosecuting authorities; in France he is judged guilty when arrested and must prove his innocence. This is somewhat analogous to what I believe should be the point of departure in diagnosis of cancer.

It is stated that in only two per cent. of chronic ulcer cases does clinical cancer develop. The pathological reports from the Mayo Clinic indicate that this figure is far too low. Hence a large number of ulcers with microscopic findings suggesting malignancy never develop clinically into what we understand as cancer. Judging from histories of cancer cases I have seen, in the vast majority there is no history of ulcer. Of course, so called precancerous lesions of the stomach may have been present without symptoms, but this is a point yet to be proved as far as gastric cancer is concerned. Our reasoning for the premises commonly taken here is based upon what we know of cancer following chronic lesions in visible parts of the body, and considering all lesions the number of cancer cases are few. I cannot prove the contrary of Mayo's contention, except in a gross clinical way, so I still feel that Ashoff's beliefs are best. The question why in one person cancer develops from a lesion and does not in another has yet to be answered. To the clinician there is a susceptibility to this disease in some persons, and this susceptibility when present may even influence the character of the neoplasm primarily and the course of it both locally and generally. It seems true that the vast majority of the people who have suspicious histories of chronic ulcers are resistant to cancer and do not acquire it, no matter how long a gastric ulcer had existed or how much neglected. We all agree that surgery is the proper procedure in all persistent ulcers, and that the effort should continue to render possible their cure by surgery, both from the standpoint of relief of symptoms and because in a small number of the whole they are precancerous lesions. One cannot tell, however, at the time of examination of old ulcers which person is susceptible to malignant disease and which is not. To feel that all or only one half of the unhealed ulcers are or will become true cancers, is reaching far into the realm of supposition, for the opposite has been proved by clinical facts. It is hoped that in the future some laboratory test for susceptibility to cancer will be found, such a test as valuable for cancer as is the Wassermann, luetin, or spinal fluid test for syphilis. If only a test for susceptibility were available, much of the mystery in the ulcer cancer problem and in cancer elsewhere in the body would be tremendously cleared up. If cancer were an infective condition, it is probable that its cause would have become known with the development of ultramicroscopic methods and a test discovered. Practically all of the most important diseases of man are now in the class of infections, and laboratory procedures for their diagnoses are based upon the fact that a definite infection exists.

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*Read before the Harlem Medical Association, May 2, 1917.

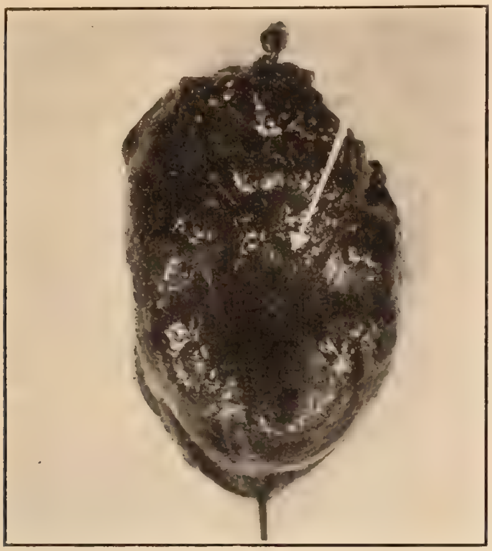

FIG. 1.—Looking into the pylorus from the stomach side. The darkness of the lower half of specimen is due to blood in the mucous membrane of clamp trauma. Arrow points to greatest thickness of growth, on each side of which specimens were cut for microscopical examination. No macroscopical evidence of cancer in the mucous membrane. The growth involved only the lower left quadrant.

Up to three years ago 320 cases of gastric cancer had been examined by me. In these a history strongly or mildly suggesting ulcer was met in sixteen cases, or about five per cent. Of these cases 287 were deemed good or fair enough for recovery from the immediate effects of exploratory incision, although after a negative Wassermann, operation was advised in all. It was advised also with a positive Wassermann, providing a short course of antisyphilitic treatment had not helped. One can never tell even in what seems to be a late case whether an operation might not be of some assistance, and thus the best plan is to do at least an exploration in all. Of the 287 cases, 192 were operated in, and in the ninety-five remaining, there were two factors against it. In sixty-four, physicians advised the patient against operation—a most unreasonable and unwarranted attitude for any of us to take positively—the patients themselves declining operation in the remainder. Of the 192, in fact in 279 of the whole, all are dead as far as I know, my records being complete in 259 cases; the remaining twenty I was not able to trace. Of the whole number there were eighty-one cases in which I felt that surgery offered distinct possibilities of benefit, seventy having been operated in. It is a discouraging record for any conscientious physician that after all this work all the patients are dead, although in many a prospect of distinct benefits and lengthening of life had been looked for. In but eight cases was the possibility of complete cure marked, and the deductions from these eight are the special occasion for this article. Extensive excision was done in every one of these patients, in four with the removal of glands. Two of the latter had return of the growth locally in the stomach; one is dying at present, and the other will not live much longer. At any rate, they all lived practically three years after the diagnosis and operation and

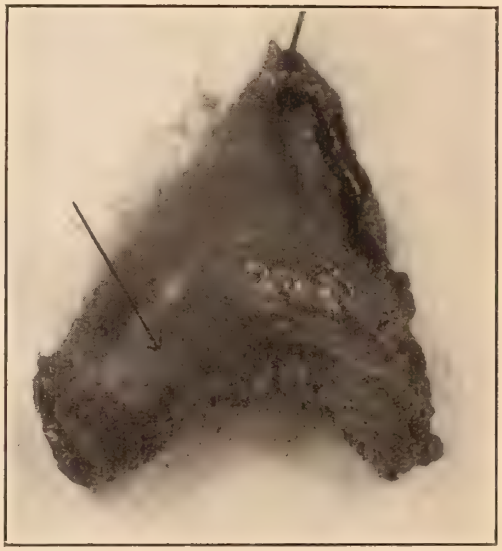

FIG. 2.—Posterior wall of the stomach, cut stomach to the left, lesser curvature to right, greater curvature above. Duodenum upper right apex. Arrow points to site of growth. No evidence of peritoneal involvement, glands, metastases, etc.

were useful members of society during most of that time, a result I feel would have been impossible unless operation had been done. Of the six remaining, one now has an extensive carcinosis of the abdomen, and will die shortly, and another had a cancerous breast removed three months ago but is now apparently quite well. Four are today well, and these, too, were primary cancer cases, not questionable ulcers.

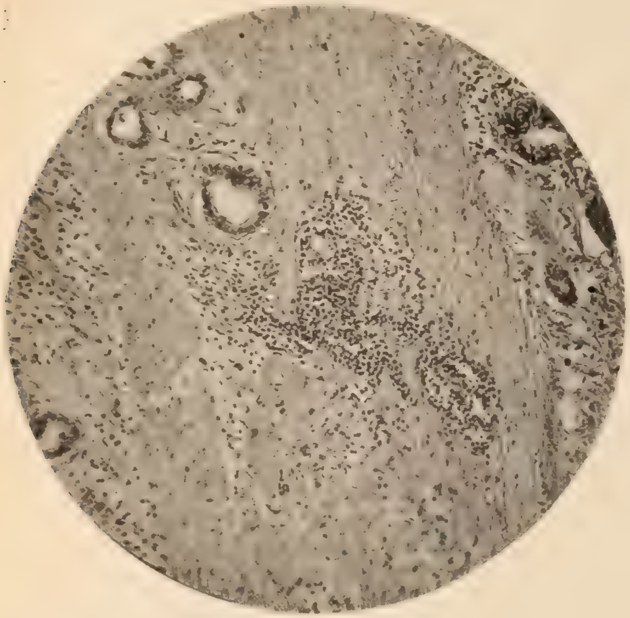

FIG. 3.—Carcinoma cells invading mucous membrane and submucous tissue.

The early examination in these eight cases showed obstruction at the pylorus and definite gastric symptoms due to the persistent obstruction and not to the cancer in any way. Of course, the obstruction was due to cancer, but the point I wish to make is that they came under observation for symptoms due entirely to the pyloric obstruction. The laboratory findings with test meal examinations proved this in all, and the x ray in all but one. In one, traces of blood in very small amounts were found frequently in test meal and stool. In the rest this was negative. Hydrochloric acid was present in all but one, two having a distinct hyperacidity. In the one in which acid was not found, there were traces of organic acid and a very occasional Boas-Oppler bacilli. In one of the hyperacid cases I had the opportunity to do three extractions in eleven days, suspecting, after the x ray had suggested the diagnosis, that the normal acid content would run down, but it did not. In all there were more than five hour delays of mixed meals; in five it was over twelve hours. The Wolf-Junghaus test was made in seven, was negative in six, and questionable in one. None had Saxyl-Solomon urine. Thus it is plain that so far as the history and the laboratory examination were concerned, only pyloric obstruction could be diagnosed.

The x ray was more definite in all but one. In seven instances it showed a distinct defect in the anatomy and over six hour stagnation. Its greatest value to me is in the defects shown; I am firmly convinced that the direct method of x ray diagnosis is dependable. In these instances, encroachment on the lumen defects, definite tenderness to pressure upon these areas, peristaltic wave jump areas, and deformities were manifested. All but one had pyloric obstruction of permanent kinds, confirming the laboratory findings. The value of the x ray was in confirming the laboratory method in diagnosing stagnation. What the laboratory could not show was the anatomical defects, and because of this, the x ray method takes precedence over the laboratory, although the latter should not be neglected. In one case as normal a stomach as was ever observed by x ray was seen—no defects, no jumps, no anything—yet the history was suspicious. The laboratory was more valuable here than the x ray in that blood was demonstrated in the test meal and stool.

Most important of all, however, is the history. In the play of the different forces contending for recognition and supremacy in the advance of medical science, this matter is receiving less attention. While the laboratory and x ray offer in this, as well as in many subjects in medicine, most valuable service as a method of diagnosis, neither one is complete in itself. There are services in the completion of a diagnosis that they, and only they, can give—additional facts on which to base a definite decision. The history, however, should take precedence. It is unfortunate that the easiest and the least time and expense consuming method of the three is so slightly regarded by an apparently constantly growing number of our colleagues. In every one of these cases details in the history, simple physical examination, or both suggested an obstruction of the pylorus, one that had not existed long, but was permanent in type and mildly affecting the general health. While the x ray usually showed the defect, the history was more suggestive of its nature than either the x ray or the laboratory. In the history one deals with an individual and that means dealing with disease far more directly and dispassionately

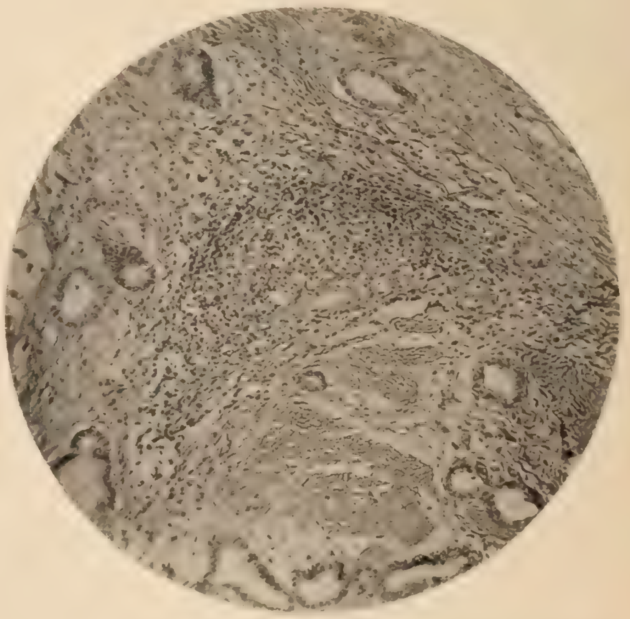

FIG. 4.—Collection of carcinoma cells in deeper and denser portion of the organ.

than the two indirect methods of laboratory and x ray. Manifestly, the most direct method is to operate, but the victims of the early manifestations of disease have not got operation primarily in mind. This must always be suggested by the examiner and reasoned out with the patient. It is at this point that the history is important, because this is the foundation of later symptoms. Symptoms bring the case under observation. Inasmuch as the field of abdominal diagnosis is large and the number of cases of cancer is comparatively small, histories are very important. If I were deprived of any two methods in the four of history and physical examination, x ray, laboratory, and operation, I would prefer the first and second. The best service, however, is to be had in diagnosis of early cancer by all four, in which history is of the first importance. I state this after considerable experience with all. Why histories are being neglected in abdominal work is beyond me.

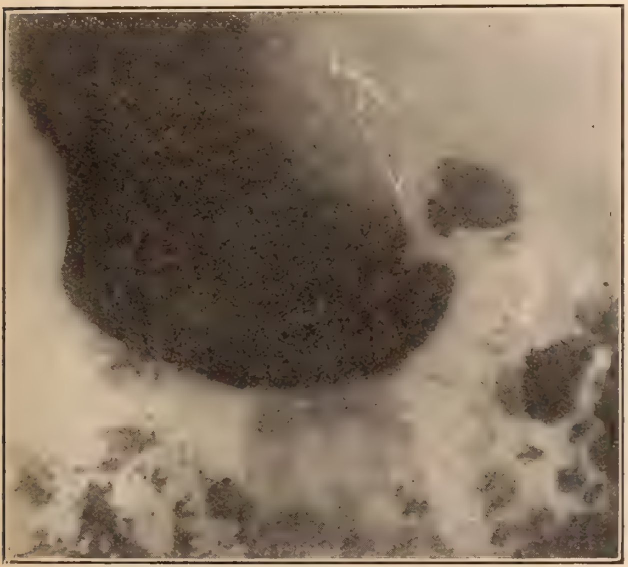

Fig. 5.—Röntgenogram showing defect at pylorus, moderate dilatation of stomach, normal exit. Arrow points to defect. Plate made by Dr. I. Seth Hirsch.

I offer a division of the early gastric cancer cases into two main groups: those which are not situated at the orifices and those which are. In those not situated at the orifice practically none, excepting possibly the few ulcer cases, will be diagnosed early enough for cure. They have no local symptoms until a large part of the stomach is diseased, and then the symptoms are general as well as local, as in all late cases. A few of these patients, however, come under observation fairly early and they should be operated upon, but in by far the larger number they do not come to any medical man until marked extension of disease is present. The second type are those at the orifices, pylorus, or cardia, and these are more fortunate. Suggestive and pronounced subjective symptoms come on quickly and are often distinct enough to see in a history, however casually given: the slight nausea, coming on perhaps only late in the day; the bitter taste suggestive of a stagnant stomach; the occasional vomiting of foods retained from the previous meal or even before this, although this is a late symptom; the relaxed stomach, and possibly its visible peristalsis if sufficient tone is still present and the obstruction is distinct enough. With these are also the danger signals of anorexia and perhaps aversion to meat; neither are pronounced in the early case and only suggestively present. All of these serve as beacons on the trail, although the lights may be only barely visible in the darkness. When the lesion is at the pylorus, distress is felt in the median line and is made worse by taking food, there is tenderness on pressure, perhaps spasm, and an unexplainable weakness becomes manifest and gradually increases. When the growth is at the cardia, there are difficulty in swallowing never before present and attendant esophageal distress which may be minor in nature, yet definitely present.

If an early case has come under medical observation, why wait until anorexia, vomiting of stagnant contents, loss of weight and strength, anemia, cachexia, a mass, and so forth are present? Recourse should be taken promptly to the x ray and the laboratory long before these manifestations set in, and then a frank statement to the surgeon and to the patient of your beliefs should be made. In all the cases I have diagnosed early, I believe it was possible for anyone who is watching and careful in his work to recognize the condition. It is the obstruction, or delay of total stomach contents in fixed time, that I wish to emphasize particularly, since all of my early cases had it. I will report only one case recently seen in which credit goes distinctly to a general practitioner of medicine and gynecology, Dr. M. O. Magid, and a röntgenologist, Dr. I. S. Hirsch, for their skill. I was simply the consultant asked to weigh the facts considering indication for surgery. I feel that they deserve far more credit than myself, even though I specified the nature of the growth. The case presents some of the points brought out in this article, and serves somewhat as a summary.

Case.—A man, sixty-four years of age, was brought to me on December 5, 1916. There was nothing of importance in his family or personal history except that he had been practically well up to his present illness, which began about three months before. His first sensations were those of indefinite pain in the epigastrium. These were not acute, but were always intensified by the taking of meals. He said that at times it might be characterized as distress, but he thought that a slight degree of pain expressed the sensation best. In the course of a few weeks he became fearful of taking foods and noticed that solid foods distressed him, while soft and fluid ones were comfortable. About three weeks from the time the pain started he was distressed by even fluid foods. After a few days of this the pain subsided so that there was only a slight degree of distress, and with this he began to partake of foods of all kinds. From the beginning there was a definite degree of anorexia which did not subside when the gastric distress lessened, although he felt that it was less than during the first three weeks. At the present time he is feeling quite well except for a degree of weakness. This is indefinite, although bona fide and not a neurological condition.

On examination, the man was slightly anemic, and thought he had lost about six pounds through the entire illness. There was no evidence of cachexia. His abdomen was large and there was a spasm, not very marked, in the epigastrium on the right side. This on percussion corresponded to the pyloric end of the stomach, and it was difficult to say whether a mass was palpable below it or not. If there was a mass it was very small; the large size of the abdomen and the spasm made it impossible to be sure.

The most probable diagnosis was early carcinoma at the pyloric end of the stomach. A triple test meal extracted the same morning for twelve, six, and one hour endurance showed 190 c.c. stagnant return, a free HCl of 13°, a combined HCl of 8°, and a total acidity of 22°. Lactic acid was present in small amounts, likewise blood and an occasional Boas-Oppler bacillus. Diagnosis still early carcinoma of the stomach, and operation advised.

Here was a man over sixty years of age who had always been well up to the present illness, never having had any indigestion. Three months ago a bona fide digestive trouble set in with pain and distress, and anorexia was a distinct symptom running through its course up to the present. The distress is of a selective food type, which, according to the physical character of the foods taken, point to a pyloric obstruction. The cessation of pain suggests a carcinoma, because carcinomas in the stomach commonly do this in the beginning of their history. During the whole illness there was a gradual loss of strength and weight, and the test meal showed a moderate degree of gastric stagnation, a lowered hydrochloric acid acidity, some blood, and an occasional Boas-Oppler bacilli. The diagnosis of a new growth at the pyloric end of the stomach, it seems to me, was easy, and it is perfectly manifest that this in all probability was cancer and a good case for operation.

Three days afterward in the Polyclinic Hospital a partial gastrectomy was done by Dr. A. Sturmdof. There was a hard mass, small in size, directly inside the pylorus. It was situated on the posterior wall and no evidence of its nature was observed, metastases, etc. Its character was so hard, however, that carcinoma was the most practical pathology. At the time of the operation I saw the x ray plate for the first time which is reproduced herewith. Examination of the sections shows that the growth was a primary carcinoma.

21 West Seventy-fourth Street.

DIAGNOSTIC TEETH.*

By Percy Willard Roberts, M. D.,
New York,
Associate Professor of Orthopedic Surgery, Postgraduate Hospital; Associate Attending Orthopedist, Mt. Sinai Hospital; Assistant Surgeon, Hospital for Ruptured and Crippled.

There is abundant evidence that the value of the teeth as an aid in the diagnosis of certain morbid states, notably bone and joint lesions, is very much underrated. There have come under the writer's observation during the last few years numerous cases of inherited syphilis which had undergone long periods of treatment based upon incorrect diagnoses and in which inspection of the teeth with an intelligent interpretation of the findings would have given a clue to the true pathology and shortened immeasurably the period of invalidism. If errors are of frequent occurrence in the field of orthopedic surgery, where more or less constant vigilance is exercised for the appearance of syphilitic manifestations, may they not exist with like frequency in other branches of medicine? This is entirely probable for the very good reason that anomalies of the teeth are usually looked upon as the special charge of the dental surgeon, their clinical significance being little understood.

The knowledge of the average medical man regarding the relationship between the teeth and hereditary syphilis stops at the dictum of Jonathan Hutchinson who, even in his later writings, maintained that the only dental stigma pathognomonic of syphilis was notched central incisors, and that to consider other malformations as indices of hereditary taint was to open the door of diagnostic error. Syphilographers of the French and Italian schools have in the last two decades added much to the observations of Hutchinson and it is now recognized that there are at least three dental malformations of equal importance to the classical Hutchinson teeth. Not only that, but there are also entitled to consideration many other distortions both in form and arrangement of the teeth which occur more frequently in inherited syphilis than in any other disease.

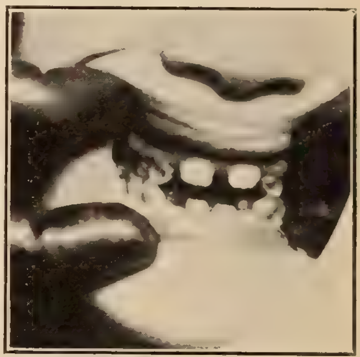

Fig. 1.—Widely spaced upper central incisors in a syphilitic boy, who also has a saddle nose, corneal opacity of left eye, and defective hearing, and is mentally subnormal.

That the abnormal tooth formations seen in hereditary syphilis are not merely an expression of a general dystrophy, but are more often the result of local inflammatory disturbance, due to the immediate presence of the spirochetes, is suggested by the fact that the organisms have been recovered from the dental structures of the dead fetus. It may be argued that morbid processes other than syphilis could produce anomalies similar to those found in lues, and the contention would be incontrovertible, except that to produce the variations in form and arrangement and even the suppression of the dental units considered indicative of syphilis it is necessary that the distorting agent shall be active over a relatively long period of time embracing the last five months of fetal life and the first few of the child's existence. In other words, its activity must correspond, not to the period of eruption of the teeth, but to the time during which they are undergoing calcification. The first permanent molars begin to dentify during the sixth month of intrauterine life and the incisors and canines during the first three months after birth. It has been stated by some writers that tuberculosis and rickets are responsible for many of the common dental defects, but it is difficult to see wherein the course of these maladies even approximates the conditions necessary to produce the lesions under consideration, and neither of them could satisfactorily explain the localized anomalies which occur without other evidence of disease. More than that, after careful examination of a large number of children in the Paris hospitals

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*Read before the Section in Orthopedic Surgery of the New York Academy of Medicine.

Fournier and Hallopeau have expressed the opinion that tooth erosions are not frequently produced by either tuberculosis or rickets, and this seems to be the belief of many observers, despite some evidence to the contrary.

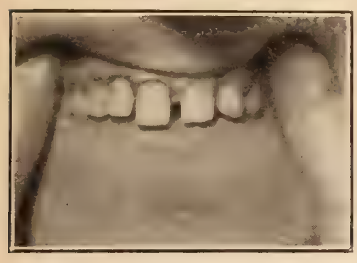

Fig. 2.—Widely spaced upper central incisors. Syphilitic manifestations present since childhood cleared up under mixed treatment. Two sisters have similar teeth.

The recognized pathognomonic dental stigmata are the notched upper central incisors of Hutchinson; cuspal erosions of the first permanent molars, recognition of which is credited to Moon, of London; multiple and systematic dystrophies of the permanent teeth, and multiple dystrophies of the deciduous teeth described by Cavallaro. These imperfections Fournier, Hallopeau, Darier, Cavallaro, and others agree are produced by syphilis alone, although there are some dissenting opinions as to the infallibility of their diagnostic import. In addition there are other anomalies of form and arrangement of the teeth frequently seen in inherited syphilis which may have an important bearing on clinical diagnosis in both medicine and surgery. Fournier estimates that of such conditions eighty per cent. are produced by syphilis and the balance by other causes which may be unknown, but from which syphilis cannot be definitely excluded.

One of the common malformations is the absence of dental units which may be so extensive as to produce an entirely toothless jaw. There are also symmetrical erosions of various kinds, striking irregularities of form and distribution, anomalies of spacing, microdontism, cleft teeth, white sulci, and the tendency to early decay. All of these are common to hereditary syphilis, and while not pathognomonic of the disease and perhaps of no significance at all when appearing alone, yet the least of them may become a sign of vital consequence when associated with a distant, active, morbid process of doubtful pathology.

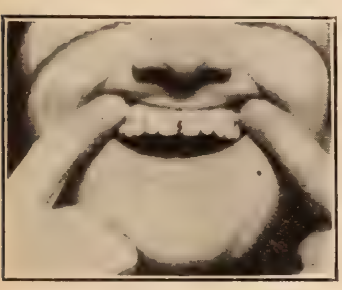

Fig. 3.—Moderate type of widely spaced upper central incisors. Cervical adenitis with sinus; osteochondritis of sternoclavicular joints; extremely tender tibiæ. Formerly treated for tuberculosis. Wassermann positive. All symptoms have subsided under mixed treatment.

The point which the writer seeks to emphasize is the value of an otherwise trivial dental anomaly as a clue to the pathology of an active lesion occurring elsewhere in the body. It is evident that syphilis may, by invasion of the dental follicles during their period of development, produce an almost limitless number of peculiarities, and it is important to remember that anomalies of the teeth, no matter how slight, are frequently suggestive of hereditary syphilis. It follows, therefore, that by routine examination of the teeth we may acquire information which will direct us toward the correct solution of a blind clinical problem.

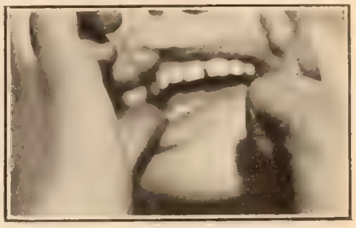

Fig. 4.—Widely spaced upper central incisors of the moderate type. Patient treated seven years for tuberculosis of knee. Symptoms reappeared after removal of cast. Complete restoration of function after a course of mixed treatment without immobilization.

In connection with this attention is particularly called to abnormal spacing between the two upper central incisors (Fig. 1), which, when occurring alone, has not heretofore been regarded as of diagnostic significance. There is nothing in the extensive investigations thus far made by the writer to indicate that this condition may not be produced by other causes than syphilis and it would be most unwise and unreasonable to mark all people with widely spaced teeth as the bearers of hereditary taint. Nevertheless, the fact that the anomaly occurs in recognized syphilitics at times gives to it a distinct diagnostic value. It may, indeed, be the only dental irregularity in a subject of inherited syphilis (Fig. 2) and has in the writer's experience been the means on many occasions of detecting syphilis which had been for years overlooked. The importance of this observation will perhaps best be illustrated by briefly outlining actual cases.

Case I.—A boy, fourteen years of age, had for two years been treated for tuberculosis of the elbow, which was ankylosed at a right angle, and a sequestrum of dead bone had been removed from the lower end of the humerus leaving a sinus which refused to heal. On the clue furnished by widely spaced upper incisors, a diagnosis of probable syphilis was made, notwithstanding a negative Wassermann. Under the influence of mixed treatment the sinus healed rapidly and complete function was restored to the joint.

Case II.—A boy, eight years old, had been treated for six years for tuberculosis of the knee during which time the joint had been immobilized in plaster of Paris. A large atypical lesion was revealed by the x ray in the upper part of the right tibia, extending downward from the epiphyseal line. Widely spaced upper incisors suggested syphilis and under mixed treatment the symptoms subsided, the x ray showed bone regeneration, and joint motion returned.

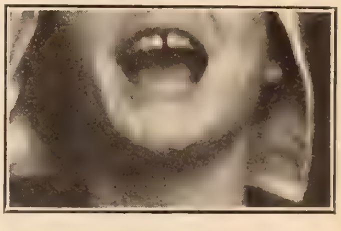

Fig. 5.—Widely spaced upper central incisors in otherwise perfectly regular teeth. Inherited syphilis; positive Wassermann. Two other children in same family have similar teeth and active lesions of hereditary lues.

Case III.—A boy, twelve years old, whose hip had been locked up for a year in a plaster spica on the supposition that he had tuberculosis of the joint with a profusely discharging sinus, presented widely spaced upper incisors in otherwise perfectly regular teeth. On this evidence he was placed on mixed treatment. The sinus healed and all hip symptoms rapidly disappeared.

Case IV.—A girl, fifteen years of age, had been treated for six years for lesions of the left hip and right knee. She was twice admitted to an orthopedic hospital. When she came under the writer's observation the hip had cleared up, but she was still wearing a brace extending from the sole of the foot to the groin to protect the knee which was stiff, tender, and painful. The presence of widely spaced upper central incisors and other dental irregularities suggested syphilis. Under the influence of mixed treatment the symptoms disappeared and the brace was discarded.

CASE V.—A young woman, aged twenty-three years, came under observation with enlarged glands of the neck, associated with a discharging sinus of a month's duration. She had been told that these were tuberculous and had received a course of tuberculin treatment. Because of widely spaced upper central incisors (Fig. 3), she was referred to the writer for an opinion. On examination it was learned that when nine years old a similar condition existed for three years. Two years ago an enlargement occurred at the upper end of the sternum and tenderness still remained at the sternoclavicular joints. There was also tenderness of the tibiæ. The symptoms disappeared under mixed treatment. The Wassermann in this case was positive.

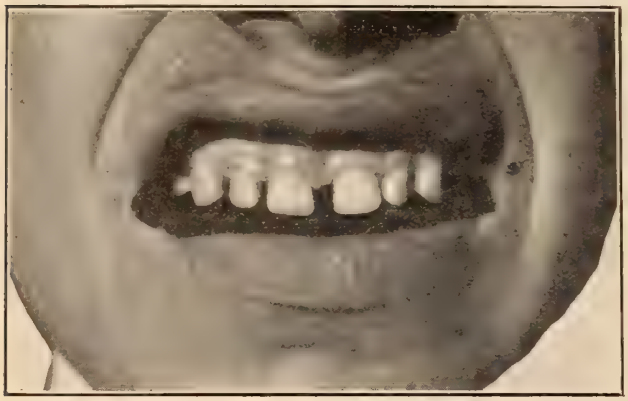

FIG. 6.—Widely spaced upper incisors, no dental units missing. Hip symptoms which had persisted two years disappeared under mixed treatment. Wassermann negative. Brother has dental evidence of inherited syphilis.

CASE VI.—In 1910 a boy was taken to a large New York clinic because of pain, swelling, and stiffness in the right knee. A diagnosis of tuberculous arthritis was followed by immobilization in plaster for three years. The cast was then removed, but reapplied later because of a return of pain and stiffness. This experience was repeated several times and when he came under observation he had been three months without protection. Pain, stiffness, and limp had reappeared and on the clue furnished by widely spaced upper incisors and multiple erosions of other teeth (Fig. 4), he was placed on mixed treatment. All symptoms disappeared in three weeks without resorting to a plaster cast.

CASE VII.—A girl, aged sixteen years, with symptoms of mental depression had had various diagnoses and many forms of treatment without result. On account of widely spaced upper central incisors (Fig. 5) she was placed on mercury and potassium iodide with striking improvement. The mental condition cleared up and remained normal until she discontinued the medicine of her own volition, when the depression reappeared, but was again promptly controlled on resumption of treatment. This patient was later found to have a positive Wasserman, although two other children in the same family with widely spaced upper incisors and other evidence of syphilis gave negative reactions.

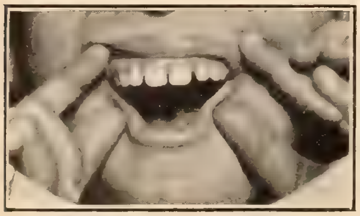

FIG. 7.—Widely spaced upper incisors. Child has had more or less continuous headaches for several years. Sister has widely spaced incisors and hip disease. Both improving under mixed treatment. Father contracted syphilis two years before marriage, and Wassermann still positive a year ago.

CASE VIII.—Another patient had been in bed two weeks in one of our large hospitals with supposed hip disease, symptoms of which had been present two years. Widely spaced upper incisors were present (Fig. 6), and, although the Wassermann was negative, he was given mercury and potassium iodide on the dental evidence alone and made a fairly rapid and complete recovery.

CASE IX.—During the examination of a married woman, thirty years of age, widely spaced upper central incisors were observed. Inquiry regarding her past medical history revealed the fact that for years she had had recurring attacks of severe periostitis of both tibiæ, recurring corneal ulcers in childhood, an undiagnosed persistent rash in childhood, "urticaria" of several weeks' duration in later years, frequent severe headaches all of her life and, to quote her own words, "there was always something the matter." She had never borne children. She recognized the taste of the potassium iodide which was prescribed for her bone tenderness and said she had taken the same medicine years ago and that her father, too, had taken it for a long period of time. The tenderness of her tibiæ, which was extreme and had persisted for months, entirely disappeared after a few weeks of mixed treatment.

CASE X.—A boy with vertebral caries simulating Pott's disease was treated for several years by means of plaster jackets and was finally operated upon by implantation of a bone graft into the spine. The graft eventually sloughed, leaving several profusely discharging sinuses, and when he came under observation his condition was desperate. Examination revealed typically notched teeth and a course of mixed treatment was instituted with most gratifying results. The sinuses healed, general nutrition improved, and when he was taken from the hospital the boy was able to stand and take a few steps alone.

CASE XI.—A different type of dental deformity, the fissured tooth, was responsible for a diagnosis of inherited syphilis in an undersized boy, ten years old, who for a year had had occasional mental symptoms and a slight limp due to pain about the left ankle. He had been seen by several pediatrists and neurologists who overlooked the cause of his trouble. An x ray revealed a lesion in the lower end of the tibia adjoining the epiphyseal line. Mercury and potassium iodide cleared up all his symptoms in a few weeks.

These varied instances of unrecognized syphilis, which might easily have been diagnosed at the onset of symptoms, indicate not only the wisdom but the necessity as a routine procedure of inspecting the teeth. They are suggestive, too, of the value of the minor dental defects, especially widely spaced upper incisors, as an index of inherited syphilis.

It is not to be assumed from what has been said of the results of the cases cited, which were selected from a series of over fifty now under observation, that recovery always takes place in a few weeks. Signs of improvement often appear in ten days and in this series those without definite bone lesions cleared up rapidly. On the other hand, x ray records indicate that complete osseous regeneration, when it does take place, requires from ten to fourteen months of constant treatment.

In conclusion, let it be repeated that the typical Hutchinson tooth, with which we are all familiar, is but one of many types of dental deformity produced by inherited syphilis. The very nature of the disease, most active as it is during the period of tooth formation, may produce an infinite variety of abnormal dental shapes and arrangements, the presence of any one of which when associated with disease in other parts of the body should arouse suspicion as to the pathology of the active process where positive evidence of its nonsyphilitic origin is lacking. To ignore these signals of hereditary taint which nature has placed so conspicuously before us to invite diagnostic disaster.

576 FIFTH AVENUE.

PROPHYLACTIC INOCULATION IN TETANUS.

By J. Rudis-Jicinsky, M.D.,
Chicago, Ill.

Since my article on our work in Serbia in surgery and medicine, I have received so many letters of inquiry from my colleagues from all parts of United States, asking especially about our experience with cases of tetanus, that I considered it my duty to write upon this subject. The general use of immediate preventive inoculation in our cases was a precautionary measure of the utmost importance, especially in surgical cases. At our hospital in Uskup, during 1914-1915, we inoculated 8,272 wounded soldiers and hundreds of medical patients, not to mention civilians of the city and vicinity, including persons of all nationalities engaged in war without distinction. In the General Hospital "U gradu" there were 18,096 surgical cases during that time, not counting cases from foreign and local missions.

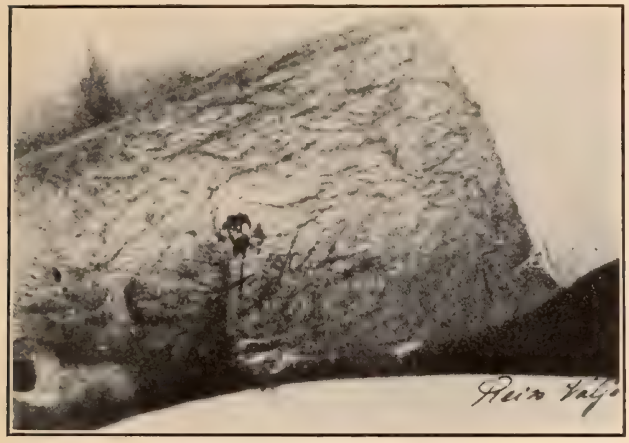

Fig. 1.—Wound caused by an explosive bullet. The wound of entry. (Hospital in Valjevo, Reiss.)

When we left for Serbia in October, 1914, we bought, with the kind support of our benefactor John W. Frothingham in New York, many gallons of antitetanic serum from one of the most reliable American firms. We had enough of this valuable prophylactic material to supply other military hospitals near the front and base hospitals. Thus, many cases of tetanus were modified and others prevented altogether. In all our surgical work only six cases of tetanus and two fatalities occurred in one year of actual experience—this under the most miserable circumstances and with the poverty and the most wretched sanitary condition of an exhausted and stricken people and their armies struggling for existence.

When we first saw the terrible lacerated and infected wounds, fractures with crushed bones, and peculiar injuries of all kinds on our arrival in Gevgelija (Dzevdzelija) we at once realized that the prevention of wound infection would be the key to successful emergency work. At the railroad station at Gevgelija near the firing line, we had to take care of the first transport of wounded Serbian soldiers who had been attacked by their Slavic brethren, the Bulgarians near Strumica, a few miles from Gevgelija. We applied a great number of first aid dressings at the railroad station, and later at the hospital, a new tobacco factory near by, we took care of 1,609 patients, trying our best to secure under the prevailing conditions an aseptic status for all the wounds and of everything which was brought in contact with them. We established by the most simple methods thorough disinfection of the wound and its environment, the field of operation, the hands of the surgeons and assistants, and instruments, sponges, sutures, ligatures, drains, and dressing material. We maintained as far as possible hygienic condition in the surroundings of the patients and their personal hygiene, and provided clean nourishment and the proper nursing. The insanitary conditions around the building had to be changed and more beds ordered. After one week we left for Uskup under convoy, the destroyed bridges over the Vardar having been repaired. We left Doctor Guca and two nurses of our unit in Gevgelija until the two American Red Cross units arrived.

We soon found out how complicated is the process of wound infection; we had to strive not only to guard against the entrance of the infecting organism, but to work at the same time to prevent conditions known to favor the reproduction of the organism. The hospital was overcrowded, the transports arriving three or more times a day. In Uskup, and also in Gevgelija, we had cases of nonsuppurative wound infections and, especially during the typhus epidemic, many cases of erysipelas, erysipeloid and few cases of tetanus. These cases furnished the most striking examples of what could be done when antitetanic serum was given in time. Here and in other hospitals it was observed how easily a large proportion of the cases of tetanus were modified to an atypical form. This was due to the general use of immediate prophylactic inoculation with serum in contrast with other cases where the symptoms were controlled from the start.

Having some experience with the acute and chronic infectious disease caused by the tetanus bacillus, especially in trauma, we carefully studied the history of each wounded soldier. We inquired as to the history and character of the injury,

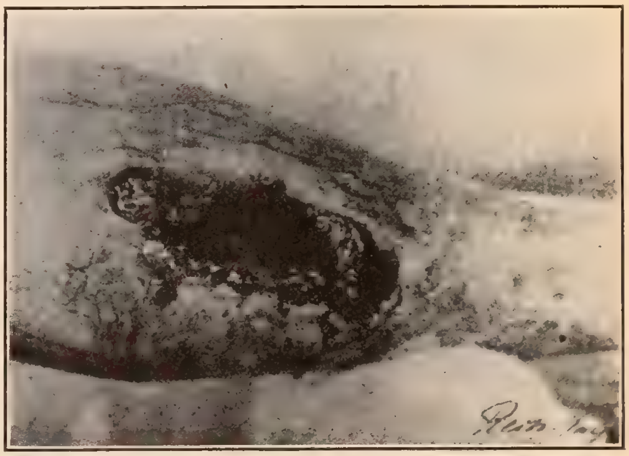

Fig. 2.—Wound caused by an explosive bullet. The wound of exit. (Hospital in Valjevo, Serbia, Reiss, 1914.)

whether dirt, clothing, mud, or small fragments and particles of bullets and projectiles were carried in; we got information about the vicinity where the wounds were received and in what soil; we asked if putrefying liquids, old straw, manure, rubbish, and dust, were near by. When the patient had a lacerated wound, crushed bones, compound fractures with constantly draining sinuses, a wound apparently full of pus without apparent cause, or wounds produced by bullets—*Einschusspatronen*—so called dum-dum, etc., he received at once a prophylactic dose of serum to guard against tetanus. The last mentioned wounds were especially carefully observed. In general in such a case the wound of entrance was small. The wound of exit from the body was enormous, the flesh often protruding in the form of a mushroom and being terribly lacerated. The inside of the wound was shattered, the bones, when struck, broken into small pieces and splinters, and some particles of the projectile were remaining. The bullet on exploding inside of the body broke up, the fragments acting like a shrapnel. To this was added the effect of the gases. These wounds were very dangerous, and in all such cases serum was given at once, the prophylactic dose being at least 1,500 units, in three injections or 500 units a day, and sometimes even more, repeated as the case progressed. A limb struck by an explosive bullet was almost always lost; a wound in the head or the trunk was in majority of cases fatal. Ordinary bullets fired at close range may also produce wounds in which the orifice is normal at the point of entry and very large at the point of exit; but in these cases, of which we have had a very great number, the tear and the channel through the body was not so large as in the wounds made by explosive bullets and the danger of tetanus was not so great with comparatively clean bullets.

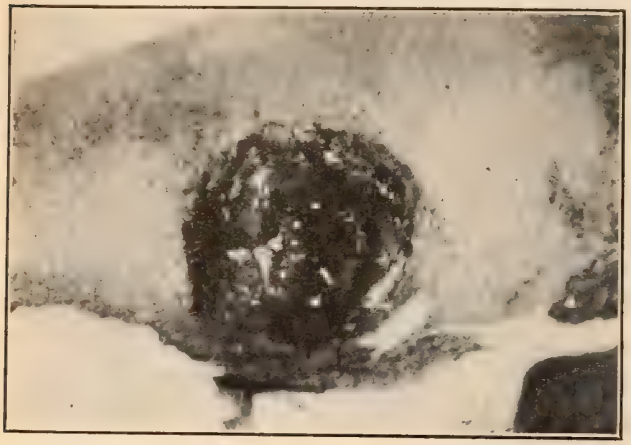

Fig. 3.—Wound in leg caused by an explosive bullet. Wound of exit in shape of a mushroom. (September 29, 1914. Valjevo, Reiss.)

In cases where we had to extract from the wounds shattered fragments of explosive bullets, as found on x ray examination, the serum was given at once. We also gave serum in cases in which the wound seemed to be very small and not progressing favorably and when the patient told us that he had heard two explosions when fired at—the sharp report of the rifle as it was fired and a second explosion which seemed to occur sometimes behind them and sometimes in front, the fragments of the bullets striking the ground and producing a comparatively small, but unclean injury, a simple scratch, or a small punctured and contused wound. We found that in a majority of the cases a slight injury may serve as a gate of entrance for the poison or the anaerobic bacillus, which cannot grow in the presence of oxygen. The injuries were almost always on the extremities, particularly on the hands and feet, but we had also cases of head, trunk, and abdomen injuries. In acute tetanus the duration of incubation was about two weeks, while in chronic cases the symptoms appeared usually after the second week. The members of the English units had the same experience, dividing the modified form of the disease into three types: splanchnic tetanus, cephalic tetanus, and local tetanus of the extremities. Our two patients who died had wounds of abdomen and thorax. The general convulsions and opisthonus were absent; the spasms were limited to the muscles of deglutition and respiration and death occurred from respiratory paralysis. In one case of the cephalic type the patient showed symptoms of delirium, the paralysis involving the facial nerve, together with muscular spasms, the oculomotor nerve, and finally even the hypoglossal nerve. In local tetanus of the extremities we observed the same symptoms which Burrows describes: "There was tetanic spasticity of the muscles in some cases; in others no symptoms were observed in the beginning, but later forms of restricted stiffness and rigidity limited to certain groups of muscles developed gradually." At first though, the patient complained of tension of the muscles of the jaw, the ear, and back of the neck, and soon tonic spasms of the masseters rendered the facial muscles more or less immobile and locked the jaws. In other cases the rigidity of the cervical muscles was marked by the distinctive physiognomy and the sardonic grin of the patient. Fever of moderate degree was present. Prognosis in the acute form was more guarded than in the chronic, depending altogether upon the reaction after regularly repeated injections of antitoxin and the behavior and condition of the original wound.

The wounds were disinfected with tincture of iodine, salt solution, etc., and thoroughly cauterized. In order to do this effectively, the agents employed were brought in contact with every portion of the wound. Punctured wounds were first laid open.

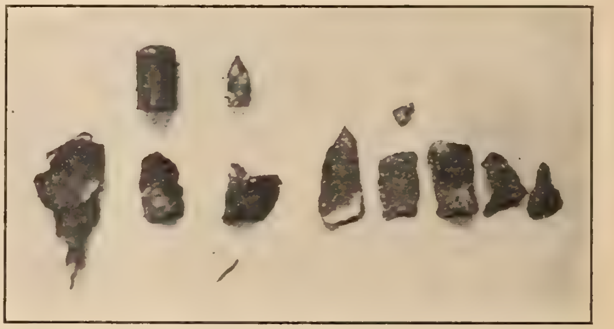

Fig. 4.—Collection of fragments of explosive bullets, extracted from wounds of Serbian soldiers; danger of tetanus. (Sjeceff.)

"The fact that the deadly poison is developed at the site of infection," as Anders says, "gives to the local measures supreme importance in the treatment of tetanus" (1). At the first warning we moved the patient into a secluded dark room with good ventilation and carefully regulated temperature. For all these cases we assigned one special male nurse with orders to remove all sources of external irritation, to give light but nourishing diet by means of small tube or catheter passed through the nostrils, and if necessary to administer food per rectum. The heart was stimulated by hypodermic injections of strychnine and digitalis. The spasms were best controlled by chloroform inhalations, and during the intervals the patient was kept under the influence of morphine administered subcutaneously.

We have studied carefully the immunizing value of tetanus antitoxin, and have found that doses in the strength usually recommended by the manufacturer are almost useless in cases in which the symptoms have progressed beyond languor and headache, or the prodromal stage. Therefore we increased the dose according to the symptoms. The established affection defies all known methods of medical treatment, and our aim should be to combine all modern ways with large doses of serum to diminish the intensity of the painful spasms and all other disturbances as soon as possible. In doubtful cases and in those cases where the condition of the wound was such that we expected infection, the protective inoculation was carried out by injecting the serum hypodermically as early and efficiently as possible, reducing the danger and frequency of the disease with precision.

In other hospitals, Serbian especially, the carbolic acid treatment was used, until our serum was received, which, it was stated, was better than the antitoxin made in Germany. The antitoxin made in Germany was not only weaker than ours, but it was too old, having lain here since the last Balkan war. Therefore, the Baccelli method was followed. The wound was cleaned with strong antiseptic solution, either corrosive sublimate or carbolic acid. The patient was then placed in as quiet a place as possible, and all the ordinary rules of diet and care, etc., were observed. If the case was one of only moderate severity, they commenced with doses of three grains in twenty-four hours, rapidly increasing the dose to double or triple quantity. Chloral, morphine, strychnine, etc., was given as usual, as with the other treatment when the carbolic acid was given hypodermically. The patients were remarkably tolerant toward these injections, but the results with our American serum later on were better, as they said in antagonizing the toxins and quieting the nervous system. Strange as it may seem, there were not many cases of tetanus altogether, even at the beginning of the war with Austria, August, 1914, but in Valjevo, Reiss found many developed cases of traumatic origin on the fields of battle of Crnabara and Parachnitza, due to expanding cartridges and explosive bullets of Austrian make.

Our Doctor Borcic proved beyond doubt in his field laboratory that tetanus appeared in rabbits in twenty-four hours after the injection of pure culture. In our two cases with all the characteristic symptoms of tetanus death occurred in three and four days, respectively. In tetanus certainly the action of the microbes on the tissues was entirely different from that of erysipelas, and of those lesions we had also a few. In erysipelas the streptococcus was always found in the tissues affected, and its rapid multiplication in the body was an important element in the extension of the infection. In tetanus the bacillus does not seem to multiply to any extent in the body, but its presence was determined in our cases, with the help of the microscope, in the wound secretions or in the tissues at the point of inoculation. "The tetanic spasms extending in more or less rapid succession to the different muscular groups, according to the acuity of the disease, are caused by the action of the toxins at the distance from the seat of infection, which found their way through the fluids of the body to remote parts" (2). Therefore amputation of entire limb would not eliminate the toxins that have invaded the central nervous system, as the bacillus enters the tissues deeply before it can exert its specific pathogenic action. At this moment we had to inoculate to prevent or modify the symptoms of tetanus altogether.

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1900 BLUE ISLAND AVENUE.

THE FUNCTIONAL NEUROSES.

By ADOLPH STERN, M. D.,
New York.

An important step toward gaining a clear insight into the mechanism of the neuroses and of the psychoses was made by Freud through his elucidation of that phase of human psychology which deals with the emotions, or, as we call them in our work, desires or impulses. His work has thrown considerable light not only on abnormal, but also on normal psychology, and before going into the description of the neuroses proper, I think it advisable to mention briefly some of the salient features of the psychanalytic work, which has made possible the elucidation of the psychical mechanism in the neuroses, rendering them intelligible and accessible to therapeutics.

If it is accepted as axiomatic that the neurotic is retarded in his emotional development, or, as we say, he is infantile, much confusion is dispelled at once relative to his heretofore apparently impossible, unintelligible, foolish, or meaningless actions or thought processes. They are purposeful and replete with meaning; they hide from the patient his own impulses, but betray to the man versed in the symbolism of the neuroses what the patient himself does not consciously know. It is the purpose of the psychanalyst by removing the inhibitions of the patient to get him to see himself as he is and to adjust himself to his environment as the normal adult does. The neurotic in his symptoms has a definite purpose in view, though the end to be accomplished is unknown or not consciously recognized by him. The thought or action appears erratic because somewhere on the road between the origin of the impulse, or wish, and the end result a psychical force (repression) has achieved a distortion or a displacement of emotion from the original impulse, so that the end result, instead of being a fulfillment of the original wish as such, comes to the patient's consciousness as a symptom. One may ask: Why should distortion be employed to disguise a wish? Because the nature of the impulse or wish is in marked dysharmony with the cultural development of the patient. Freud has truly said that the neurotic, in many phases of his emotional life, lives in the past. Those desires and impulses in a child under four or five years of age, i. e., before the feelings of shame, disgust, or morality have taken form, are considered almost as physiological; we hope and expect to see them disappear as development of the social side of the individual takes place. These impulses we find as the underlying cause of conflict in patients suffering from the psychoneuroses. That which years ago to the patient as a child was a source of pleasure realized as such, now in his grown up state is converted by means of the elements of shame, morality, etc., of the adult into a conscious displeasure, in a way into a punishment to himself for having such a wish or impulse. Thus we explain the involuntary smile or even indifference with which the hysteric tells of his symptoms, no matter how grave they may be. The involuntary smile seems to imply, "I enjoy my suffering," a condition made clear if we conceive of the patient as having accomplished a satisfactory result to himself, though the mechanism by means of which all this has been brought about is unknown to the patient.

We say, then, that the distortion is due to the fact that unconsciously, if you can conceive of it, the patient has realized the incompatibility of the nature of the impulse with his moral self; yet being unable to forego the fulfillment of the repressed pleasure in spite of the nature of the wish or impulse, a conflict arises between the repression and the impulse; and the symptom, a compromise between the two forces, is the result. The symptom is the original wish in a form compatible with the moral or social self of the patient and at the same time consciously conceived by the patient as displeasure and unconsciously accepted as the opposite. In the form of a symptom the original impulse is unrecognized by the patient as such. Analogous phenomena, or processes, are everyday occurrences. How often do we consciously, by a little shading down of its crudities, give expression to some thought, which now carries a meaning identical with that contained in the original one, yet which could not have been spoken in its original state either for fear of offending our own or others' esthetic or moral self?

We then conceive of the neurotic as a hypersensitive individual, groping about in the dark in his attempt to adjust his moral self to his primitive or instinctive impulses, which insist on fulfillment. It is in this way that he differs from the pervert. The pervert accepts for himself, as his emotional life, that against which the neurotic is striving to defend himself, at the same time unable entirely to do without it in some form. The neurotic has fallen in the conflict or struggle, yet a victor, in that he has not yielded and become a pervert. The normal person has succeeded in repressing, or, better, sublimating these impulses, at the same time maintaining more or less emotional health. These impulses are present in all of us, representing instinctive desires incompatible with our cultural growth. To that extent then we all have in us the neuropathic constitution.

What is the nature of these desires? No matter what form the symptoms of a neurosis may take, their ultimate reduction as to etiology leads to one source. I refrain from mentioning the word until I attempt to clear away some misconception regarding this much abused term in its application to the causation of the neuroses. As far as some of the manifestations of the actual neuroses are concerned, namely, neurasthenia and anxiety neurosis, the meaning of the term "sex" should be taken in its generally accepted sense. These two forms are caused by some gross disturbance of the normal sexual function, as I shall explain later. When, however, we think of a sexual disturbance as the cause of the psychoneuroses, it were better to conceive of the pathologically sensitive emotions present in the neurotic as the disturbing agents. In the neurotics we find all the normal emotions present in an abnormal quantity. It is in his attempt to adjust himself to these pathologically enlarged emotions that the neurotic comes to grief. In him are present to an abnormal extent feelings of fear, hate, envy, jealousy, distrust, apprehension, anxiety, revenge, and spite, to name the most important. These "feelings" are present in all of us, but superabundant in the neurotic. All these emotions are also manifest in very young children to an extent pathological from the viewpoint of the adult. Some of these impulses in their instinctive state are present in animals, in whom they serve the purpose of selfpreservation, being in all instances necessary in the animal world, where might is right, and fulfillment of desire is based solely on physical limitation.

The animal has but two desires to satisfy, hunger and sex, and his emotional reactions are present to further these two impulses. In this respect they are essentially egocentric. We find this in very young children and also in the neurotic. All the emotions in the human being, also, are primarily egocentric and only later does his cultural or social side manifest itself, after, say, the age of five years, when he learns to renounce some of his instinctive desires. However, all the emotions I mention are traced back ultimately, as Freud has shown, to the hunger and sex instincts, and that is why we say that sex, in the infantile sense, plays such a decisive rôle in the etiology of the neuroses.

The neuroses are classified as follows: 1, the actual neuroses, embracing a neurasthenia and the anxiety neurosis; and 2, the psychoneuroses, made up of hysteria, or the conversion hysteria of Freud, anxiety hysteria, and the compulsive states such as obsessive thoughts and acts.

The classification is founded on an etiological basis. At times it is rather difficult to draw sharp lines in classifying some cases. Though pure forms do exist, examples of mixed neuroses are frequently observed, in which both physical and psychical sexual factors enter into the causation of the symptoms. "In the actual neuroses the symptoms are due to physical causes and are not further reducible by psychological analysis; whereas in the psychoneuroses the symptoms can be demonstrated to be the end product of intricate (unconscious) mental processes" (1).

Neurasthenia, the first of the actual neuroses, is a term still very vaguely applied by medical men in general. Very frequently every form of the functional nervous state, with the exception of hysteria proper and compulsion states to which the term psychasthenia is often applied, has been included under the heading "neurasthenia." The term should be limited to that functional nervous condition which is characterized by a state of fatigue, sense of pressure on the head, flatulent dyspepsia, and constipation. "The disease is usually due to excessive onanism, or involuntary seminal emissions, practised in spite of painful emotional conflict" (1).

The other actual neurosis, by far the most common of all the different forms, is the anxiety neurosis, so called because its most constant and most prominent symptom is a morbid anxiety, anxiousness, or dread. This condition has two forms: the acute anxiety attack, not very common, and the chronic form, which is by far the more prevalent. In the acute anxiety attack, which varies widely in its severity, the patient suffers from an intense anxiety or dread, with fear of impending death or insanity. The attack may produce loss of consciousness. As a rule there is a sense of suffocation, deep respiratory efforts, general sweating and flushing of the skin, fullness of the head, tremors, profuse diarrhea, and frequent micturation. As a rule the heart action is greatly accelerated, with anginal pain, distress, or palpitation, and feeling as if the heart had stopped. Nausea, vomiting, and dizziness are frequent and distressing symptoms. During an attack the patient suffers intensely and looks sick. In the chronic form of this disease, the patient is in a state of apprehension or uncertainty. This emotion frequently attaches itself to the ordinary tasks of the individual, making them seem bigger than they really are—in a minor form the individual, who worries much. It also attaches itself to conditions which usually evoke some emotion of dread, like fear of burglars, the dark, thunder, etc. Sleeplessness, general irritability, and hyperesthesia to sound commonly accompany an anxiety state. Other symptoms of the chronic state are giddiness, paresthesia—rheumatic like pains—vasomotor disturbances, nausea, and vomiting. When one set of symptoms, either cardiac or gastrointestinal for instance, predominates, errors in diagnosis are likely to occur. In the chronic cases the anxiety may not manifest itself except in the complaints regarding the physical symptoms resembling neurasthenia, but with the symptoms more diverse.

The etiology of anxiety neurosis can in general be stated to consist of sexual deprivation or excitation, leaving an unfulfilled desire which never comes to the conscious knowledge of the patient as such, but for some reason is repressed and converted into anxiety.[1] The main conditions concerned in the production of an anxiety neurosis are embraces of engaged couples for long periods with consequent excitation and no satisfaction; interrupted intercourse in the married; and sexual abstinence in an individual who suddenly ceases to indulge in intercourse, as following the death of the marital partner, or on refraining from long continued masturbation. It at times occurs in the aged, both male and female, around the climacterium, with sudden increase of desire. Treatment is naturally suggested by the underlying etiology. A correction of the abnormal sex life brings about very good results as a rule.

The essential difference between the actual neuroses and psychoneuroses lies in the etiology of the two conditions. In the former the cause lies in the present and is due to some gross sexual disturbance. In the latter, however, while the inciting cause is in the present, the essential cause lies in the past in the early childhood of the individual, in reality before the age of five. While apparently a banal condition, like business reverses or a shock of some kind, does precipitate an attack, yet in reality these influences do not bring about a psychoneuroses unless the individual has failed to adjust himself to his infantile experiences; if his unconscious attitude to his environment, from the viewpoint of his emotional life, is a normal adult one. Perhaps I can best bring out my meaning through an example, which at the same time will embody in it the features and mechanisms on which we base our conception of the etiology and therefore, also, the treatment of the psychoneuroses.

CASE.—About two years ago a man, thirty years of age, married at that time but two months, came to see me because he was beset with fears of imprisonment for some minor offenses committed three years before the onset of his present illness. Grave doubts as to his ability now to make a living, marked anxiety, sleeplessness, crying spells, and restlessness made up the picture of an anxiety hysteria. He was a capable lawyer, energetic and ambitious, whose dishonest acts would not have entailed imprisonment even if he had been detected in their commitment. They did not worry him at the time they were committed, but now they loomed large; he felt guilty and feared the consequences of his misdeeds. He argued by himself and with his friends concerning all the possibilities, and logically proved to himself that he ought not to fear, yet could not dispel this intense apprehension and anxiety. The onset of the condition was precipitated by the dissolution of his partnership with an older man, on whom he had relied to conduct the management of his law practice. Thrown upon his own resources, he lost courage, wished to give up his offices entirely and seek some means other than the practice of law to earn a livelihood. The condition rapidly took the form I have described.

The analysis revealed the different components that made up the picture. It developed that though only married two months, quarrels had been frequent between wife and husband, who had fancies now and then of a separation, being convinced in his own mind that all love between them was gone. He had had fancies as to what he would do if his wife died. The quarrels between the couple as a rule resulted from the insistence of the husband that his wife was trying to separate him from his "family," i. e., his mother and his youngest sister; and on the tendency of these two to dictate to the young wife as to how she should act toward her husband. The young husband very readily overlooked the faults of his mother and sister, while those of his wife he constantly brought to her attention. Through his dreams the patient was enabled to see that this blind attachment to the female members of his former family was in reality an unconscious love, which prevented his loving his wife—patient was psychosexually impotent—and the first opportunity to break up his home was unconsciously converted into a doubt of his ability to make a living—breaking up of partnership—the breaking up of his home to be followed, as he pictured in his fancies, by his going back to his mother's home to live.

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[1] Though Freud separates the neuroses into the actual and psychoneuroses, and lays stress on some gross sexual disturbance as the etiology of the former, thereby seeming to imply a purely physical cause for its being, I agree with those who believe that no neurosis exists without a mental conflict. For instance, among married people practising coitus interruptus, the partner developing the neurosis may have had, momentarily perhaps, the following thoughts or similar ones, which then disappear: "If I were not married now, I could indulge to my heart's content." Perhaps fancies follow in which the individual realizes this repressed wish. The feelings of guilt which follow these fancies, conceived by a neurotic as actual, are important factors in the formation of the pathological anxiety.

In this disease we have a totally unconscious love for his mother and a sister, and unconscious criminal desires toward his wife, as shown in the thought "what would happen if my wife died." These two impulses giving rise to anxiety, apprehension, and feelings of guilt, unconsciously brought about and displaced from the deep sources of guilty feeling—unconscious incestuous feelings and criminal impulses—to acts committed, in themselves unable to evoke so much emotion. The illness, however, made the patient somewhat unfit to carry on his profession and was his unconscious attempt to justify his failure to support his wife, whom he thought he did not love, and enable him to go back to his old environment, in which he was the favorite son, more loved than loving. Underlying the entire neurosis was this unconscious fixation, which made a transference of that love to a stranger an impossibility. Psychanalysis made all this conscious to the patient, enabling him to see things as they are, and acting as a cure.

This represents an anxiety hysteria, differing from the so called conversion hysteria, in that the repressed emotion remains entirely in the psychical sphere; whereas in the conversion hysteria the repressed emotion is taken from the psychical sphere into the physical, being converted into a physical symptom, as, for instance, the paralysis of a limb. The mechanism of the obsessions resembles that of the anxiety hysteria, though we may have obsessive acts in addition to thoughts.

To sum up: Neuroses are definite disturbances in the emotional sphere of an individual, having definite etiological bases and being divisible into separate, distinct forms, each form having more or less distinctive clinical features. The neuroses as we view them are intelligible psychological phenomena, amenable by the psychanalytical method, to a rational form of therapy.

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120 West Eighty-sixth Street.

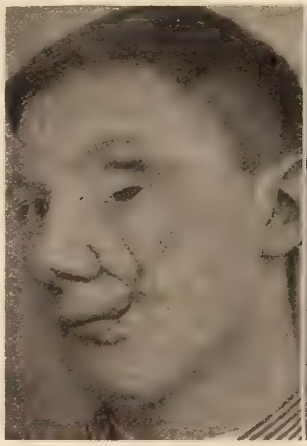

Fig. 1.

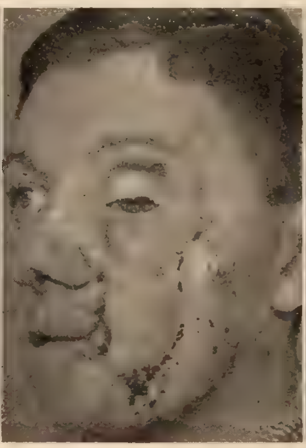

Fig. 2.

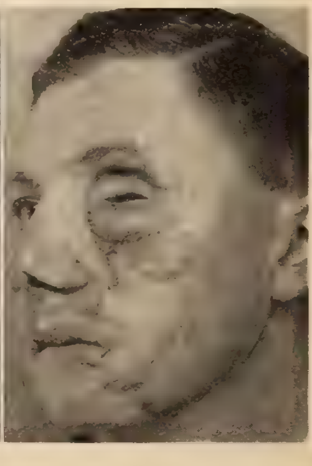

Fig. 3.

ISLAND FLAPS.

By J. F. S. Esser, M. D.,

Dutch Surgeon for Plastic Operations, Now in Vienna.

The wounded soldiers in Austria afforded many cases of facial injuries which healed with large deforming scars. If these scars were near the corner of the mouth, I often used flaps from the neck directly under the jaw line, near the external maxillary artery. These flaps had no skin pedicle, but one of deep soft tissue and which contained the external maxillary artery. I call them "island flaps" because, after being placed in the facial defect resulting when the scars are removed, they give the effect of a free transplantation. If this flap can be taken just on the border of the defect the procedure is very advantageous, as the flap need not be much more than half the size of the defect, because in sewing together the secondary defect the primary becomes much smaller by this manipulation. When the flap cannot be taken from the border of the defect, the skin bridge between the defect and the flap may be split. Some tissue must be removed from the split to allow the pedicle to lie in it. If the flap has to be moved any great distance, the pedicle must be rather thin and elastic, but even when the artery is in it nourishment of the skin flap is exceedingly good. I had a case where the seam of the island flap became inflamed and the sutures had soon to be completely removed and a secondary seam, after livening of the edges, was necessary. The flap was never endangered and always showed splendid circulation; the secondary seam healed finely (Case II).

The advantages of the island flap are striking in nourishment and cosmetic effect, as no turned skin pedicle is to be seen and the tension is equal everywhere. The procedure is also as practical as it is easy, even for inexperienced plastic operators, while this cannot be said of the choice of skin pedicle flaps. Besides, I have practised other island flaps of the face in cases where I wished to give mucous membrane substitute out of the skin.

Case I.—The wound in Infantryman F.'s face, Royal Reserve Hospital No. 8, Vienna, healed after shot injury with loss of the right eye and strong scar development over the entire cheek, so that it was as hard as a board and showed ray formed scars (Fig. 1). The left mouth corner was destroyed and quite immovable. The under eyelid turned outwards (ectropion). After complete excision of all the scars, I placed a large island flap as above described in the large defect. The soft tissue pedicle was taken, as mentioned, in the cut of the skin bridge between defect and flap. Fig. 2 shows the result about ten days after this operation. Fig. 3 shows the result shortly after correcting the corner of the mouth and levelling the under eyelid with a pedicle flap, taken from under the outward corner of the eye vertically downwards—pedicle at the top—and placed in a horizontal incision under the eyelid. The patient after some small seam corrections will look very well, and his mouth and eyelid are now already quite moveable.

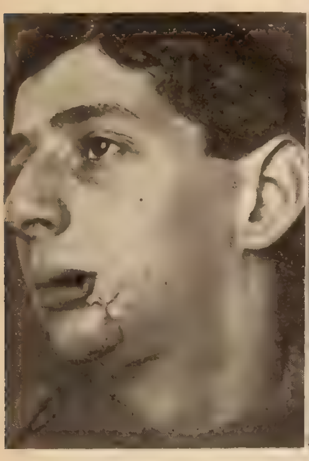
FIG. 4.

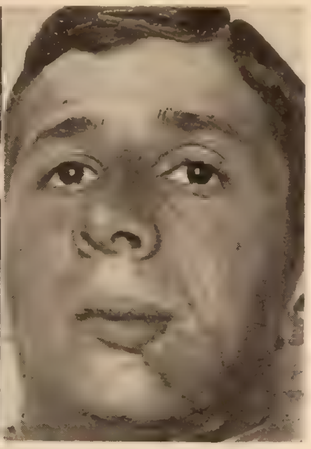
FIG. 5.

CASE II.—Infantryman D., Royal Reserve Hospital No. 17, Vienna, was shot in the jaw. After healing of the fracture the underlip was quite immovable and saliva flowed from it. Round the outer scar, the changed skin was contracted and grown together with deep inner scars, so that the whole was as stiff as a board. In this case an island flap was taken from the border of the large defect that had arisen after excision of all the abnormal tissue, and placed in the defect reduced by sewing the secondary defect together. This is the case in which, as mentioned previously, inflammation of the island flap seam necessitated the removal of the sutures, the livening of the edges and secondary suturing. The result is functionally perfect, but to improve the cosmetic effect an aftercorrection could be made in replacing the still somewhat overturned red of the lip. (Figs. 4 and 5.)

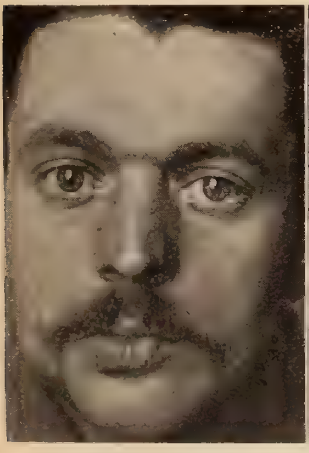
FIG. 6.

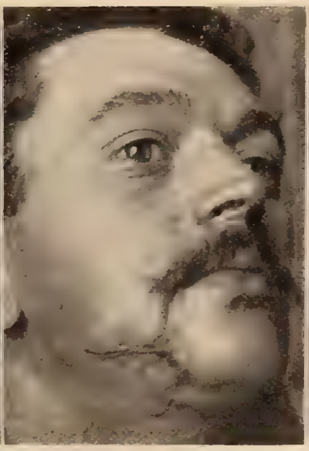
FIG. 7.

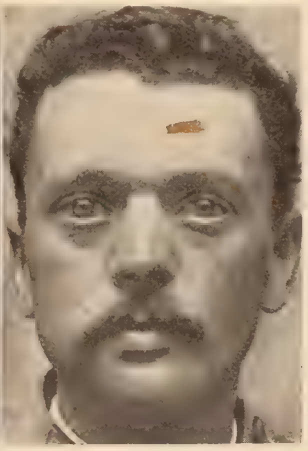
FIG. 8.

CASE III.—On soldier F. B. of the same hospital I made a large plastic to build a new upper lip, his own having been entirely shot away. After this, the mucous fornix was too small to receive the dental prothesis. Therefore I turned a piece of the cheek skin from under the eye, only pedicled with soft tissue, inwards into a horizontal incision of the mucous membrane and penetrated all the tissue to the skin and ended just in the lower skin incision; the pedicled skin flap then turned through the horizontal incision to the mouth inside, and was then sewn together with the mucous membrane wound edges. The skin secondary defect was closed linear.

CASE IV.—Infantryman T. was relieved of an immobilizing scar after mouth jaw shot in a similar way to Case II. (Figs. 6, 7, 8.)

HALLUX VALGUS.

A New Operative Procedure.

BY JOSEPH E. FULD, M. D.,
New York.

Hallux valgus is an outward displacement of the great toe. The condition is very common and only attracts attention when the bursa, ordinarily known as a bunion, over the metatarsophalangeal joint becomes inflamed. It is rarely congenital and it is sometimes caused by rheumatoid arthritis; in fact, it is usually accompanied by a dry, inflammatory arthritis. The most frequent cause, however, is the wearing of ill fitting or too short shoes, and for this reason it is more commonly found in women than men, probably because they are more often influenced by prevailing fashion in shoes unsuited to their feet and their muscles are less able to oppose the deformity effected by pressure over the joint.

An improperly shaped shoe, or one too short for the foot, may necessitate walking on one side of the foot, resulting in flat foot, crowding of the toes, hallux valgus, hammer toe, or abducted foot, a condition the pathology of which it is difficult to differentiate from that of hallux valgus. High heels also crowd the foot forward so that dorsiflexion and adduction of the great toe result, the interphalangeal joints and the great toe deviate outward, and there is inward protrusion of the head of the metatarsal bone, which becomes hypertrophied. I have seen cases of cellulitis of the foot arising from neglected bursitis. The internal lateral ligament of the joint is stretched and the external lateral ligament is shortened and thicker than normal. The tendons of the muscles on the inner side are lengthened and those on the outer side are shortened. The soft parts over the inner aspect of the joint are thickened and enlarged and include a bursa with a superimposed corn or callus. This bursa may be inflamed and it sometimes suppurates. The value of the great toe as an inward brace to the foot is thus destroyed. Pain is caused by the pressure of the shoe on the acute bursitis and by pressure on the anterior tibial nerve between the shoe and the underlying part of the bone and also on the nerve fibres between the bony outgrowth on the base of the first phalanx of the great toe and the side of the first phalanx of the second. Relief can sometimes be obtained in slight cases by wearing proper shoes and right and left socks or stockings with a separate compartment for the great toe. The toe should be massaged and corrected manually several times a day and a soft plug should be worn at night between the first and second toes.

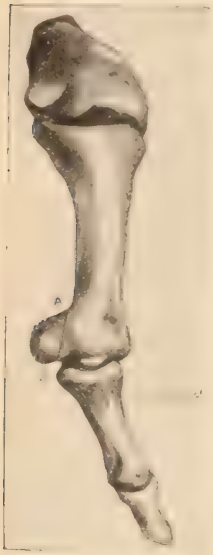
Fig. 1.—Bony projection. A-B, line of excision.

Various forms of splints have been devised, but usually operative treatment constitutes the only real cure, this being contraindicated only in diabetes, any broken down constitutional condition, and hemophilia. Operation is also temporarily contraindicated in an accompanying suppurative process, such as acute bursitis—inflamed bunion—which should first be treated before operative procedure. Operation is indicated when the hyperthrophy, or hallux valgus, or the bursitis makes protection of the sensitive joint difficult, and in my opinion it should have in view, 1, the correction of the deformity; 2, the prevention of recurrence, and, 3, the preservation of the longitudinal arch.

Several operations have been devised for the cure of this condition. Rowlands and Turner removed the prominent inner half of the head of the first metatarsal bone and sometimes the prominent inner basal angle of the first phalanx, divided the extensor brevis hallucis, and sometimes lengthened the extensor longus hallucis. Tubby chiseled off the prominent head of the first metatarsal bone, divided the ligaments and the extensor proprius pollicis tendon, and replaced the phalanges in position. In cases where the head was greatly hypertrophied and there were marked symptoms of arthritis, he excised completely the head of the metatarsal bone, taking care to remove the projecting spur on the outer side of the first phalanx. The sesamoid bones were also removed, as pressure on them subsequently caused pain. After the operation he advised that a wedge of gauze be worn between the first and second toes. Inasmuch as the intact metatarsal bone is a necessary part of the arch of the foot, he found that these patients must use a valgus plate for walking. William L. Keller found that all the old operations for the relief of hallux valgus were unsatisfactory. Resection of the head of the first metatarsal toe, successful in the flat footed individual, injured a normal arch. He devised an operation which sacrificed no part of the plantar articular surface. C. H. Mayo recommended that the bursa be interposed between the joint surfaces after excision of the metatarsal head. In other words, the bursa was transplanted to the space formed by the resection of the articular head of the first metatarsal, the joint surface of the first phalanx being left intact. Von Bergmann resected the base of the phalanx and the head of the first metatarsal. Goldthwait, Painter, and Osgood believe that the Hüter operation of removal of the metatarsal bone is almost uniformly satisfactory when the proper operative technic and aftertreatment have been observed. Henry Ling Taylor advises the use of an elongated, or Thomas heel, or shoes straight on the inner side. If operation is necessary he believes that oblique incision of the head of the first metatarsal is as good as any. Royal Whitman considers that the primary object should be to remove the projecting bone.

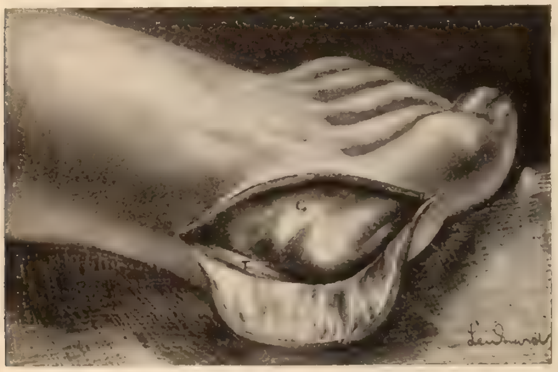
Fig. 2.—C, capsule; T, tendon of abductor hallucis to be transplanted.

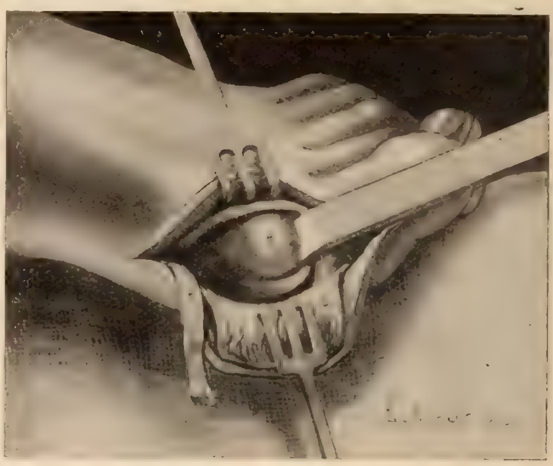
Fig. 3.—B, bony projection; T, tendon of abductor hallucis; C, capsule.

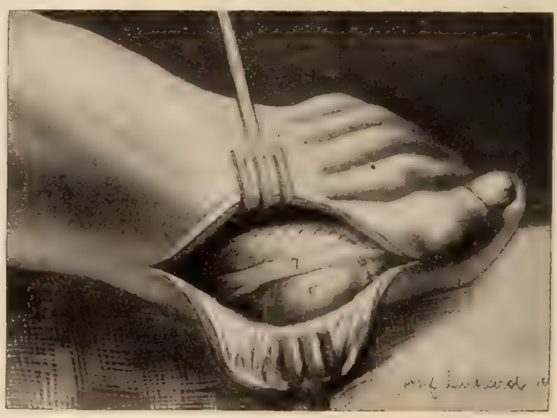
Fig. 4.—T, tendon transplanted and sutured; C, capsule sutured.

He also stretched and divided tissues that resisted a corrected position.

In my opinion, the usual operation of the resection of the head of the metatarsal bone only temporarily corrects the deformity. To prevent recurrence. I devised and found feasible a method of transplanting the tendon of the abductor hallucis from its usual insertion in the plantar surface of the base of the first phalanx to the periosteum covering the middle of the inner surface of the first phalanx. To meet the third requirement of any successful operation for hallux valgus—the preservation of the longitudinal arch—I confined the bone section to the exostosis without resection of the head and followed this by suturing the capsule over the denuded bone area, deep to the transplanted abductor tendon to prevent involvement of the transplanted tendon in the subsequent and inevitable callus. The histories of a large number of cases treated by this operation show that it was rarely necessary to resect the head of the metatarsal bone. After a thorough trial of the various operative methods, this one has given the best results. The simplicity, ease, and safety with which it can be performed in my opinion warrant its trial in these cases. It allows the patient to walk well and absolutely without pain; the great toe remains in perfect position and is naturally mobile, and it does not affect the weight bearing function of the foot.

101 East Eighty-first Street.

A CASE OF DOUBLE STRANGULATED FEMORAL HERNIÆ.

By Wesley J. Woolston, M. D.,

Chicago.

A cursory review of the literature has failed to reveal a case of double strangulated femoral herniæ similar to the following:

Case.—The patient, a woman, was admitted to the night service at Cook County Hospital, April 11, 1917. On the afternoon of April 9th she was seized with excruciating pain in the lower abdominal region. This was followed by vomiting repeated every half hour until the time of operation. The vomitus was gastric and biliary but never fecal in character. Bowels had not moved from the onset. Patient stated that she had never had a similar attack. In fact she had never had any previous illness of any consequence.

The patient was forty-one years of age, had had twelve normal pregnancies, no miscarriages, and a normal menstrual history. She stated that for the past ten years she has noticed a swelling over the left femoral region and that for the past two years she has noticed a swelling over the right femoral region. A belt has been worn on the left side but not the right. The swellings have always been reducible until the present time when neither one can be reduced. Physical examination was negative except for a tumor mass in each femoral region each the size of a hen's egg. They were slightly movable but not reducible through the saphenous opening. The integument was not discolored. The temperature is 97.8° F.; pulse, 104, and the respirations, 24. The diagnosis of double strangulated femoral herniæ was made and the patient was operated on. A cutaneous incision was made on the right side, about three to four inches in length, parallel with the fibres of the external oblique and about one inch above Poupart's ligament. As in the operation for inguinal hernia the superficial epigastric vessels were caught and tied. Retraction of the two sides of the incision exposed the aponeurosis of the external oblique and the external inguinal ring, covered by the intercolumnar fascia. The aponeurosis was divided through the external inguinal ring for the full length of the incision.

Retraction of the lower flap exposed Poupart's ligament while retraction of the upper flap exposed the conjoined tendon. This procedure exposed a space covered by the fascia transversalis. This was then divided and the sac and contents were found to be strangulated in the femoral opening below Poupart's ligament. An effort was made to insert the finger or some blunt instrument into ring in order to cut down on it without danger to the contents but it was without success. The ring was then nicked sufficiently to withdraw the contents which consisted of bowel and omentum. The bowel was quite dark but reacted to the application of heat and it was decided to return it to the abdominal cavity. The omentum showed signs of strangulation, being very much congested, and we ligated that portion of it. The sac was then isolated and ligated in the usual manner. The ring was dealt with by suturing the fibres of Cooper's ligament and the periosteum of the os pubic bone to Poupart's ligament. The wound was closed by the Andrew method, the same as for an inguinal hernia except that the cord was not molested.

The left side was handled in exactly the same manner except that the findings in the sac were different. The tissues as we approached the ring were very edematous and we anticipated a worse condition. However, when we had enlarged the ring and brought the contents of the sac into view we found a large mass of strangulated omentum adherent to the sac in places. This was freed of adhesions and ligated. The strangulation on this side was fully as great or more so than on the right. Our deduction was that the bowel became strangulated first on the right side which caused the patient the pain and the vomiting and the straining from the latter caused the left side to become strangulated, as previously to this time she was able to reduce it. The patient made an uneventful recovery and left the hospital after the usual length of time.

25 East Washington Street.

Endourethral Application of the High Frequency Current.—Ernest Roucayrol (*Bulletin de l'Académie de médicine,* May 22, 1917) employs in the treatment of acute or chronic urethritis due to the gonococcus, which is killed by temperatures exceeding 39° C., straight or curved urethral thermophores consisting of nickeled or silver plated copper tubing in the interior of which are soldered at intervals several insulated wires conducting the current to the thermophore. The other electrode consists of a metallic plate placed beneath the buttocks or over the penis or perineum. An electric mechanism connected with the thermophore, including a galvanometer, is provided to obviate heating of the electrode to such a temperature as would injure the urethral tissues. Each sitting lasts twenty minutes. The method was used chiefly in rebellious, painful cases of chronic urethritis. In forty-four cases of this type, pain uniformly disappeared during the first sitting. Shreds resisting all other procedures disappeared after a few sittings or were reduced to a slight pulverulent sediment, which disappeared completely when the openings of some inflamed Littré's glands were cauterized through the urethroscope. Soft infiltrations disappeared rapidly under the treatment; sclerotic changes, somewhat more slowly. Trophic urethral changes in a case of tabetic urethritis yielded rather readily to the treatment and the preexisting pain, radiating to the prostate and rectum, wholly disappeared after the first sitting. Striking results were obtained in two cases of acute urethritis; more definite conclusions as to this condition will require further trial of the procedure.

Medicine and Surgery in the Army and Navy

THE ROCKEFELLER WAR HOSPITAL.*

Preparedness Perfected.

There was lamentation among a great many who didn't know what they were talking about, when war was actually brought home to the American people, principally to the effect that we lacked the efficiency of the enemy. However, these people have been shown that this accusation was without foundation, particularly as regards the facilities that have been devised to care for and restore to normal life our soldiers and sailors. As when one throws a pebble into a pond the ripples widen, so the first base hospital started the idea for others until we have come to the refinement of the purpose—special base hospitals. Such a hospital has been originated, erected, and equipped on the grounds of the Rockefeller Institute, at Avenue A and East Sixty-sixth Street. It is a military unit hospital of 100 beds for patients suffering from infected wounds, and will serve the purpose of demonstrating the surgical methods worked out and successfully applied at the military hospital at Compiègne, France, by Dr. Alexis Carrel and Dr. H. D. Dakin. The immediate surgical control and supervision of the hospital will be under the personal charge of Doctor Carrel, who has been permitted by the French Government to return to this country for that purpose.

The Carrel-Dakin treatment is a combination of the use of a chemical antiseptic, Dakin's fluid, which is a dilute solution of sodium hypochlorite minus caustic effects which owes its activity to chlorine, and the method of its use devised by Doctor Carrel. This treatment has been pronounced the most notable surgical development of the war; it kills bacteria, exerts a solvent effect on dead tissues, dissolves recent blood clots, eases suffering, and shortens convalescence. Those treated by this method are saved from mutilation by amputation and deformity from badly healed scars or long open wounds. The successful application of this treatment is a matter of the nicest technic in which any trained surgeon or medical man may become proficient in a few weeks. It was with the expectation that many would avail themselves of an opportunity for this careful instruction, which will be given in the form of actual demonstration and practice, that this hospital was erected. Here the method of treating wounds can be practised and the surgical methods worked out and successfully applied abroad will be demonstrated.

Dr. Simon Flexner stated that there were three objects in this enterprise: "1, to make available to the patients this improved method of treatment; 2, to demonstrate and teach to American physicians who may be enrolled for military service measures for the treatment of infected wounds especially by the Carrel-Dakin method; and 3, to test the feasibility of a unit portable military hospital, designed by Mr. Charles Butler, of New York, who, working under the French War Department, has made a thorough study of the military hospital units which have been developed for use in France and England." A fund of $200,000 was appropriated by the Rockefeller Foundation for the purpose of making the plan possible financially. The surgeons general of the Army, Navy, and Public Health Service, the executive officers of the Red Cross, and the National Research Council all expressed deep interest in the plan. Successive groups of surgeons will be assigned to the hospital by the surgeons general to study the method and to learn in about four weeks by practical application the proper technic. The hospital is now ready to receive patients suffering from infected wounds received in industrial or street accidents, and all infective processes, such as abscesses, suppurative conditions, etc.

There are fifteen buildings grouped together in compact form, surrounded by screens of green hedges and trees veiling them from the street, each easy of communication with the others by way of slatted walks, differences of grades being taken up by inclines. This makes feasible the transport by wheeled vehicles of food, linen, laundry, stretchers, etc. With the exception of the stores building, which is of ordinary shack construction, the buildings are of portable house unit construction, walls, floors, and roofs being formed of panels. The walls, roofs and floors are double with an air space between the outer and the inner sheathing. The Humphreys system of construction has been adapted with modification or improvement in the form of steel trusses and the type of windows with the lower sash fixed and upper sash hinged at the bottom to swing in, having check pieces to prevent draughts. There is ample window and door space in each ward.

The administration building, which is connected with the laboratory, contains the offices of the chief surgeon, surgeon on duty, superintendent of nurses, executive officer, and clerks, the telephone exchange, the visitors' waiting room and a cloakroom and toilet. The laboratory building contains a room for demonstration and lectures, record officer's room, storage and coat room, a fully equipped pharmacy, an orderlies' waiting room, and bacteriological and chemical laboratories, complete in every detail. The very complete power plant of the Institute itself is used for the steam and electricity required and city gas is used in the laboratory instead of the lamps usually necessary in a base hospital. The water supply and sewage disposal are of course adequate owing to the location of the hospital well within the city limits. The receiving and discharging building has a storeroom for patients' clothing and property. Here the ambulance brings the patient, who is undressed, washed, and put into hospital clothes; his pedigree is taken, very careful records of his progress being kept in most adequate files. At discharge, the patient returns to this building, surrenders his hospital clothes, secures his own, which have been washed or disinfected, and collects his other property. First aid supplies are kept in this building which are used when necessary by the surgeon on duty.

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*Credit is given to the memorandum prepared by Mr. Charles Butler, the architect for this hospital, with thanks for permission to use it.

The operating pavilion is 105 feet long by twenty-eight feet wide with walls ten feet high. It is ideally lighted from the north. This building also contains a large workroom for nurses, a sterilizing room, an anesthetizing room and an x ray room with space for the demonstration, storage, and dark room. There are two wards, each containing twenty-four beds with the possibility of increase to thirty without crowding and with the bed spacing independent of the windows, owing to their construction. Each ward contains a quiet room with one bed, and there is a small isolated pavilion with four beds for contagious diseases which may develop after admission. The special steam kitchen and laundry seemed essential though they are of minimum capacity. There is a large terrace with screens and awnings on to which the patients' beds may be wheeled to their increased comfort and the hastening of their convalescence. Each ward contains a nurses' office and linen room from which, through a window, the ward and the isolation room may be surveyed at all times. Easily accessible to this is the diet kitchen with electric cooker, steam table, sink, and refrigerator. Beyond this are bedpan sink, the patients' toilets and lavatories, a sterilizing room, bathroom, and the housemaid's sink room with implements for cleaning. All dressings are made in the wards, so that it has not been necessary to provide a surgical dressing room. Easy exit in case of fire has been provided by two hinged panels at the side of the wards which swing out in an instant's manipulation.

There is a mess hall with one end for nurses, the other for orderlies and maids, and a recreation building for convalescent patients, which contains a small library and resting and reception rooms. The labor required for the constant transport of food and cleaned and soiled linen has been reduced to a minimum by grouping the kitchen and laundry in close proximity to the mess hall and the ward buildings. The wide separation between the ward buildings and the quarters reserved for nurses, orderlies, and maids, insures quiet to the patients from the normal activities of their attendants when off duty. The kitchen contains a checking office with vegetable storage space adjoining. On one side of the refrigerator is the grocery and milk room with the meat room on the other. The equipment is a marvel of completeness; there are steam kettles, vegetable steamers, and cereal cookers of the most approved design. On one side of the kitchen is the vegetable preparation room and on the other the bakery. All china is brought back from the wards and mess hall to the dishwasher. The food cars remain in the kitchen between meals, picking up their loads at the cooks' tables, tea and coffee urns, and the pantry table. The laundry has two receiving rooms, one for ordinary soiled linen, the other for the arriving patient's clothing, infected linen, and bedding which pass through the sterilizing washer or the steam and formaldehyde sterilizer. There is storage room for mattresses, pillows, and linen, a mending room, and a small clothing storage room. There is a small office for the storekeeper in the stores building, which is equipped also for work in carpentering and painting.

The nurses' and the maids' buildings are similar. As these are their living quarters, they are supplied with single and double bedrooms, a small sitting room with electric cooker and pantry, baths, toilets,

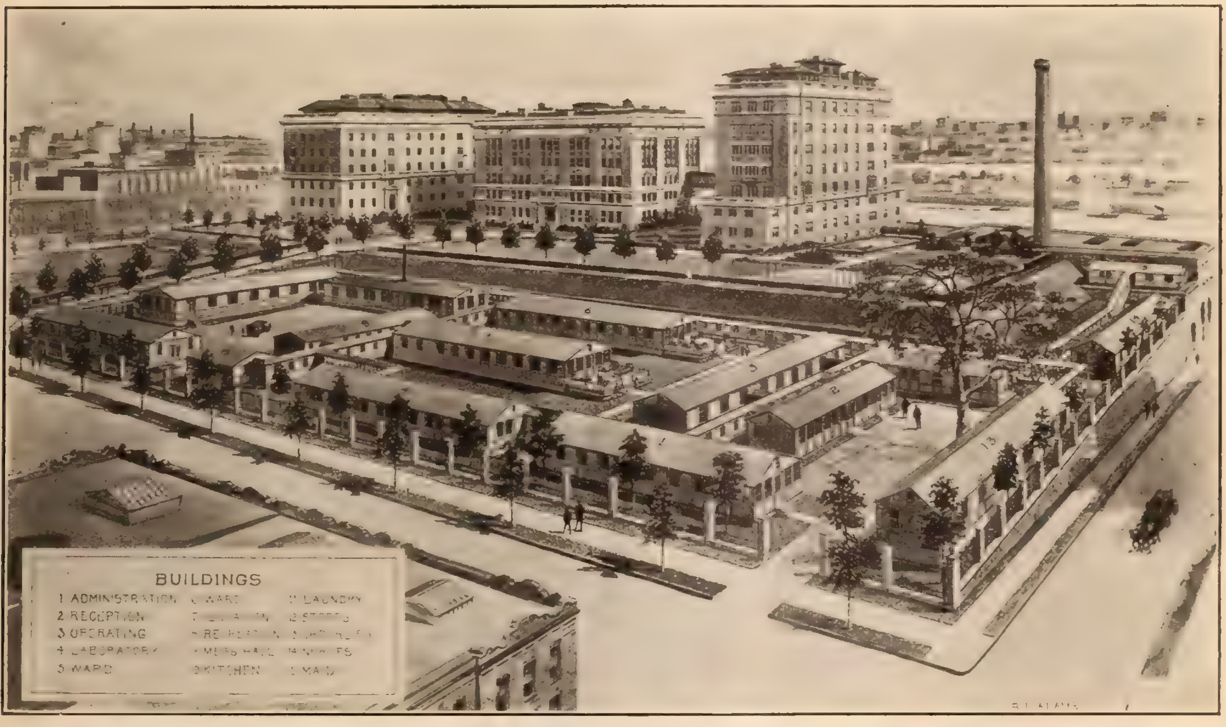

FIG. 1.—War Hospital of the Rockefeller Institute, New York. A portable war hospital of fifty beds comprising an acre of buildings erected at Avenue A and Sixty-fourth Street, New York. Every few yards of the structures have a movable section of wall which affords a bomb exit in case of fire from bombs.

slop sink, and linen and store closets. The orderlies' quarters are divided into a large dormitory with a few rooms for sergeants, a sitting room, and a room for cleaning boots, equipment, etc. The plumbing is standard; the electric wiring is exposed throughout; the heating is by pipe coils; the hot water supply furnished by steam coil tanks There is a complete intercommunicating telephone system and a fire alarm system with watchman's clock, while hydrants and fire extinguishers are placed in convenient locations within and outside the building. There is also a portable ice machine.

It is impossible to express with too high commendation the value of this enterprise. The erection of the buildings was started on June 1st and they were completed on July 13th. Patients are now being treated and the classes for special training have been opened, physicians from all parts of the country having availed themselves of this opportunity to learn the correct method of administering the Carrel-Dakin treatment, which has accomplished so much abroad. This is essentially a preparation for war, but infected wounds are received in other places than the battlefield, and the possibilities for this treatment are far more extensive than any use to which it has yet been put. This is a hospital in which man, woman, or child may be allowed to give Nature a chance to restore the body and tissues to normal, undeterred by microbes and their toxins. Industrial accidents, lacerations, comminuted fractures, extensive trauma, and diseases in which there is suppuration have lost two thirds of their terrors: convalescence now means merely rest and inactivity in bed, with no annoying secretions, no unpleasant odor, and but little disturbance in general health.

Certainly, the Rockefeller Foundation and those engaged in the work of this hospital have availed of an epoch making opportunity of the greatest possible benefit to humanity.

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Fig. 2.—Alexis Carrel, L. B., Sc. B., M. D.

MEDICAL NOTES FROM THE FRONT.

Typhoid in Vaccinated Soldiers—Two Peculiar War Wounds—Treatment of Penetrating Wounds of the Chest.

Geneva, *July 8, 1917.*

An important question in the medicine of warfare which has given rise to much discussion and careful study is the occurrence of typhoid fever in vaccinated soldiers. If the term typhoid fever is accepted in the purely clinical sense, therefore including not only infection by Eberth's bacillus but paratyphoid as well, one will frequently come across patients in epidemics who have been previously vaccinated, no matter what vaccine has been employed. It is also important carefully to set apart cases of typhoid fever in subjects who have been vaccinated with a sufficient dose of dead bacilli and in whom a sufficiently long interval has elapsed since the vaccination, from those cases which develop soon after a hasty vaccination has been done. In the first class of cases, when vaccination is done properly, the infection assumes a very mild type, but is often accompanied by relapses, although such instances may very likely be cases of paratyphoid. However, the value of the vaccination is proved by the absence of serious symptoms and no mortality. This possibility of long illness placing a number of soldiers out of commission still makes it desirable to perfect the technic of paratyphoid vaccination and indicates that more frequent revaccination of typhoid is in order.

In the second class of cases, when the typhoid occurs shortly after a hasty vaccination, the clinical aspect of the infection is much like that of an unvaccinated subject, but generally speaking, the gravity is less the longer the lapse of time between the beginning of the febrile manifestations and the injection of the dead bacilli. In other words, the injection appears to weaken the organic defense when it is given at a time when the dissemination of the virulent living bacteria has already taken place in the body. On the contrary, it fortifies the defense of the organism when it is given before the living bacilli have had time to drain upon the system.

A distinction can be made between typhoid fever occurring after a single injection of five millions of bacilli, from that succeeding two injections, the first of five millions, the second of 1,000 millions. The typhoid cases of the first group are the most numerous, because the injection has been rarely given at a time when the organism was only incompletely invaded by the specific bacillus, so that the evolution of the infection does not appear to be in any way modified by the attempt at vaccination. Usually the subject is vaccinated during the incubation period and reaction following the injection is almost always absent. Serious cases occur in this class, but when a subject has been vaccinated eight or ten days before the first rise of temperature, the case usually runs a mild course and few severe instances are noted.

In all patients, the disease offers two types of development. One is a period of perfect health existing between the time of vaccination and the beginning of the typhoid; in the second this period is marked by a series of minor disturbances in health. The existence of this incubation period which has been clinically proved in men who only become really ill more than two weeks after the injection of the vaccine, clearly leads one to assume that the injection was given to subjects already the hosts of the specific bacillus. The attentive study of certain epidemics clearly shows that there are undoubted cases of latent eberthism and instances of very mild infections go to prove what has just been said. Cases of typhoid are much less frequent after four weeks from the date of vaccination; the evolution is of medium intensity and the patient reacts as if no vaccine had been given. Following two successive injections, it seems to be probable that when the second injection has been given during the incubation period of a typhoid, the prognosis of the disease is not so good. The prognosis is far better if the second vaccination has been given from one to three weeks before the commencement of the typhoid. The majority of cases begin about a fortnight after vaccination, and in some during this lapse of two weeks certain minor disturbances are complained of, and it would seem as if the vaccination had been done in latent hosts of living virulent bacilli. After the lapse of a fortnight, the number and intensity of the cases of typhoid decreases. The patient seems to be vaccinated, but insufficiently so, but it is quite possible that the patient has, in reality, a paratyphoid.

From actual observation it would seem as if the introduction of dead bacilli into the organism tends in the first place to take possession of the natural defenses of the organism so that a large dose of vaccine is injurious if living bacilli are already existent in the body. Later on, the vaccine causes the elaboration of protective properties, and at this phase infection from living bacilli not only has to face the natural defenses of the body, but the acquired ones as well. In practice, therefore, massive doses of vaccine are not to be recommended if an epidemic has broken out, because they leave the already infected subjects without protection. It is better to inject repeated and progressively increasing doses which soon reinforce the defenses of the organism without first seriously weakening them. Therefore, when an epidemic has developed fractional vaccination is the proper method. Generally speaking it may be said that subjects who have been methodically vaccinated some time before are not completely protected against the syndrome of typhoid, but they go through a mild form of the disease. Perhaps they may be suffering from paratyphoid and it is possible that antiparatyphoid vaccination might be the means of less illness. Subjects vaccinated with massive doses while an epidemic is in full blast will probably have a mild case if they acquire the disease, or the gravity will be attenuated, unless the vaccination is done at the beginning of the typhoid.

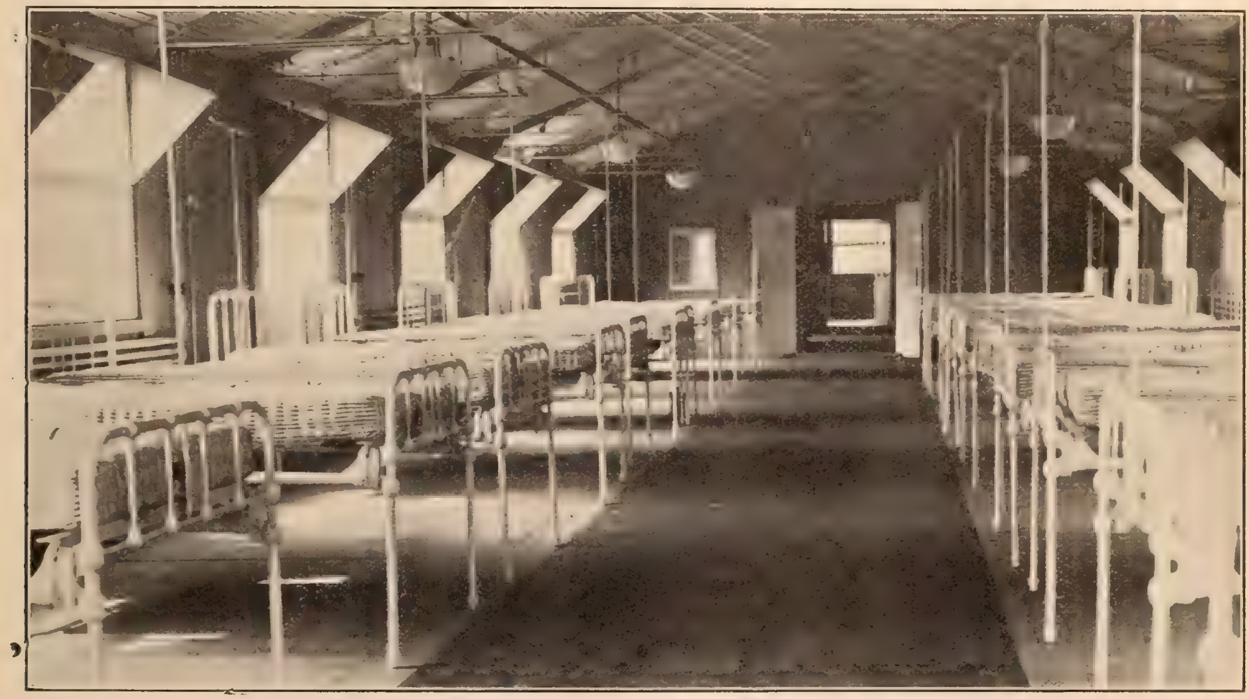

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FIG. 3.—Interior of ward in Rockefeller Institute portable war hospital. All the windows open inward at the top and provide a maximum amount of light and air.

* * * * *

Some cases of war surgery have given rise to most extraordinary discoveries, while the receipt of an injury occasionally occurs under peculiar circumstances. A young officer was brought to Ambulance No. ——, with a large abdominal wound seated in the right subcostal region, through which the right colic angle protruded. This was reduced and then a laceration of the gallbladder was seen along with quite a good sized wound on the anterior border of the liver. The wounds were packed with gauze and a rubber drain inserted. Shortly after, a counter opening in the right lumbar region was made for more complete drainage of the bile. Some time later, while searching for the projectile with a radioscopic screen, a metallic body was seen in Douglas's pouch. Laparotomy was done for the removal of the supposed projectile which, in reality, was found to be six twenty franc gold pieces stuck together. There was no trace of any projectile, as it had made its exit through the lumbar opening. Recovery was so complete and rapid that at the end of three months this officer was ready to return to the front.

The second case that I shall mention was that of a soldier, twenty-two years of age who, more preoccupied by the necessities of hygiene than by the dangers accruing from the close proximity of the enemy, left the trench during the night to satisfy a physiological desire. By the beautiful moonlight he was seen by some Hun in the crouching position and received a rifle bullet which went through both buttocks from left to right, passing across the rectum, as two bullet openings in the walls of the gut could be felt by the exploring finger. The exit opening of the bullet in the right buttock was gaping and the size of a silver dollar, while the rectal opening on the right readily admitted the index finger. The openings in the left buttock and left rectal wall were punctiform. By proper incisions and drainage this soldier recovered so well that he returned to the fighting line three months after his injury had been received.

* * * * *

I would like now to say a few words as to the present status of the treatment of penetrating wounds of the thorax. In one ambulance service at the front, out of a total of twenty-four cases of thoracic injuries by rifle bullets there were four deaths and twenty recoveries, and nine cases of chest injury resulting from bursting shell or shrapnel there were five recoveries and four deaths. When all is considered, I feel that it is safe to say that the gravity of the case is greater in penetrating wounds of the thorax from bursting shell since the mortality is about forty-four per cent., while that from rifle bullets is sixteen per cent. These, of course, are the immediate results obtained in an ambulance near the firing line. If one follows the many discussions on this question which have taken place at the Surgical Society of Paris, it at once becomes apparent that the results obtained by various surgeons in penetrating chest wounds are most varied and cannot be compared. The majority of statistics offered have been those of base hospitals, where patients arrive after having enjoyed a prolonged treatment and prolonged rest.

With few exceptions the cases which are sent to the base hospitals with complications are simply examples of late complications and not primary complications. The series of thirty-eight cases reported by Dupont and Kendirdjy, for example, represents a fortunate one, which had been expurged before the arrival of the patients at the ambulance. In this total of thirty-eight cases of penetrating wounds of the thorax, thirty-seven were due to rifle bullets, while only one resulted from shrapnel, and this accounts for the only death which occurred. Lenormant's statistics are probably nearer the reality. In a total of twenty-nine cases, twenty were due to rifle bullets and nine to bursting shell or shrapnel with six deaths.

Comparison with recent wars as far as present results are concerned is out of the question, and Phocas is undoubtedly right when he says that in the Greco-Bulgarian war, at the ambulance he directed at Athens, he had seventy cases of wounds of the thorax, only one of which necessitated an operation for empyemia, while some of the others merely required puncture. Phocas questions whether this benignity was apparent or real, but he suspects that the really serious cases of thoracic wounds did not reach Athens. He is of the opinion, however, that wounds of the thorax by projectiles act in much the same way as wounds of the same type met with in civil practice and are governed by the same laws. They are either beyond any hope from the onset or are benign to the extent that they are recovered from by expectant treatment and rest.

(*To be concluded.*)

MEDICAL NEWS FROM WASHINGTON.

Conversion of the Havana into a Hospital Ship—Otolaryngologists and Ophthalmologists Plan Service—Uncommissioned Army Surgeons to Be Commissioned—Recommissioning Medical Officers Whose Services Have Been Honorably Terminated—Plans for Sanitary Corps—Estimates of Appropriations for Public Health Service for the Coming Year.

WASHINGTON, *August 6, 1917.*

The Ward liner *Havana,* recently secured by the Navy Department for use as a hospital ship, is considered easily adapted to that service, and the work of conversion already is under way. While the accommodations to be available depend to some extent upon the alterations, it is believed that it will be possible to provide some 300 beds. This hospital ship and another one to be obtained undoubtedly will be assigned to the Atlantic Fleet.

* * * * *

Under the direction of the General Medical Board of the Council of National Defense, the subcommittees on otolaryngology and ophthalmology have sent out to practically every eye, ear, and throat specialist in the country a questionnaire to learn their willingness to enter the medical service of the military establishment if a call were made for them. Both committees report that they will have a sufficient number of men to meet the needs. With the idea in view that injuries to the head seldom involve only one structure, the subcommittee on ophthalmology determined some weeks ago to join action with the subcommittee on otolaryngology for the purpose of devising the best means of bringing all head subjects under one section. To bring about this result, the executive committee added to the personnel of the subcommittee on otolaryngology an oral surgeon, and to the subcommittee on ophthalmology a brain surgeon. These subcommittees, acting as a joint body, have made an exhaustive study, and as a result recommended to the surgeon general of the army the advisability of the establishment of sections in surgery of the head in the base hospitals. Major T. C. Lyster, Army Medical Corps, was assigned to make a thorough study of the whole situation.

A bill recently introduced in the House by Representative Nolan, of California, provides that all acting assistant surgeons and contract surgeons of the United States army who have served under standard contracts in accordance with the army regulations and under orders of commanding officers with troops in the field at army posts in United States general hospitals, or who performed whatever duties required of medical officers under the orders of superior authority, and who were not commissioned in the United States Medical Reserve Corps at the time of the passage of the bill, shall be commissioned first lieutenants in the Medical Reserve Corps, the date of commission to be as of the date of entry into the service as an acting assistant surgeon or contract surgeon. It also is provided by the bill that the surgeon general of the army shall have authority to recommend for commission for active service in the Medical Reserve Corps in case of necessity any physicians who have served as commissioned medical officers in the volunteer service of the United States, in the national guard or militia, or any acting assistant surgeon or contract surgeon who served for a period of at least three months and whose services have been honorably terminated, provided they are mentally and physically qualified to perform the duties required of them.

* * * * *

Under the terms of the act of May 18th, which authorizes the President temporarily to increase the military establishment, orders have been given for the organization under the Medical Department of the army for the period of the existing emergency, a sanitary corps consisting of commissioned officers proportionately distributed among the several grades as in the Medical Corps now established by law, and such enlisted men as the secretary of war may determine to be necessary. The total number of officers in the corps will be approximately equal to, but not exceed, one for every 1,000 of the total strength of the military forces authorized from time to time pursuant to law. The officers of the corps will be provided by assigning officers of the Medical Reserve Corps thereto or by appointment of officers of the Medical Reserve Corps, or of citizens of the United States that are found under the regulations established by the secretary of war to possess special skill in sanitation in sanitary engineering, bacteriology, or other sciences related to sanitation and preventive medicine, or that possess other knowledge of special advantage to the Medical Department. There will be no grade in the Sanitary Corps above that of major, and no officers of the regular Medical Corps will be appointed to the Sanitary Corps. The number in the several authorized grades in the Sanitary Corps will be proportional to the number authorized by law for the corresponding grades of the Medical Corps.

* * * * *

The secretary of the treasury has approved and transmitted to Congress supplemental estimates of appropriations required by the Public Health Service for the fiscal year ending June 30, 1918. The first item of $100,000 is urgently needed for additional commissioned medical officers, in order to carry out the various acts of Congress, imposing certain duties on the Public Health Service. The immigration act approved February 5, 1917, now requires that the alien crews of all vessels arriving in the United States shall receive a thorough physical examination. These examinations necessarily will have to be made on board ship, and will require all of the additional commissioned medical officers asked for. At some ports the law now requires not only that there shall be not less than two medical officers to make examinations of aliens, but also that the medical officers shall be men of special training and experience. Formerly neither inspection of crews nor the double medical examination were required. On account of the war, the service is rapidly losing a number of acting assistant surgeons, who have gone into the military service, and their places must be filled by regular officers in the immediate future. Fifteen commissioned medical officers of the Public Health Service now are serving upon coast guard vessels in the navy upon outside patrol duty on account of the war. In addition to this, thirteen commissioned officers are on duty with the navy in a sanitary capacity. Furthermore, some of the experts of the service are making sanitary surveys of the sites and vicinities of places proposed as cantonments for the military forces.

Another appropriation asked for is $300,000 for use in connection with the cooperation of the Public Health Service with state and municipal health authorities in the prevention of the spread of contagious and infectious diseases in interstate traffic, and this is particularly required on account of conditions incident to the war. The assemblage of large forces at different places throughout the country constitutes a potential danger to the health of the civil population. This is shown by the presence already of outbreaks of cerebrospinal meningitis here and there in the military reservations, outbreaks which have had a tendency to spread to the civil population.

A third item, of $559,270, is for increased maritime quarantine facilities on the Atlantic coast. It is of military necessity, in that the various maritime quarantine stations must be so prepared and equipped as to avoid the detention of vessels returning from across the sea with sick and wounded; should quarantinable disease appear on board. Should an infected vessel arrive at quarantine, the station should have ample equipment and capacity for the housing and care of the personnel, thus releasing the vessel for further use after disinfection. For this purpose additional barracks are required upon sites already provided, together with equipment, utensils, increased tentage, bedding, etc., to meet any emergency that may arise.

Editorial Notes and Comments

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EDITORS
CHARLES E. DE M. SAJOUS, M.D., LL.D., Sc.D.,
Philadelphia,
SMITH ELY JELLIFFE, A.M., M.D., Ph.D.,
New York

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A PRAGMATIC RENOVATION OF SURGERY.

True modesty is a wholesome quality inspired by a working contact with reality. The phantasy world, however, lures workers away from the application of this quality to actual conditions of need. The comparison of two important branches of practical science illustrates this. Professor Miller, of the University of Wisconsin, has called attention, in an address to that institution [*Science*, June 1, 1917, ix, 7] to the departure of mathematics from its original practical simplicity and its endowment with properties from the unfathomable depths of the phantasy life—that of unreality desire—and he declares that the consequent loss of modesty created a "difficulty which still pertains in our use of drugs and the knife."

This is the very keynote of the address which Doctor Bevan delivered as chairman of the Section in Surgery at the recent meeting of the American Medical Association. [Problem of Unnecessary Operations and of Incompetent Surgeons, *Journal A. M. A.*, July 21, 1917, LXIX, No. 3.] With clear cut and emphatic repetition he drives home certain facts whose fearless consideration should restore something of that lost simplicity of modesty and pragmatic common sense to a science which also has been led astray into a certain fetichism. This is the expression of an elusive and obscuring coloration of phantasy, resulting in egoistic projects which are quite foreign to surgery's essentially practical service.

He lays emphasis upon the realities of actual surgical accomplishment and the earnestness and honesty of the medical profession at large, of a vast number of surgeons who are eradicating physical ills. No less, however, does he emphasize the need for a growing interest and a more thorough, regulated study of the surgical problem, with its difficulties as well as its manifold possibilities of service. For this reason he drags into the light the three causes which he considers at the bottom of much unnecessary and unjustifiable surgery and of the many operations performed by unqualified men. "Ignorance, dishonesty, and bad judgment, sometimes bad judgment amounting almost to an obsession," may all be grouped under the obsessional category. He goes on to do this when he sets up the ideal surgery as merely the practice of common sense over against "surgical tangents and obsessions." These latter arise from that great unknown which surrounds every science through the individuals who comprise the scientific body. We are growing familiar through the newer psychology with the egoistic impulses and the distortions through which they disguise themselves from common sense, which we are coming to believe make up this great unknown out of which such personal tangents and obsessions arise; unknown as such and therefore dangerous. Since it is so, it behooves the medical profession to begin to understand these things and to see where unconscious blindness destroys the evaluation of one's own theories of surgery and one's own rash or tangential desire to perform it. Doctor Bevan's remedy for this evil is that which fits the correction of this blindness of overindividuality in all spheres of human activity. He suggests that surgical problems should be submitted to a joint study which should include the competent opinion of specialists in every province of medicine. This would make the surgical question not only theoretically but practically a moral and an educational one.

This is the reference of the individual point of view, preference, selfseeking, anything which may go astray left to itself, to the medical group, the herd, where alone in the field of pragmatism advancing criteria are to be established. Here then in the test in this larger society, comprised of those whose careful attention is directed to problems of health, there would result a limitation of meddlesome surgery and a submission of much that is rushed to the knife to some other more rational probing after causes. Research has already discovered that these lie far deeper many times than the reach of the knife and therefore are aggravated through subtle association rather than helped by such interference. Even the very concept of disease has too long been subject to a "cutting out." A new conception of the intricate unity of mind and body in one energized personality has no place for such a point of attack. Freeing the pragmatic attack upon disease from the confusing interpretations which arise from unconscious phantasy expressed in personal prejudice and overconfidence, we must yet take them into consideration in the complex of disease syndromes, for they are largely the cause of disease. Surgery has its service to perform in some of the end results but it can no more "cut out" epilepsy, for instance, by a release of eye muscles, removal of ovaries, the teeth, or, relic of ancient barbarism, the severing of the inoffensive gut because of its peculiar function as a passage for waste matter, than the whole of life's well directed effort, which is health, could be expressed in the terms of one narrowly limited accomplishment. Surgery is part and an important part of the problem of healthy utilization of energy. Therefore let it seek conscientiously for its true place in the light of the broader concept and to that point direct its indispensable service.

THE DANGERS OF RHUBARB.

The time of the year when the tired business man dreams of trout pools, golf links, tennis courts, and campfires; when the small boys see through and beyond the blackboard into a world of marbles, circuses, and freedom; when the poet bursts forth into song and a livelier iris changes on the burnished dove—in short, the vernal springtime of the year was in the good old days also the time when our mothers dosed us with sulphur and molasses, sassafras, or whatever other spring tonic the family pharmacopœia proclaimed as beneficial. Later on we rebelled against being medicated willy nilly, but we partook for a long time of the family superstition which recommended the consumption of certain vegetables as being "good for the blood." Among these therapeutic treasures rhubarb held a high place. Whether stewed or prepared in other ways, this plant has been held in high esteem. Certainly no one would suspect that danger lurked beneath such an innocent exterior as that which rhubarb leaves present to the world, but this has been the case.

A distressing instance occurred in England recently. A minister partook of rhubarb leaves cooked in water, to which had been added cooking soda for the purpose of neutralizing the acidity and rendering unnecessary the addition of sugar. This had evidently produced calcium and potassium oxalates in considerable quantities as autopsy showed oxalic acid in the viscera and no other poison. The fatal dose is given in some textbooks as sixty grains, but is probably much lower than this; in fact a case has been reported of serious symptoms from one and a half grains, symptoms which were only checked by prompt treatment. The soluble oxalates, potassium and sodium, are just as poisonous. The best antidote is chalk which forms an insoluble calcium oxalate. A pinch of powdered chalk added to the rhubarb leaves would have rendered them perfectly innocuous.

Truly nowadays Death assumes protean forms. He creeps over the battlefield in a choking, nauseous stench; he bursts forth in liquid fire; he rains down from the clouds, and he lurks in rhubarb leaves. The chemistry of cooking is indeed sadly neglected. There is an old story of a Chinese cook who had only to see a dish prepared once and he was letter perfect. On one occasion the mistress of the house, while showing him how to prepare a certain dessert, found that the first egg she broke was bad and threw it away. Ever after when the Chinaman prepared this dish he broke an egg and threw it away. Many cooks who smile at this story are really not much more intelligent in their cooking than the Chinaman. They go ahead following the same routine in cooking year after year, never knowing what the chemical constituents of various food products are, never appreciating what changes heat produces in organic compounds, and attributing the gastrointestinal disturbances which occur from time to time in the household to the mysterious visitations of an inscrutable Providence. Let us by all means have more knowledge of what we are consuming day by day, especially at the present time when economy and public health are both indispensable.

MENINGEAL REACTIONS IN CONCEALED OR ATTENUATED FORMS OF ACUTE CEREBROSPINAL MENINGITIS.

The acute cerebrospinal meningitides readily give rise to abnormal types of the affection, the concealed or attenuated forms being the more commonly met. These abnormal types exist in primary cerebrospinal meningitis due to the meningococcus or other varieties of microbes, such as the pneumococcus and divers kinds of cocci. In secondary cerebrospinal meningitis of microbic origin, the abnormal types may also be encountered and very frequently lumbar puncture in these attenuated cases will give incomplete formulas of the cerebrospinal fluid.

There is a group designated by the term meningeal reactions, with a concealed or attenuated symptomatology, whose origin, whether infectious, toxiinfectious, or toxic, is difficult to ascertain. The comparison of these meningeal reactions with attenuated meningitis shows, however, that all these clinical types differ only in degree. Clinically, they cannot always be distinguished, but the divergence in the results of lumbar puncture proves that the following data are to be taken into account in their pathogenesis, namely, 1, the nature and intensity of the irritating agent; 2, the route of penetration taken by and arrival in the meninges of this agent; 3, the action of the agent on the meninges and particularly on the underlying nervous centres; 4, the very varied lesions to which it gives rise; 5, the susceptibility properly belonging to the nervous centres according to the given case, and, 6, their possible irritation independent of any meningeal lesion.

If these data are examined, the conclusion arrived at will be that there are, besides infectious meningitis properly speaking, many varied states of the meninges. Some of toxic origin, such as uremia, eclampsia, saturnism, etc., are worthy of the name of toxic meningitis. The others, whose nature has not as yet been distinctly established, which in all likelihood is of toxiinfectious origin but due to an attenuated toxiinfection, are what have been called meningeal reactions. In reality, they are nothing more nor less than meningitis of very mild type, the result of a temporary irritation of a low intensity; in other words, an incomplete meningitis. There is also what has been called meningism proper which is attributed to reflex action and toxins, but of which little is really known; its importance is losing ground. From these meningeal states, which always produce a simultaneous excitation of the nervous centres, are to be distinguished the reactions of the cerebrospinal fluid, when there is no clinical evidence of meningitis; these may be compared to the humoral reactions in general, although one must take into account the particular characters due to anatomy and physiology.

At the present time the results of lumbar puncture are not always sufficient to affirm the diagnosis, and while awaiting further researches on the biochemical properties of the cerebrospinal fluid which shall show the nature of the divers meningeal processes, one must rely upon one's diagnosis, on prognosis and therapeutic results, and on a detailed analysis of the symptoms and etiological data, all these being important elements which laboratory examinations cannot always furnish.

THE ANNALS OF MEDICAL HISTORY—A NEW AVENUE INTO THE PAST.

The immortal value of the past and the measure of its availability for present use have been nowhere more impressively and compactly formulated than in Bergson's *Creative Evolution*. The past as he conceives it is no longer a relic reverenced by the antiquary, but is in itself a part of that stream which ceaselessly flows on through the present to create the future. The new publication, *Annals of Medical History*, which has recently appeared from the medical press, gives promise of being infused with a true spirit of progressive evaluation of the storehouses of thought, attainment, even of the mistakes and seeming follies of groping effort which lie behind the present day science.

This first number is already warm with the attraction of that great past which "streams behind us . . . pressing at the portals" of the present of medical interest and practice "seeking to join it." Indeed one sobering reflection which is gathered from its perusal is not entirely unfamiliar, namely, that present thought and custom, even in so advanced a science as medicine, are yet strangely intermingled with and dependent upon the most remote customs and beliefs. These are in part the fetters of a magic interpretation of facts, and more yet a mystical fear of certain unknown elements or blind dependence upon them, rather than an applied direction of energy upon actualities in the sphere of sickness and health. On the other hand such an interrelation with the past furnishes life with meaning and full synthetic purpose, and to these the *Annals* will serve to give access. They are evidently to stand at the gateway which joins past with present, there to draw out from the rich inheritance of medical history that which will set value to medical research in its continuity and further the useful work of medicine for the present and the future. As consciousness must necessarily narrow its field in each application of itself to the affair at hand for the moment, so medicine in its definite attack upon each separate problem presented in clinic or laboratory appears to be focused upon its limited object. It is the retrospective view which gives it its mutual setting in a world of a multitude of interests, none of which can be separated from the others. In the past medicine finds its relative value and is in turn enhanced by that interweaving with all other human interests in which alone it rediscovers its own place. For this reason there is fundamental interest about studies into the mysteries of the Greek beliefs concerning death and the Chthonian deities and the rise of medicine from these earlier cult beliefs and practises. Aside from the scholarly presentation of the material there is a suggestiveness in the earlier beliefs and the therapeutic measures which grew out of them, in which the thoughtful mind can read much of the unending human struggle and reaching out for health and productiveness as the expression of life itself. The slow progress toward clearer light and more exact knowledge shows itself in the outstanding figure of Girolamo Francastora who in the early sixteenth century brought to bear upon the subject of infectious disease a straightforward investigation based upon accumulated clinical data, assimilated and discussed by a thoughtful and philosophical mind. At another time medicine enjoyed the spirited support and stimulus of Voltaire's intellectual acumen and ability to collect much information and knowledge. The early days of the American Colonies contribute something in the history of medical practice, and the deep religious fervor which existed among the ancient Hebrews portrays the close relation of health getting with the deepest impulses of the soul.

The study of a peculiar type of deliberate murder for the sake of mercenary profit in providing cadavers for anatomical study, presents another phase of the human problem, one peculiar in its psychology to no particular age nor race. The energic concept, which the reader likes to feel is the genetic tenor of this new publication, seems, however, to have failed here in the author's summing of his findings in this study. Distribution and redistribution of dynamic energy as the explanation of life's trials and failures and its crimes could not say so conclusively as it is said here: "Men are born, they do not become murderers," and that there is one quality lacking, which is their moral sense. Yet all this material which is to be presented must open the way not to a mere understanding of the past in its historical preservation, but must stimulate and enlarge the understanding of just such an all embracing concept of energy. This moves through all human society in efforts after medical knowledge and advance, and gives it no small expression of itself. All this material moreover aids in understanding each individual problem, criminal psychology as well as religious aspiration, intellectual craving for knowledge as well as health seeking and progress in strictly medical lines. Thus past and present are revealed as one.

THE DETERMINATION OF VISUAL ACUITY.

Probably none of the senses is so important to the human economy as vision. The greater development of mechanical aids to vision over that of aids to the other senses bears witness to the greater visual needs of civilization. Indeed, it is said that civilization is visualization. In nearly every one of the human endeavors vision is of the highest importance. This is so important in military life that only the least amount of deviation from the normal is allowed in those who would engage in that life. Ordinarily visual acuity is taken as the index of the distance one can see from the eye. Strictly speaking, however, visual acuity refers to the clearness of vision without regard to distance. Vision lacks acuity when at no distance from the eye can the object be seen clearly. In such a case the visual condition is pathological, and is not affected by corrective appliances. In visual defects of refractive origin there is usually some distance at which there is acute vision, and this distance can be lengthened or shortened by appropriate lenses.

However, if the distance requirement is the important element in the examination—and for this the Snellen or other card tests are used—it is important that the type, the background, and especially the illumination, be uniform; otherwise the results of the tests will vary greatly. Thus far there has been found no correlation between illumination and visual acuity for which correction could be figured out according to the deviation. While proper illumination of the test cards will improve the distance acuity, an illumination greater than the normal requirements seems to have no effect in increasing the distance. Results in the visual examinations are bound to vary unless a standard scientific illumination intensity is maintained. Unless so maintained individuals with the same degree of acuity will receive different ratings according to the degree of illumination maintained. In this way much injustice may be done. For examinations on a large scale where uniformity is essential artificial illumination must be used, so protected as to prevent glare into the eyes of the man examined. An eight to ten metre candle light is taken to be equal to seventy-five per cent. of daylight illumination. For purposes of illumination, however, an eight metre candle light is low illumination, and forty metre candle light is very high for ordinary purposes or for uncolored illumination. Whatever power is selected it must be uniformly used to obtain uniform results. It must be borne in mind, further, that white illumination gives the most acute vision; next is red, then green, then blue. At best, the light question is still open to discussion.

The visual acuity evidenced by the test types may be a technical determination, but it is not a practical one. In the last analysis no one can tell what an eye will do until it is put to practical test. There are so many extrinsic factors that influence visual acuity, such as familiarity with the subject, the aid of other senses, illumination, etc., that it is never safe to make other than a technical determination. At best the Snellen test type and similar tests for distance or astigmatism are very crude indeed. They cannot be final where the subject has a special interest or desire to get a low rating for vision or for the degree of astigmatism. The more scientific and accurate methods lie in the use of the retinoscope for the determination of the nature and the degree of refractive error for distance and the ophthalmoscope and the ophthalmometer for the determination of the degree and the variety of astigmatism. Of course, the ophthalmoscope will betray the presence of pathological conditions in the eye. Nearly every one can apply the type tests, but it requires a degree of skill to apply the ophthalmic instruments. These instruments cannot be used on large scale examinations, but they can and should be used to check up the doubtful cases. The test types can be used to determine those who have normal distance acuity. The instrumental tests can be given to all who fail in the test type.

News Items

A Pharmaceutical Corps for the Army.—Representative Edmonds, of Philadelphia, has introduced into Congress a bill which provides for the establishment of a pharmaceutical corps within the Medical Department of the Army, the director of the corps to have the rank of major. The bill has been referred to the Committee on Military Affairs.

Metabolism Experiments.—The Carnegie Institute, of Boston, is planning to conduct a series of experiments to determine whether men and women cannot maintain their powers on smaller rations than has hitherto been accepted as a minimum. The Battle Creek Sanitarium has just finished a metabolism experiment lasting forty-five days, with ten subjects, for the purpose of determining the effect of different diets on the chemical composition of the blood. The results are being tabulated and will be published later.

Red Cross Naval Hospital.—The American Red Cross Society has established at Philadelphia for the use of the navy the first general Red Cross hospital in this country. The city of Philadelphia had condemned the building and grounds of the Medico-Chirurgical Hospital in order that a boulevard might be cut through its grounds. The usefulness of the building, however, was not seriously interfered with, and Philadelphia offered this hospital to the Red Cross for the duration of the war. It contains about 250 beds.

An Outbreak of Diphtheria at Newport.—A quarantine for five days was established on August 3d over Forts Greble and Adams and the naval training station as the result of an outbreak of diphtheria in Newport, Portsmouth, and Middletown. Thirty-one new cases of diphtheria among the navy recruits were reported on August 6th, and 191 cases are now being taken care of at the local hospital. In addition there are eight cases among the army troops, including one officer and one reservist. All are said to be slight.

Anesthetics for France.—In response to an urgent cablegram from Major Grayson M. P. Murphy, head of the Red Cross Commission in France, the Red Cross is planning to ship to Europe 100,000 half pound tins of ether. Because of the shortage of anesthetics in France, the Red Cross War Council, in addition, has authorized Major Murphy to establish, as soon as practicable, a central plant to manufacture nitrous oxygen. American machinery will be shipped to France for this purpose, and American operatives will be sent over.

Personal.—Dr. Edward B. Dench, of New York, has been selected by Lieutenant Colonel Burt R. Shurly, Medical Officers' Reserve Corps, who is director of the Detroit College of Medicine and Surgery Base Hospital, to take charge of the head division of the unit. Doctor Dench will have the rank of major.

Dr. S. R. Klein, formerly professor of histology and embryology at Fordham University and director of the Norwich, Conn., Research and Experimental Laboratory, has been appointed assistant superintendent, pathologist, and röntgenologist to the Waldheim Park Sanitarium and Polyclinic, Oconomowoc, Wis.

Civil Service Examinations.—Among the positions for which the New York State Civil Service Commission will hold examinations on Saturday, September 8th, are the following in the State Department of Health: Diagnostician and epidemiologist, $3,500, open to both men and women and limited to physicians; bacteriologist, $2,000, open to men and women; medical expert on tuberculosis, $3,200, open to men and women, limited to physicians; assistant to the deputy commissioner of health, men only, $3,500; field agent, division of tuberculosis, $2,000, open to men and women. A special circular of information may be obtained from the commission.

Red Cross Society on a Military Basis.—The Secretary of War announces that President Wilson has reorganized the American Red Cross Society on a military basis. Hereafter duly qualified officers of the Red Cross will be recognized by military titles, with assimilated rank and for appropriate duties. The two chief officers will have the rank of major general and the members of the central committee will receive the rank of brigadier general. Mr. Harvey D. Gibson, director general, becomes a colonel, and the assistant director general, a lieutenant colonel. Directors of certain bureaus, base hospitals, supply depots, etc., are given the rank of major; assistant directors become captains and lieutenants. These commissions confer no military authority or obligation, serving merely as certificates of identity.

Civil Service Examination for Chief Medical Examiner.—The Municipal Civil Service Commission has announced an examination for Chief Medical Examiner of New York city, for which applications will be received until 4 p. m. August 14th. The incumbent of this position will be in charge of the office of the Chief Medical Examiner of the city of New York, which will perform generally the duties heretofore performed by the coroners of the several boroughs. The salary is $7,500 a year; there is one appointment to be made. This examination is open to all citizens of the United States who meet with the requirements. Candidates must be physicians and skilled pathologists of at least ten years' experience. The examination will consist of an experience rating, an oral examination and a practical test in connection with which candidates will be required to perform an autopsy and report their findings in writing. Minimum age limit, thirty years. Any person desiring to take this examination should write at once for detailed notice of examination; address Robert W. Belcher, Secretary, Municipal Civil Service Commission, Municipal Building, New York, N. Y.

A Six Year Course in Medicine at Toronto University.—The senate of the University of Toronto has determined to increase the length of the undergraduate course in medicine from five to six years, this regulation, however, not to become effective until after the close of the war.

Bellevue Surgeons Receive Commissions.—Thirteen members of the surgical staff of Bellevue Hospital have received commissions in the Medical Corps of the United States Army: Dr. Michael J. Thornton, assistant medical superintendent of the hospital, has been commissioned a captain and the others with the grade of first lieutenant, as follows: Dr. George E. Aubrey, Dr. Thayer A. Smith, Dr. Joseph C. Horan, Dr. Eugene Calvelli, Dr. Arthur Palmer, Dr. Alfred E. Holmes, Dr. Carl Van Tyner, Dr. Martin L. Sowers, Dr. William B. Wood, Dr. Hubert C. Dixon, Dr. William V. Healey and Dr. Roland P. Blythe.

Sanitation of Districts Adjoining Soldiers' Camps.—The American Red Cross Society has organized a bureau of sanitary service to take over the care of sanitation in the vicinity of army and navy mobilization points. Dr. W. H. Frost, of the United States Public Health Service, is director of the bureau and an appropriation of $800,000 has been made by the Red Cross Society for its use. Sanitary control of the cantonments will be exercised by the military authorities, but the districts immediately adjoining do not come under their jurisdiction, and the object of the bureau is to supervise and aid in such operations as will tend to make health conditions about the camps as nearly ideal as possible. Increased forces will be provided for milk inspection, war will be made upon malaria carrying mosquitoes, and a radius of from fifteen to sixty square miles outside of the camps will be "policed" for the protection of the men.

American Women's Hospital.—The War Service Committee of the Medical Women's National Association has organized the American Women's Hospitals for work at home and abroad. The surgeon general of the Army and the director general of the department of military relief of the American Red Cross have approved the provision made for service to the army and to the civil population. The work will be officially part of the medical and surgical service of the American Red Cross. The scope of the plan is broad, including the establishment of hospital units for maternity service and village practice in the devastated parts of the Allied countries. In this country patients will be treated in hospitals equipped for the purpose; soldiers' dependents will be cared for; interned alien enemies will be given medical aid, and substitutes will be provided to look after the hospital service and the private practice of physicians who have gone to the front. The first units hope to go to France and Serbia in the early fall. Headquarters have been established at 637 Madison Avenue, New York. Dr. Rosalie Slaughter Morton is chairman of the War Service Committee.

Changes in Personnel of the Medical Board of the Council of National Defense.—More than half the original membership of the general medical board of the Council of National Defense have entered the service of the Army or Navy and are now engaged in active work for one of the military departments, either abroad or in the United States, and the membership of the board has had to be changed from time to time. The members who have been called to active duty in the offices of the Surgeons General of the Army and Navy include Dr. William J. Mayo, Rochester; Dr. Victor C. Vaughan, Ann Arbor; Dr. William H. Welch, Baltimore; Dr. Theodore C. Janeway, Baltimore; Dr. W. H. G. Logan, Washington; Dr. Edward Martin, Philadelphia; Dr. Charles H. Mayo, Rochester; Dr. William B. Snow, New York; Dr. Stuart McGuire, Richmond; Dr. Winford Smith, Baltimore; Dr. William C. Woodward, Washington. The following are in service in France or elsewhere: Dr. Frederic A. Besley, Chicago; Dr. George E. Brewer, New York; Dr. George W. Crile, Cleveland; Dr. John M. T. Finney, Baltimore; Dr. Joseph Marshall Flint, New Haven; Dr. Charles H. Peck, New York city; Dr. Richard P. Strong, Boston; Dr. William S. Thayer, Baltimore; Dr. George Walker, Baltimore.

National Social Unit Established in Cincinnati.—Thirty-three Cincinnati physicians have organized and elected a director for the purpose of conducting the health work of the district in which they live, under the plan of the National Social Unit Organization, which was formed last year in New York, under the presidency of Gifford Pinchot. Dr. J. H. Landis, president of the Cincinnati Academy of Medicine and health officer of that city, is chairman of the committee which has endorsed the movement.

British War Surgery.—Dr. Joel E. Goldthwaite, of Boston, a major in the Medical Officers' Reserve Corps, United States Army, who returned from Europe Tuesday, August 7th, where he had gone to study methods of treating the wounded in the hospitals of France and England, is reported to have said that out of a batch of 1,350 wounded soldiers who had been crushed and fearfully maimed by shells, 1,000 had been so skilfully patched up by the surgeons at the London Orthopedic Hospital that they were able to return to duty. Major Goldthwaite was one of twenty American medical officers who were sent abroad by the Government. He said he had returned to recruit surgeons for study of war hospital conditions in order that American soldiers might later have the benefit of modern treatment from their own surgeons.

Neurologists and Psychiatrists to Examine Recruits.—Major Pearce Bailey, of the Medical Officers' Reserve Corps, chairman of the Mental Hygiene War Committee of the National Committee for Mental Hygiene, has drawn up a set of directions for the one hundred and fifty psychiatrists and neurologists who have been detailed to conduct examinations of recruits in order to weed out men who are nervously or mentally unfit for service. The Committee on Clinical Methods and Standardization of Examinations and Reports, a subcommittee of the Mental Hygiene War Committee, has issued a report containing a general outline of the classes of recruits to be excluded from service. The committee is composed of the following members: Dr. August Hoch, of New York; Dr. Adolph Meyer, of Baltimore; Dr. E. E. Southard, of Boston; Dr. Albert Barrett, of Ann Arbor; Dr. William A. White, of Washington; Dr. Walter E. Fernald, of Waverley, Mass; Dr. Thomas W. Salmon, of New York; Dr. Pearce Bailey, of New York; Dr. Joseph Collins, of New York; Dr. T. H. Weisenburg, of Philadelphia; and Dr. Robert M. Yerkes, of Cambridge, Mass.

Reconstruction Hospitals.—The Surgeon General of the Army has approved the new Orthopedic Advisory Council which will make recommendations to the surgeon general concerning orthopedic matters and reconstruction work among the physically disabled soldiers. The members of this council are: Major E. G. Brackett, of Boston; Major David Silver, of Pittsburgh; Major Albert H. Frieberg, of Cincinnati; Major Fred H. Albee, of New York; Major G. G. Davis, of Philadelphia; Major H. D. Corbusier, of the Surgeon General's Office, Washington; and Major Joel E. Goldthwait, of Boston.

It is hoped that an arrangement can be made at these reconstruction hospitals whereby the work will be done under the supervision and control of the surgeon general, who will provide the staff for the work of reeducation. The object and aim of this policy is to keep the men under control until they are selfsupporting. A new reconstruction orthopedic base hospital is being organized in Boston, under the charge of Major Brackett, and it is understood that another is under way in Washington. There are ten orthopedic reconstruction hospitals and many of the base hospitals have attached a unit for this special work. It is estimated that over 70 per cent. of the cases that are turned over by the base hospitals for further treatment are bone, joint, tendon, and nerve injuries. The adequate provision now being made for the soldiers who will be returned to the United States suffering from crippling injuries, to be permanently debarred from selfsupport unless reeducated and fitted for remunerative work lessens the seriousness of a sociological and economic situation.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

THE USE OF INEXPENSIVE DRUGS IN PRACTICE.

By Louis T. de M. Sajous, B. S., M. D.,
Philadelphia.

(*Continued from page 233.*)

In the last issue the relative cost of the various drugs of the nitrite group was compared, and nitroglycerin, among others, was shown to be considerably less expensive than amyl nitrite. It was suggested that the difference in rapidity of action between nitroglycerin and amyl nitrite is not such as to render unjustifiable substitution of the former for the latter in many instances, even among suddenly arising disturbances in which prompt action on the part of the vasodilator remedy used seems desirable. In connection herewith certain relative disadvantages of amyl nitrite were referred to. That one can expect nitroglycerin to be readily absorbed from the oral mucosa is confirmed not only by the actual observation of prompt pharmacological action after administration in this manner, but by the fact, recognized in the U. S. Pharmacopœia, that even contact of ntiroglycerin with the skin is sufficient to induce nitrite symptoms, such as headache.

An emergency disorder not yet mentioned in which nitrites are held serviceable is the paroxysm of bronchial asthma. Here there has come into use what is under ordinary conditions the least expensive of all the drugs exerting a nitrite effect, viz., potassium nitrate. When burned, usually with stramonium or other bronchodilator drugs, and often in the form of the antiasthmatic cigarette, made with paper previously impregnated with a solution of nitre, this salt sets free nitrites which are believed capable, on inhalation, of relaxing bronchiolar spasm. Because of the increase, at least fourfold, in the price of potassium nitrate owing to the war, this salt, in a single dose for inhalation purposes of about five grains, is now little if at all cheaper than nitroglycerin or sodium nitrite. It can hardly be considered, moreover, as certain in action as the other nitrite remedies, and substitution of it for them in any conditions more acute or serious than the average asthmatic paroxysm would therefore seem unjustifiable.

Turning now to conditions in which a more prolonged, and not necessarily as prompt nitrite action is desired, we are led to consider in the first place those associated with continued high vascular tension. In these amyl nitrite is from the outset inappropriate because of its transitory action, and the remedies generally used are nitroglycerin and sodium nitrite. As is generally recognized, it is especially in the incipient stage of arteriosclerosis that nitrites are effectual in reducing vascular tension and relieving headache and other symptoms caused by it. According to W. J. Conklin, 1910, the extent to which high arterial pressure can be lowered by the nitrites varies largely with the existing degree of spasm of the vessels; vessels in a condition of fibrosis are especially susceptible to spasm, and hence the relief afforded by these agents, analogous to that obtained in the bronchiolar spasm of asthma. Admitting that nitrites in high blood pressure constitute on the whole merely symptomatic treatment and that in many instances an artificial diminution of a moderately high pressure is contraindicated, it is of interest to compare the relative advantages of nitroglycerin and sodium nitrite for the purpose in question.

Although nitroglycerin and other organic nitrates are generally believed to require chemical reduction to nitrites by the tissues before the typical nitrite action can be exerted, observation shows plainly that they act more rapidly and evanescently than the inorganic nitrites themselves. This peculiarity, together with the facts that the organic nitrates promptly cause dilatation of excised vessels with which they are brought in contact, and that nitroglycerin is active in a dose—0.01 grain—one hundred times smaller than is sodium nitrite, have led even Sollmann to question whether, after all, nitroglycerin does not act directly without previous chemical change. The tables constructed by Wallace and Ringer and by Matthew as a result of clinical investigation of the actions of the nitrites on the blood pressure show that whereas nitroglycerin begins to act in one or two minutes, reaches its maximum effect in five to eight minutes, and is inactive after thirty to thirty-five minutes, sodium nitrite begins to act in only five to fifteen minutes, attains the maximum in fifteen to forty-five minutes, and continues to act for one to two hours. According to Matthew, moreover, the maximum depression in blood pressure is maintained by two to three minims of nitroglycerin solution for only two minutes, whereas by sodium nitrite it is maintained for twenty to sixty minutes. In patients with arteriosclerosis, Wallace and Ringer found two grains of sodium nitrite active for two hours, as against thirty-five minutes for one-thirtieth grain of nitroglycerin. The maximum drop in pressure was also greater with the inorganic salt—fifty-three millimetres Hg as against thirty millimetres. The drop in the diastolic pressure under nitrites is, according to Lawrence, 1912, approximately one half that in the systolic pressure. Sodium nitrite has been held sometimes to produce gastric irritation, the hydrochloric acid of the gastric juice breaking some of it up and setting free nitrous acid and possibly some irritant gases. This unpleasant action, however, does not seem sufficiently pronounced to figure as an actual disadvantage of the salt as compared to nitroglycerin.

Despite the fact that the relief of such high pressure symptoms as headache, tinnitus, dyspnea, flushes, etc., lasts longer after single doses of the nitrites than the effect on the blood pressure, thus prolonging the time of benefit from nitroglycerin beyond its half hour period of manifest vascular action, it seems plain from the foregoing observations that for a sustained effect in high pressure cases, sodium nitrite is in general superior to nitroglycerin, though the latter be taken four times a day, or even oftener. This should, perhaps, be modified to the extent of admitting, with Bastedo, that in general arteriosclerosis the effect of nitroglycerin sometimes persists several hours. Two probable advantages of sodium nitrite over nitroglycerin are brought to light in the suggestion of Hewlett, 1912, that the former causes less headache than the other nitrites employed in high blood pressure, and that of Matthew, to the effect that the drug tolerance which soon develops during the use of nitroglycerin does not occur in the case of sodium nitrite. In the preceding installment these two agents were referred to as being practically alike in cost, dose for dose. As a matter of fact, the difference between them, to be precise, appears to be one of about twenty per cent. in favor of the inorganic salt. The less expensive is thus also that which presents the greater number of advantages in the continuous treatment of high pressure states.

(*To be continued.*)

Nonsurgical Treatment of Intestinal Stasis.—J. H. Kellogg (*Journal A. M. A.*, June 30, 1917) does not believe in the safety or propriety of ileocolostomy or partial colectomy, except in the very small minority of cases in which such operation is made essential through extensive disease of the colon. In the vast majority of cases of chronic intestinal stasis the colon can be reeducated and the condition relieved by proper medical measures. A bulky diet, low in protein and made up chiefly of fruits, fresh vegetables, and whole grain preparations should be prescribed. Half an ounce to one ounce of cellulose should be given daily in the form of agar or bran with each meal. At every meal the patient should take from one half to one and one half ounces of liquid petrolatum. Abdominal massage and exercises for developing the abdominal muscles should be ordered. In obstinate cases it may be necessary at first for the patient to take a couple of tablespoonfuls of bran three or four times a day and as much fruit as he can eat. Tomatoes, fresh or stewed, are especially useful. When there is hyperacidity such fruits as bananas, pears, white cherries, and melons should be used. The patient should be required to go to stool the first thing in the morning and after each meal. It may be necessary at first to give an occasional enema at 80° F. Where there is spastic colitis hot saline enemas should be given and followed by the introduction into the rectum of several ounces of a fluid culture of Bacillus bulgaricus and Bacillus bifidus. This should be done with the patient in the knee chest position. Electricity to the upper rectum or pelvic colon, very weak solutions of hydrogen peroxide, solutions of citric acid, or a mixture of equal parts of carbon dioxide and pure oxygen gas introduced into the rectum will stimulate the intestine in cases with lost or impaired sensibility. It is often preferable to use a petrolatum which melts at body temperature rather than the liquid preparation.

Successful Conservative Treatment of Early Gas Gangrene.—C. H. S. Frankau, Hamilton Drummond, and G. E. Neligan (*British Medical Journal*, June 2, 1917) have acted upon the recent proof that gas gangrene was a disease of damaged muscles and was likely to be limited to single muscles or muscle groups. On this basis they have attempted to discover the infected muscles as early as possible and to cut short the disease by complete resection of each of those found involved. Even in cases in which the resections were so extensive as to render the limb useless, its practice gave better results than immediate amputation, and the latter operation was reserved for a time after the patient had recovered from the gangrene. Following the muscle resections the aftertreatment of the wounded part included the use of the lightest and thinnest possible dressings, exposure of the wound to the sunshine, and constant or intermittent irrigation by the Carrel method of some modification. These measures gave unexpectedly favorable results, as illustrated by the records of fourteen cases.

Ethyl Chloride as Anesthetic in War Surgery.—Boureau (*Presse médicale*, May 21, 1917) highly recommends the substitution of ethyl chloride for chloroform and ether in war surgery because of its rapid action, because it is much less toxic, having no deleterious effect on the heart, respiratory apparatus, liver, or kidneys, and because of its rapid elimination, all but one twentieth of the amount in the blood passing out within four minutes after its administration, whereas in the case of chloroform one third and in that of ether one seventh of the amount still persists in the blood after one hour. In military practice much time is saved through the rapidity of induction of anesthesia and also through the fact that immediately after the operation most of the wounded can leave the ambulance hospital in the sitting position, instead of recumbent. For the initial cleansing of wounds, extraction of missiles, ligations of vessels, and painful dressings, ethyl chloride is decidedly the agent of choice, and those who have taken it prefer it to ether or chloroform. Boureau's recent experience with it covers nearly 2,000 cases, including 212 missile extractions, 135 removals of bone fragments, fifty-seven amputations or operations on flaps, thirty-six resections, including the knee, shoulder, and elbow, twelve astragalectomies, twelve nerve sutures, etc. Not the least untoward happening attended the anesthesia in any instance, though operations lasting as long as an hour and three quarters were performed under it. All special inhalers were discarded in favor of a four layer compress of rather thick cloth or a mere handkerchief, on which two to three c. c. of kelene were dropped to start with. Although plenty of air was allowed the preanesthetic period never exceeded one minute. After fifteen or twenty seconds the dose of kelene was renewed and the cloth brought more tightly to the face, and a minute and a half or two minutes later, complete resolution was obtained, the corneal reflex disappeared, the pupils dilated, and the operation was begun. Anesthesia was then kept up by dropping about one c. c. of kelene on the compress every minute. Slight convulsive movements of the limbs were found to indicate the giving of a little pure air, when they promptly passed off.

Citrate Blood Transfusion.—V. P. W. Sydenstricker, V. R. Mason, and T. M. Rivers (*Journal A. M. A.*, June 9, 1917) report their experiences with this method, as compared with the results obtained by other methods of transfusion. They conclude that the citrate method is almost ideal if very careful preliminary tests for blood compatibility are made. These tests are absolutely essential to success and the observations to determine the absence of hemolysis and agglutination must be prolonged over periods of at least an hour. Washed cells from donors of Moss's Group IV may be given with safety to recipients of any other group. Repeated transfusions in pernicious anemia are associated with some danger, since after a number of such transfusions homologous blood may cause reactions of increasing severity. The symptoms which most commonly follow blood transfusion are, in the order of the frequency of their occurrence, malaise, slight fever, chilly sensations, actual chill, urticaria, pruritus, nausea, vomiting, lumbar pain, dyspnea, cyanosis, and hemoglobinuria. Symptoms of these types were present in seventeen per cent. of the 100 transfusions done by the authors, but most of the reactions were very slight and none was fatal.

Operation for Loose Semilunar Cartilage.—R. P. Rowlands (*Lancet*, June 9, 1917) describes an operation for the cure of loose internal semilunar cartilage which is both simple and productive of the most satisfactory results. Before undertaking the operation one should be very certain that the diagnosis is correct and should also select his cases with some care, as a fair proportion of the recent ones will recover without operation. In those in which an operation is required the knee should be put at rest for two or three days to lessen the effusion. Then the skin is prepared from the middle of the thigh to the middle of the leg by shaving, washing with ether, painting with iodine, and applying a sterile pad. With the patient anesthetized the leg is held up for a few minutes to empty it of blood and a flat rubber tourniquet is wrapped very tightly about the middle of the thigh. With the knee in semiflexion and properly and completely draped with sterile towels, an incision two and one half inches long is made vertically over the space between the femur and tibia and one inch internal to the patellar ligament. It should extend half an inch below the upper border of the tibia. Sterile gauze pads are clipped to the edges of the wound and the joint is opened. With the edges of the wound retracted by an assistant the front end of the cartilage is detached with a knife and drawn forward and inward with a Mayo-Ochsner forceps. The middle and posterior portions are gradually separated from the tibia and the capsule, increasing flexion of the knee, and making access to the posterior end easier. Nearly the entire cartilage is removed. The knee is then straightened and the capsule is sewed with a continuous suture of fine gut, the skin with one of linen. A sterile pad is applied, secured by a sterile gauze roll and covered with a thick layer of cotton, extending from the lower third of the thigh to the upper third of the knee. Over all a firm bandage is applied. A second layer of cotton wool is put on and this is covered with a bandage very firmly applied. Then the tourniquet is removed and the knee slightly flexed over a soft pillow. This operation avoids all hemorrhage into the joint, minimizes the manipulation of the parts, and avoids infection. Aftertreatment begins at once by daily gentle passive flexion and extension of the knee, removal of the outer bandage and cotton on the fourth day, and the inner and the skin stitches at the end of a week. The patient is then allowed to get about in a wheeled chair and is permitted to walk a little with the knee stiff at the end of ten days. Massage, manipulation, and gentle active and passive movements are continued and increased so that by the end of a month or six weeks the movements and functions of the joint are perfect.

X Ray Treatment of Goitre.—Russell Boggs (*Interstate Medical Journal*, April, 1917) believes that the Röntgen treatment offers a good prospect of cure without operation in a large percentage of cases of exophthalmic goitre. The principal treatment should be directed to the thyroid, but in many cases the thymus should also be rayed; this is major work and should not be attempted by any one unfamiliar with the technic and the physiology of the ductless glands. The first symptoms of improvement are a decrease in the pulse rate and an increase in weight; the reduction in the size of the thyroid is not always marked even after the disappearance of all symptoms, and the exophthalmos is the last to show improvement. Even if operation is found to be necessary later the mortality will be lessened by a preliminary x ray treatment, the aim of such treatment being to produce sufficient atrophy of the thyroid so that it will bring forth a normal amount of secretion and no more.

A New Treatment for Psoriasis.—Louis Bory (*Presse médicale*, June 7, 1917), in view of the favorable action of sulphur, used internally or externally, on psoriasis, the probable relationship of psoriasis to tuberculosis, in which sulphur likewise acts well, and the beneficial effect of eucalyptol, used externally, on psoriasis and other skin affections, was led to try a combined sulphur and eucalyptol treatment in psoriasis, using the following formula:

℞ Sulphuris præcipitati puri, ...0.2 gram;
Eucalyptolis, ...20 c.c.;
Olei sesami, ...80 c.c.

In preparing this solution the oil and sulphur are first heated until the latter has completely dissolved, the solution then cooled, and the eucalyptol finally added. Olive oil might be substituted for the oil of sesame, but the resulting solution is less stable and perfect. The preparation was injected in five c. c. doses deeply into the gluteal muscles. In the first patient, a man covered with psoriasic patches for many years, thick scales became detached on the third day after the first injection. Then the erythematous patches themselves became paler and finally disappeared, in the absence of any local treatment. In four other cases results almost equally brilliant were obtained. In the most rebellious a slight rose coloration remained at the site of the former patches after eight injections. Bory believes a similar oily solution of sulphur might well replace the colloid preparations of sulphur hitherto used in chronic rheumatic cases.

Autoserotherapy in Acute Infections.—Herbert H. Sinclair (*International Journal of Surgery*, April, 1917) prepares an autosensitized, autogenous vaccine by applying a blister to the patient's chest and drawing off the serum in a hypodermic syringe. This serum is injected into the patient. Sinclair has used it with success in cases of pneumonia, whooping cough, and puerperal sepsis. The higher the leucocytosis the better the result. When leucopenia is present, no benefit is to be expected. There is no local reaction at the site of injection, which is always the case when stock vaccines are used. In cases of pneumonia there is a general feeling of relief within an hour, the breathing becomes easier, and perspiration sets in. He has used this form of vaccine in over 200 cases.

Treatment of Goitre.—J. C. Moore (*Northwest Medicine*, June, 1917) says that it is known that drinking water carries the causative agent of goitre and that the first step in treatment should be to use nothing but boiled or distilled water. This is alone usually sufficient to cure the simple nontoxic goitres of adolescence. If this fails iodine should be administered cautiously for a period of not over a month and the skin over the tumor should be painted with the drug at the same time. In toxic goitres iodine should be used with extreme caution, if at all. In such cases absolute physical and mental rest, the use of boiled water, catharsis, meatless diet, and a dose of 0.3 gram of quinine hydrobromate and of 0.06 gram of ergotine every four hours should be prescribed. Injections of boiling water into the gland are of some value. Operation is usually needed for such cases after the toxic stage has been somewhat controlled. Hyperplastic, nontoxic goitres may resist the measures previously outlined and they should receive one or more injections of five per cent. phenol directly into the gland substance. About four to eight mils is sufficient for a single injection. This usually promptly reduces the gland to normal size and effects a permanent cure.

The Vaginal Plug.—E. Hastings Tweedy (*Lancet*, June 2, 1917) urges the proper use of the vaginal plug for the control of ante partum hemorrhage. The failures which its use has met in the hands of many others are due to the improper method of application. The plug should be made of many small pieces of cotton which should be inserted as follows: The left hand should be passed into the vagina with the palm facing the sacrum and the tips of the fingers behind the cervix. Pieces of cotton wool the size of the thumb knuckle, wrung out of lysol solution, should be inserted into the cervix with the right hand while the fingers of the left are squeezing the pledgets into a solid mass and making room for more. This process should be continued until the whole vagina is filled with a solid mass of the cotton. A T binder should then be applied and a firm abdominal binder put on and fastened tightly from above downward. Such a plug will at once arrest the hemorrhage, which it accomplishes by compressing the uterine vessels between its mass and the uterus. The plug has the disadvantages of not being easy to apply and of causing some pain and shock and often some superficial lacerations of the vaginal mucosa.

Wounds of the Buttocks in War.—George E. Davis (*Journal A. M. A.*, June 9, 1917) emphasizes the frequency and very serious nature of this type of wound. Owing to the fact that the soil is often contaminated with tetanus organisms, and more specially to the fact that the human stools often harbor this organism, the occurrence of tetanus as a complication of these wounds is very frequent. For its prevention each patient should receive an immediate prophylactic dose of antitoxin and should be given another dose when he reaches hospital. Gas bacillus infection is often very frequent and very fatal owing to the fact that amputation cannot be performed. It should be treated by the early free incision of all such wounds, the removal of foreign bodies, efforts to destroy the ordinary pyogenic organisms, and open drainage with dry, loose gauze packs. The local infiltration of the wound tissues with oxygen is also of considerable value in checking this infection. The diet of all cases with buttock wounds should be free of food that might be likely to carry tetanus organisms, such as the vegetables and fruits which are eaten raw. All patients should receive a preliminary thorough purgation to remove any such organisms which may have been present. Cases with severe lacerated wounds involving the rectum often do badly, but their prognosis can be greatly improved by the prompt performance of a colostomy.

Sterilization of Infected Wounds by Sunlight.—Leriche (*Presse médicale*, May 24, 1917) reports bacteriological observations, conducted with the assistance of Mendeleef, on the action of heliotherapy of infected wounds. In the most favorable cases, those of recent wounds from which dead tissues had been excised and which had been opened out flat, a sterile condition was obtained in forty-eight hours, the first period of insolation lasted half an hour and the second two and a half hours. Exposed to sunlight regularly such a wound remained sterile for six days, at the end of which secondary suture was performed with successful results. In less favorable cases, e. g., deep wounds with irregular recesses and fractures, the sterile condition was obtained in four to six days, while in less recent and badly infected or imperfectly opened up wounds, a still longer period was required. Microscopical study showed that with the fluid oozing copiously from wounds exposed to sunlight bacteria are mechanically washed outward from the tissues, occurring at first in free suspension, but later filling numerous living leucocytes. Smears made before, during, and after exposures clearly revealed a phagocytosis which completes the effect of the mechanical disinfection. The pyocyaneus organism disappeared after two fifteen minute exposures, the vibrio of sepsis almost entirely after a half hour exposure, and the proteus after exposure on six successive days. Where the sunlight is rather subdued the wounds can be safely exposed for a long time; where bright and hot, small progressive doses are indicated, not exceeding fifteen minutes on the first few days. Where a wound cannot be properly opened up, as in the upper part of the thigh or the pelvis, heliotherapy should not be employed, but Carrel's method of drainage should be instituted.

Clinical Problems Relating to the Faucial Tonsils in Adults.—George E. Shambaugh (*Annals of Otology, Rhinology, and Laryngology,* March, 1917) states that it is now generally recognized that such conditions as neuritis, acute and chronic rheumatism, Bright's disease, and cardiovascular degeneration owe their origin for the most part to foci of infection on such as are frequently found in the faucial tonsils. Enlarged tonsils from which masses of epithelial debris can be expressed from the crypts should be regarded with suspicion in the presence of systemic infection. There are cases, however, in which neither from the history of acute attacks of tonsillitis nor from local findings in the tonsils is there any positive evidence of tonsil infection, and still they may be the seat of an infection capable of producing the most serious systemic trouble.

Treatment of Paresis by Injections of Salvarsan into the Lateral Ventricle.—Graeme M. Hammond, Norman Sharpe, and J. Wheeler Smith, Jr. (*Journal A. M. A.,* July 7, 1917) report results, of their experiences with this method of treatment in thirteen cases, which have been under observation for sufficient time to warrant discussion. Two of the patients died of their paresis, one was unimproved by the only injection which he received, and one other showed no improvement. The remaining nine showed decided improvement, both serologically and clinically. Five of these have returned to work and are now selfsupporting, all having been unable to work for periods of three to eighteen months before treatment. Two of these appear entirely normal and have been working for over a year, but it is still too early to state that they have been cured. A period of three to five years would seem necessary before such a treatment would be warranted. In none of the patients did the treatment cause any serious reactions. The serological findings, the technic of the operation, and the preparation of the salvarsan for injection are given in detail in the paper.

Postoperative Paralytic Ileus.—Ora S. Fowler (*Colorado Medicine,* May, 1917) says that medical treatment should be instituted early along the following lines: Enemas, hot abdominal stupes, physostigmine sulphate in doses of half to one milligram, one mil of pituitary extract hourly for three to four hours, or one mil of digalen, two to four milligrams of strychnine, and caffeine sodium in doses of thirteen centigrams should be given, each every three hours alternately. The stomach should be washed every hour or so and large amounts of fluid should be given by rectum and by hypodermoclysis up to from five to eight litres every twenty-four hours. Cathartics should not be used, as they may not only be of no value, but may be actually dangerous. If relief is not secured within twelve to eighteen hours by such treatment, or if the patient grows progressively worse, resort should be had to surgical measures at once. Of these the simplest and best is incision in the left side of the anterior abdomen with the bringing to the surface of a loop of the upper jejunum and its suture to the peritoneum. It should then be opened and tubes inserted both upward and downward to remove the gas and fluid contents and also for saline intestinal irrigations.

Glaucoma.—Hans Barkan (*California State Journal of Medicine,* July, 1917) states that while he likes the Elliot operation he considers it limited to certain cases. In the one eye patients no fistulating operation should be done unless all other methods fail. In acute inflammatory attacks, such reduction should be effected as is possible by myotics, followed by iridectomy. If this is technically difficult it is to be preceded by posterior sclerotomy. In chronic subacute glaucoma, iridectomy or the Elliot operation should be done; the former should the eye be in relatively good condition, the latter if it is not. In glaucoma simplex myotics are preferred while *in statu quo;* the Elliot operation if they fail.

Treatment of Cranial Denudation.—J. Labouré (*Presse médicale,* June 14, 1917) writes concerning the treatment of extensive scalp wounds in which a portion of the cranial surface is entirely exposed. There is no tendency to granulation over the bone in such wounds, and epidermal grafts would not take hold. Labouré finds that to excite granulation over the cranium, all that is necessary is to drill a few small holes in the external table of the skull in order to set free the connective tissue of the diploe. From ten to fifty such holes may be made about one centimetre apart. Under a normal saline solution compress renewed every two or three days, reddish islets of granulation tissue will appear through the holes and extend over the bony surface. In a few weeks the bone will be completely covered, and over the granulation tissue epidermal grafts can be applied with confident anticipation of a successful result.

Digitalis in Auricular Fibrillation.—Arthur R. Cushny (*Lancet,* June 9, 1917) points out the now well known fact that digitalis is most potent in influencing the rate and rhythm of the heart in certain cases of auricular fibrillation and seeks to explain this specific action of the drug. He recalls the fact that the drug is capable of slowing the heart by stimulation of the vagus centre, but that this does not account for its slowing action in cases of auricular fibrillation, in which he has shown it to act directly upon the auriculoventricular bundle. He has observed that in the excised heart of animals, perfused with Ringer's solution for some time and thrown into auricular fibrillation by electrical stimulation, digitalis similarly slows the ventricular rate through a direct action on the bundle of His. He also finds that digitalis is capable of acting in the same manner in hearts similarly treated but not caused to fibrillate. These animal hearts are debilitated and starved through want of adequate oxygen and nutriment, and it is only on such hearts that digitalis exerts this type of local action. In the condition of auricular fibrillation in man it is reasonable to believe that the heart is also more or less debilitated through exhaustion and inadequate supply of oxygen and nutriment, and it seems plausible to believe that this is the cause of the special type of digitalis action observed. In further agreement with the animal experiments he cites two cases in man without auricular fibrillation in which the heart responded with block through action of digitalis directly on the bundle of His.

Miscellany from Home and Foreign Journals

The Leucocytes in Cases of Irritable Heart.—Grace Briscoe (*Lancet,* June 2, 1917) studied the leucocytes in a large number of cases of irritable heart and in a small group of normal controls and found that while at rest the irritable heart cases showed a slight rise or none at all above the average normal. While these patients were up and about, however, there was a considerable degree of leucocytosis. In many cases, specially those of long standing, there was also a relative and absolute lymphocytosis. The average increase in total white cells after exercise was about forty per cent. in the cases of irritable heart and about fifteen per cent. in the normal controls. The rise in polynuclears after exercise was twenty-four per cent., that in lymphocytes forty-eight per cent. in the irritable heart cases as compared with rises of thirteen and twenty-five per cent., respectively, in the normal controls. It was found that the intensity of the blood changes observed ran somewhat parallel to the severity of the clinical condition present. The occurrence of these blood changes in cases of this type, while not constant, was found to be sufficiently frequent to be of considerable diagnostic value as it represented at least one symptom which could not be simulated. The absence of either of the changes was not found to be certain evidence upon which to exclude irritable heart.

Functional Cardiopulmonary Disturbances Following Wounds of the Chest.—E. Sergent (*Bulletin de l'Académie de médecine,* June 12, 1917) points out that many subjects wounded in the chest later complain of discomfort in breathing, palpitation, and thoracic pain in the absence of all injury to the heart, pericadium, lungs, pleuræ, and mediastinum, as shown by complete physical and x ray examinations. In ten cases he was led to ascribe these disturbances to injury of the cardiac plexus and phrenic by the missile, whether the latter has remained in the tissues or passed out beyond. Thus, in a man struck four centimetres above the left nipple by a rifle bullet, which passed through to the muscles of the back, complaint of the discomforts referred to was made to Sergent about three months after the injury, and the writer noted a typical left phrenic neuralgia, with immobility of the left side of the diaphragm, pulse acceleration on the least movement, and pupillary inequality. X ray examination proved negative. Soon after there supervened thyroid enlargement, persistent tachycardia, tremor, and exophthalmos, all of which gradually subsided under high frequency currents and hematoethyroidin. The nine other cases were likewise characterized by instability of the pulse and respiration, with constant dyspnea, increased by the slightest exertion, together with phrenic neuralgia in three instances, pupillary inequality in four, and symptoms of Graves's disease in five. Nearly all these patients had received an injury of the cardiac plexus, as shown by the x ray or estimation of the course of the missile by comparison of the wounds of entrance and exit.

A Blood Change in Gas Poisoning.—James Miller (*Lancet,* May 26, 1917) studied the blood in forty-four cases of gas poisoning and found that there was an increase, both actual and relative, in the number of lymphocytes in those cases in which the symptoms persisted. In severe cases the increase was marked and of diagnostic value. In the absence of complicating disease which might cause a similar blood change, counts in which the percentage of lymphocytes approached that of the polynuclears indicated that the patient was still suffering from the effects of the gas. Slight increases in lymphocytes were found so frequently as to be of no significance. In some cases the occurrence of a diminution in the number of polynuclears was noted and it accentuated the increase in the relative lymphocyte count. The blood change was found to appear early, usually within a month, and persist for many months, along with persisting symptoms. The phenomenon occurred without reference to the kind of gas which caused the poisoning and bore no relation to the type of symptoms present. Its cause was not established, but it seemed probably related in part to the chronic inflammation in the respiratory tract and of the gastric mucosa.

Root Absorption in the Deciduous Teeth.—Luciani (*Bulletin de l'Académie de médecine,* May 15, 1917) points out that the prevailing view that absorption of the roots of the milk teeth takes place because of the pressure exerted on them by the subjacent growing permanent teeth does not sufficiently account for the phenomena witnessed. Sometimes, indeed, removal of milk teeth, the roots of which have been only in small part absorbed, becomes necessary to permit eruption of the corresponding permanent teeth. Examining over two hundred milk teeth he had extracted, Luciani noticed that whenever the roots of a tooth had been completely absorbed the pulp of that tooth was in good condition; on the contrary, whenever the roots had remained almost or quite unabsorbed, the pulp had become sphacelated or disappeared. Apparently, a healthy pulp is a necessary factor in the proper absorption of the roots of the milk teeth. The pulp brings about progressive absorption of the roots in order to prevent such compression of its own supplying vessels between these roots and the advancing permanent tooth as would lead to death of death of the pulp itself. The writer protests against the impression prevailing among the laity, and even in the medical profession, that the milk teeth need not be given much attention because they are soon to be replaced by others. The special susceptibility of the milk teeth to necrosis of the pulp results in the presence, in over fifty per cent. of children between the ages of three and ten, of foci of dental or paradental infection. If the practitioner systematically had the mouths of children under his care examined by qualified dental specialists, cases of cryptogenetic osteomyelitis, so called growing fever, gland infection, etc., could doubtless be more thoroughly studied.

Cerebral Diplegia with Abnormal Flexibility of Ankle Joints.—F. Parkes Weber (*British Journal of Children's Diseases,* March, 1917) reports a case of a boy, five and one half years old, with abnormal laxity of the ankle joints permitting extreme dorsal flexion. There is no real muscular atony. The knee jerks are at times greatly exaggerated. At times the plantar reflexes are of the extensor type. There is an "overflow" of the abdominal reflex. The response is not limited to contraction in the muscles of the abdominal wall, but it involves considerable movement of the thighs and trunk. The condition probably dates from birth. The birth was a difficult breech presentation and some widespread damage to the cerebrum and possibly the cerebellum took place.

Bilateral Pneumococcal Parotitis.—John V. Barrow (*Journal A. M. A.,* June 9, 1917) reports a case of this rare condition, occurring as a complication of a severe bronchitis. The complication began abruptly with a chill and symptoms of collapse and pain in the left parotid region. Two days later this gland was greatly swollen and the duct orifice was red and pouting and excreted greenish yellow mucopus after careful manipulation of the gland. Three days later the opposite gland became similarly involved. From three to ten mils of the purulent fluid was expressed from the glands two or three times daily for about two weeks and was found to contain pneumococci in pure culture. On the seventh day of the glandular involvement the fever fell by crisis and rose subsequently only when the duct orifices became plugged. Convalescence was slow, lasting for months, but recovery was ultimately good. The literature contains reports of only thirty cases of pneumococcal parotitis, eight of which were bilateral. An analysis shows that the earlier in the disease the parotitis develops the more serious it is through increase in the septicemic manifestations, not of the lung condition.

Influence of Maternal Oral Sepsis on the Fetus and Marasmic Children.—E. Spencer Pierrepont (*Lancet,* June 2, 1917) suggests, as the result of years of observation, that the presence of oral sepsis in the mother exerts a considerable influence upon the welfare of the child and even leads in a number of cases to miscarriage and prematurity. He contends that the oral sepsis furnishes toxins which are absorbed into the maternal bloodstream and materially affect the vitality of the fetus *in utero.* This gives the child a material handicap at birth and often seems to underlie the subsequent development of marasmus. It also influences the condition of the mammary glands and is often the cause of deficiency in the quality or quantity of the milk. Finally the added strain which the absorption of these toxins throws upon the maternal excretory apparatus is often enough to turn the tide against the woman in the toxemias of pregnancy and to precipitate eclampsia and other complications. The validity of these suggestions is shown by the instances of the birth of healthy children by mothers who had previously had weak and marasmic ones or miscarriages or premature births, normal births having resulted after the oral condition had been cured.

A Case of Cyclic Vomiting with Acetonemia.—F. Parkes Weber (*British Journal of Children's Diseases,* March, 1917) cites the case of a girl, aged seven years, who is said to have vomited at birth, and has had recurring attacks of vomiting since, lasting about three or four days, with intervals averaging five weeks between the attacks. The other members of the family—three sisters and four brothers—are not affected. The urine reduced Fehling's solution very slightly, but gave a positive reaction for acetone and diacetic acid. She was treated with sodium bicarbonate, which soon rendered the urine alkaline, but the reaction for diacetic acid was not negative until the fifth day. A second attack occurred about three weeks after she had been discharged from the hospital. This attack was preceded by a feeling of lassitude and sleepiness lasting one day. Six hours after the vomiting commenced the reactions for acetone and diacetic acid were negative. About eight hours after the first uranalysis both reactions were positive. The reactions were not negative until the fourth day. The affection seems to occur more often in girls than in boys, and usually between the ages of two and twelve. It may occur in more than one child of the same parents. The occurrence of migraine in other members of the family has been noted. It is possible that the mental symptoms—drowsiness and lassitude—mentioned in this case may after puberty become transformed into migrainous attacks. Pyrexia in these cases is not common, the temperature rarely exceeding 100° F.

Heart Failure during Tonsillectomy.—W. M. Mollison (*British Journal of Children's Diseases,* March, 1917) reports the very interesting case of a boy, six years of age, in whom shock developed during an operation for the removal of tonsils and adenoids under chloroform ether anesthesia. The body became flaccid, respiration had ceased, the pupil was dilated, and the corneal reflex absent. Lowering of the head, pulling the tongue forward, artificial respiration according to the method of Sylvester, and the administration of stimulants, including pituitrin injected directly into the heart, did not improve his condition. The stethoscope revealed absence of heart sounds. An incision four inches long was made in the abdomen, extending from the ensiform to just above the umbilicus, and through this incision the heart was massaged. Almost one c. c. of pituitrin was injected directly into the heart through this incision. It is estimated that the period of cessation of heart beats was from thirteen to twenty-four minutes. The boy was given saline infusions and the foot of the bed was raised. About an hour later he became restless and the intestines escaped from the wound. He was operated on again under light ether anesthesia and the intestines replaced. He was unconscious for seven days, had rigidity of the limbs for ten days, incontinence of urine for fifteen days, of feces for twelve days, and at one time became violent and tore the bedclothes. These symptoms were probably due to severe cerebral irritation, the brain being damaged during the cessation of the circulation. He eventually made a complete recovery. Thirteen other successful cases of a similar kind have been reported.

Infective Theory of Acute Leucemia.—Gordon Ward (*British Journal of Children's Diseases,* March, 1917), from a study of a large number of cases concludes: 1, that there is a congenital form of leucemia which occurs in children whose parents are not leucemic; 2, that leucemic parents have never been known to transmit the disease to the newborn child; 3, that instances in which actual infection of one person by another might seem to have occurred are very few, although not necessarily devoid of significance; 4, that in having a marked preference for a particular sex and age leucemia differs from the infective class of diseases and resembles the metabolic diseases and cancer.

Wassermann Reaction in the Insane.—Egbert W. Fell (*Journal of Nervous and Mental Diseases,* June, 1917) finds the following practical working rules in the differentiation of cases in insane hospital work: 1. A positive serum Wassermann usually indicates paresis, especially in males. 2. A negative serum does not exclude paresis. 3. A positive fluid Wassermann practically always indicates paresis. 4. A negative fluid practically excludes paresis. 5. A positive fluid Wassermann is by far the sign most constantly present in paresis and constantly absent in other psychoses, which makes the laboratory findings more reliable criteria for diagnosis in doubtful organic cases than uncertain clinical signs.

Korsakow's Psychosis in Association with Malaria.—Hildred Carlill (*Lancet,* April 28, 1917) reports a case with the typical mental symptoms of Korsakow's syndrome and bilateral absence of the knee jerks, occurring in a man about forty-five years old in whom malaria was the only demonstrable cause. The patient did not have syphilis, as proved by negative serum and spinal fluid Wassermann reactions, and he was known not to have been alcoholic. In addition to malaria he was the victim of a mild grade of gout and had previously had an attack suggestive of beri-beri. There are records in the literature of the probable association of Korsakow's syndrome with malaria, as well as with other fevers, but the association seems to be a rare one.

Relation of Low Blood Pressure to Death in Traumatic Shock.—F. H. Pike and Helen C. Coombs (*Journal A. M. A.,* June 23, 1917) bring out several facts, drawn from experiments on animals, which throw light on the cause of death from shock. When brain and medulla have been deprived of blood for ten to twenty minutes changes occur in the staining reactions of their cells. These damaged cells are more susceptible to strychnine than normal ones, and paralysis and death may result from its administration during the resuscitation period. Recovery of such damaged cells will take place if enough oxygenated blood is supplied. Reduction of the blood pressure during resuscitation will result fatally and increasing it will hasten recovery. It would seem that one of the most important therapeutic measures in the treatment of traumatic shock would be the elevation of the systemic blood pressure. It remains for medicine to find suitable means for accomplishing this in man in an effective and satisfactory manner.

Etiology and Diagnosis of Acute Endocarditis in Children.—G. H. Withers (*Illinois Medical Journal,* April, 1917) considers that diseases of the heart should not be regarded from the old standpoint of stenosis or regurgitation of a certain valve, but that the heart should be treated as an organ invaded in the process of a bacteriemia. From this point of view a careful etiological qualification of the infective agent should be studied. The symptom complex arousing suspicion of acute endocarditis consists of the presence of an apical systolic murmur not modified by pressure with the stethoscope or by respiratory pauses, an irregular pulse, and a misplaced apex beat with or without an increase in cardiac dullness following any infectious process. Other symptoms may be embolism producing hemiplegia, and also punctate hemorrhages into the skin and mucous membranes while a blood culture and leucocyte count may aid in diagnosis.

Value and Significance of Blood Pressure Formulas.—Francis Ashley Faught (*Medical Record,* May 12, 1917) insists that blood pressure observations must be accurately made and recorded, and averages based upon a number of readings are of much more value than isolated tests. The systolic pressure alone is of far less value than when considered in relation to the diastolic pressure, the pulse pressure, and pulse rate. Formulas should be used with great caution as they are often misleading, while marked departure from the normal ratio of systolic, diastolic, and pulse pressure indicates an abnormal state of the circulation. The maintenance of the 3:2:1 ratio usually means an efficient circulation even with a markedly elevated systolic pressure. Diastolic pressure is the best indication of peripheral resistance; small pulse pressure in high pressure cases is suggestive of myocardial involvement, and pulse pressure is of value in determining circulatory efficiency and cardiac output.

Delicate Method for the Detection of Mercury.—John A. Elliott (*Journal A. M. A.,* June 9, 1917) points out the several shortcomings of the methods so far devised, including their relative lack of delicacy and the danger of the loss of some of the mercury in the course of making the tests. He describes a new and quite simple test which is delicate to 0.015 mgm. in 500 mils of water. It consists in acidulating the fluid to be tested with concentrated hydrochloric acid, adding copper dust, shaking thoroughly for several minutes, allowing the copper to settle and decanting most of the supernatant fluid. The copper dust is then collected on a filter, washed with alcohol and ether, and dried. It is then placed in a small glass bulb with a long neck, one or two small pieces of magnesite added, and a plug of washed asbestos inserted in the neck, which is then slightly constricted and in which there is then inserted a small roll of dentists' gold leaf. The copper is then gradually brought to a red heat, which drives off all of the mercury to be collected as a distinctly visible amalgam on the gold leaf. For fluids containing large amounts of protein the mercury must be dissociated from its combination with the aid of heat and concentrated sulphuric acid and condensed in distilled water, which is then subjected to the test as described.

Proceedings of Local and National Societies

AMERICAN GYNECOLOGICAL SOCIETY.

Forty-second Annual Meeting, Held at Pittsburgh, Pa., May 31 and June 1, 1917.

The President, Dr. Frank Farrow Simpson, Pittsburgh, Pa., in the Chair.

(Concluded from page 240.)

Relation of the Parathyroid System to the Female Genital Apparatus.—Dr. Eugene H. Pool, of New York, summarized his observations as follows: No direct relationship had been established between the parathyroids and the female sex organs, and no morphological changes in the parathyroids had been noted during pregnancy, yet apparently there was a connection between the parathyroids and the sex processes in the female. Tetany, the clinical evidence of insufficient parathyroid function, was somewhat prone to occur in menstruating, pregnant, and puerperal women, as well as in patients suffering from gynecological diseases or who had undergone gynecological operations. The cause of maternal tetany was now referred to parathyroid insufficiency. The function of the parathyroids was apparently closely connected with calcium. There was reason to believe that maternal tetany and lactation tetany were associated with calcium deficiency. Latent tetany, or a subtetanic condition, was much more common in pregnant and puerperal women than was usually assumed. Tetany in newborn infants, the offspring of tetanic mothers, was usually fatal within a short time after birth. In the treatment of maternal tetany, the administration of calcium in large doses was followed by beneficial results in the great majority of the cases.

Thyroid Gland in Relation to Gynecology and Obstetrics.—Dr. David Marine, of Cleveland, said in summarizing that it might be stated that there was evidence in man of a thyroid sex gland interrelation recognizable in the female in association with the development of secondary sexual characters, with the menstruation, and with pregnancy, and also in the male at puberty, but to a very slight degree. The meager evidence available would tend to indicate that the interstitial cells of the ovary and perhaps, also, the adrenal cortex played a major rôle in this relation in the female, as certainly the cells of Leydig did in the male. The thyroid enlargement was of the nature of a work hypertrophy to stimulate metabolism identical in appearance and so far as they knew, different only in degree from that seen in simple goitre. Both of these reactions could be controlled and prevented either indirectly by giving iodine or directly by giving the iodine containing hormone in physiological doses.

Endocrine Function of the Pancreas and Its Relation to the Sex Life of Women.—Dr. A. J. Carlson, of Chicago, drew the following conclusions: All evidence supported the view that some substance or hormone secreted by the islands of Langerhans into the blood was necessary for utilization of sugar by the tissues. This function was specific for the pancreas. Other endocrine organs might influence sugar metabolism in a superficial way by altering the sugar mobilization—adrenals, thyroid—or by increasing or decreasing the rate of oxidation in the body in general. The rest of the endocrine glands could not maintain the power of the tissues to oxidize sugar in the absence of the pancreas, and the hypactivity or hyperactivity of other endocrine glands did not produce actual diabetes in the presence of a normal pancreas. While the failure of the tissues to use sugar in the absence of the pancreas was the central and definitely established fact, there were probably other primary defects involved in the development of acidosis, lipemia, increased metabolism, lowered resistance to infections, etc. All the evidence pointed to the view that true diabetes mellitus in man was primarily the result of pancreatic deficiency islets. There was at present no organotherapy of diabetes, experimental or clinical. There was at present no evidence of any specific relations of the endocrine functions of the pancreas to the gonads, male or female, or to menstruation, pregnancy, and lactation. Absolute diabetes, induced after conception, led to death of the fetus. Absolute diabetes probably rendered conception impossible. Partial diabetes under careful dietary control permitted ot normal sex life of women—menstruation, normal pregnancy, normal child, lactation—and pregnancy under such conditions did not aggravate the diabetes, but in the absence of such dietary control the condition of pregnancy aggravated the diabetes in the mother, and uncontrolled diabetes in the mother was extremely injurious to the fetus. There was some evidence that in late stages of pregnancy the fetal pancreas might function for the mother.

Influence of Adrenal Bodies upon the Genital System.—Dr. Swale Vincent, of Winnipeg, Manitoba, Canada, summarized his remarks as follows: What was called the adrenal body represented the anatomical association of two elements, each of which was derived from a separate and independent system. The adrenal proper, or cortex, was a part of the cortical or interrenal system. The medulla was simply an accumulation of chromophil cells of the same nature histologically, chemically, and pharmacodynamically, as similar masses of cells in other parts of the body. There was no clear evidence that these two systems were functionally related. The adrenal medulla, as well as the chromophil tissue generally, was developed from the sympathetic nervous system. Its duty seemed to be to facilitate the functions of this system in certain physiological emergencies. The adrenal cortex, as well as the accessory cortical adrenals, was developed from the germ epithelium, and the evidence was now strongly in favor of the view that it had certain important functions in connection with the development and growth of the sex organs. There was considerable clinical evidence that tumors of the adrenal cortex were frequently associated with sex abnormalities. The clinical evidence also favored the view that when cortical tumors occurred in the female, an accentuation of male secondary sexual, characteristics developed and simultaneously a hypoplastic condition of the internal generative organs supervened. The additional evidence as to a connection between adrenal cortex and the sexual organs was furnished by the enlargement of the cortex during breeding and pregnancy. Feeding young animals with adrenal gland substance seemed to stimulate the growth of the testes. It was possible that a final solution of the problem would only be reached when the more general problem of the relationships between the ductless glands should have been solved.

Relation of the Ovary to the Uterus and the Mammary Gland.—Dr. Leo Loeb, of St. Louis, said that the ovary was a complex gland of which the most important constituents were follicles in various stages of growth and atresia, and corpora lutea. In addition we found in some species interstitial gland and some embryonic structures developing parthenogenetically from eggs. Cyclical changes occurred both in the ovary and secondarily in the uterus and mammary glands. The primary cyclical changes in the ovary were in sequence: follicle ripening, ovulation, and corpus luteum formation. In some species ovulation was accompanied by degeneration of all but the smallest follicles. An elaborate selfregulating mechanism controlled ovulation. Normally the corpus luteum inhibited ovulation. During pregnancy the life of the corpus luteum was prolonged. Experimentally ovulation could be influenced at will, accelerated by excising all corpora lutea, or retarded by producing artificial deciduomata. The retarding action of the corpus luteum was chemical, not mechanical. The corpus luteum had a sensitizing action upon the uterus. This action could be analyzed by experimental methods. If the uterus was incised or mechanically stimulated at the time during which the corpus luteum was elaborating this growth substance, maternal placenta, deciduoma, was formed. The mechanical stimuli, therefore, assumed in this respect the function which the ovum exerted under normal conditions. The form of growth response of each species was characteristic. The localization of sensitization varied in different species, being limited to the uterus in rabbits and guineapigs, but distributed more widely in the human female. No specificity existed in the sensitizing substance given off by the corpus luteum as far as different individuals of the same species were concerned. The life period of experimental deciduomata was short except in pregnancy, during which their persistence was prolonged. Corresponding to and dependent upon cyclical ovarian changes, uterine cyclical changes occurred. The cycle consisted of heat and growth, with associated glandular activity, regression, and .interval Heat probably was due to maturation of the follicles and dependent upon the absence of the corpora lutea; growth activity was the result of corpus luteum secretions; regression marked the cessation of corpus luteum secretion, which was followed in the interval by a condition of rest. Pregnancy causing a persistence of the corpus luteum was characterized by an accentuation, but not a prolongation, of the active phase and an inhibition of the uterine cyclical changed throughout gestation. While it was possible to produce experimentally during pregnancy a new ovarian cycle through excision of the corpora lutea, such a new ovarian cycle was not followed by a new uterine cycle. During pregnancy a mechanism was at work preventing the uterine mucosa from responding to the stimuli given off by various ovarian structures. It followed that the corpus luteum subserved at least two functions, inhibiting ovulation and producing a substance which caused growth in the uterus. The ovary showed other noncyclical functions. It had a trophic influence on the genitals and either primarily or secondarily determined the development of the secondary sexual characters. The ovary likewise controlled the developments of the mammary glands. It exerted a trophic influence on this organ and determined its normal cycle. During heat and subsequent to ovulation proliferated changes occurred; these ceased while the corpus luteum developed and functioned. The incidence of breast cancer in mice was greatly reduced by castration.

Transplantation and Retention of Ovarian Tissue after Hysterectomy.—Dr. William P. Graves, of Boston, drew the following conclusions: Specific surgical menopause symptoms consisted chiefly of vasomotor disturbances in the form of hot flushes. Theoretically, vasomotor changes of the artificial menopause were due to a break in the uteroovarian functional harmony, by which the physiological balance of the glands of internal secretion was upset with consequent dysfunctional activity. After extirpation of the uterus, vasomotor disturbance ensued with approximately equal frequency, whether the ovaries were retained *in situ*, totally ablated, or transplanted. Retention of ovarian tissue after hysterectomy was of little or no physiological value and might be productive of serious harm to the patient.

Preparation and Standardization of Ovarian and Placental Extracts.—Dr. William H. Morley, of Detroit, said that a more uniform method of preparing extracts must be instituted. Some method for the standardization of these extracts must be discovered, in order to facilitate the comparison of the results of the different laboratory workers and clinicians. Many results obtained in the laboratory or in the clinic were due to the faulty preparation of extracts. The isolation of the active principle of the ovary and the placenta would clear up many, if not all, of these mooted points.

Placenta Regarded as a Gland of Internal Secretion.—Dr. Robert T. Frank, of New York, said that the experimental work of the last decade proved that Halban was correct in ascribing to the placenta an action upon the uterus and breasts. Placental extracts, mainly the lipoid fraction, rapidly induced hyperplasia of the uterus and breast, gland tissue and nipples in castrated or in noncastrated animals. The chemical substance which induced these changes was thermostabile, very resistant to strong alkalies and acids, and completely soluble in ninety-five per cent. alcohol. The substance appeared identical in its physical, chemical, and biological properties with a similar substance obtained from the corpus luteum. The substance could exert its influence in the absence of the thyroids, adrenals, pancreas, or in the absence of thyroid and adrenals combined. In view of the apparent identity of corpus luteum and placental substance, the question arose whether the placenta acted merely as a storage reservoir for corpus luteum secretion during the latter half of pregnancy, or whether the placenta elaborated a hormone of its own.

Relation of the Sex Glands to Metabolism.—Dr. John R. Murlin and Dr. Harold C. Bailey, of New York, made the following points: Their results upheld the work of Loewy and Richter so far as the reduction in metabolism after castration was concerned. Removal of the ovaries of their dogs was followed by an increase in weight in both and a lowering of the metabolism in one from twelve to seventeen per cent., and in the other from six to fourteen per cent. They believed that indirect action had a bearing on this reduction, and did not believe that the indications pointed decisively to the loss of a specific stimulus from the ovary affecting the oxidative processes of the cells. To throw more light on this complex subject further experiments with animals were necessary.

Dr. George Gellhorn, of St. Louis, had observed great improvement in two cases of kraurosis vulvæ. In one there had been permanent relief after feeding the patient ovarian extract; another patient was temporarily improved after injecting the extract. Neither suggestion nor deception was permitted to enter. The sole criterion was a change from the dry, glistening, unyielding tissue to a soft, moist, and pinkish mucosa which bore no evidence of scratching. A temporary restoration of locomotion in two case of senile osteomalacia with the same therapy was hard to explain on the ground of suggestion.

Dr. John G. Clark, of Philadelphia, said, referring to Doctor Goetsch's paper, that he could not help but feel that the preservation of normal ovarian tissue was of very vital value in younger women. He made this statement based upon a long series of cases. He had observed, however, that postoperative convalescence was not satisfactory in the younger women in the ward whose diseased ovaries were preserved. In fibroid cases in young women in whom the ovaries were normal, he saw definitely better results than under the older methods where the ovaries were removed.

Dr. Francis Carter Wood, of New York, stated that he had tried the Beatson operation experimentally and had observed the influence of the removal of the ovaries on carcinoma of the breast. This operation produced a temporary effect, which was no doubt due to the removal of the secreting substance of the ovary or due to nutritional and vascular conditions. In primary tumors in mice he gave large injections of corpus luteum and x rayed a number of the mice; no effect was produced, so that this substance when injected into an animal caused hypertrophy of the breast itself and growth of the epithelium. The cancer tissue lost its power to respond to this peculiar substance.

Dr. C. C. Guthrie, of Pittsburgh, said in reference to Doctor Graves's work on the transplantation of ovaries, that his interest was aroused years ago when he conducted experiments in laboratory fashion on the transplantation of ovarian tissue. In the later nineties or shortly thereafter, Dr. Robert T. Morris, of New York, reported the birth of a child in a woman whose ovaries had been removed and replaced by other ovaries. So far as he knew, this was the first authentic account of the reproductive function after the transplantation of ovaries.

Dr. Herman J. Boldt, of New York, said, referring to the case reported by Doctor Morris, that Doctor Morris had been waiting for two weeks for him (Doctor Boldt) to supply a patient who had had normal ovarian tissues. He did a ventrosuspension on a woman and gave him half of one ovary. In the case of his patient Doctor Morris had removed both ovaries two years previously. The patient had not menstruated during that interval. After the transplantation of ovarian tissue, the patient began to menstruate again, subsequently became pregnant, and bore a child. The child was still living.

Ureteral Stricture.—Dr. Guy L. Hunner, of Baltimore, said that ureteral stricture was far more frequent than formerly suspected. Too much importance was given in the literature to congenital stricture. Most of the cases were due to systemic infection from a distant focus, such as the tonsils, teeth, or sinuses. The symptoms were local pain at the site of the inflammatory area, renal pain due to back pressure, referred pain in the bladder, rectum, hip, thigh, etc. There was elevation of temperature with and without infection of the urine. Gastrointestinal symptoms and mental symptoms were referred to. The diagnosis must be made from kidney lesions and from lesions of practically every abdominal organ, and also from sacroiliac and other hip joint lesions. The treatment consisted of dilatation from bladder approach or of retrograde dilatation through the extraperitoneal route.

Cystoscopic Study of the End Results of Various Forms of Cystocele Operations.—Dr. LeRoy Broun and Dr. Reginald M. Rawls, of New York, stated that for the purpose of their preliminary report twelve patients were found to have a practically normal plane of the base of the bladder. Three of these had a mild trigonitis. The character of cystocele operations done upon these patients varied greatly. The larger number consisted of freeing the bladder from the vaginal mucosa and uterus, coapting the prevesical fascia under the bladder, and approximating the vaginal mucosa after the excess had been removed. A few of the operations consisted of a simple separation of the vaginal mucosa on each side of the median incision, the removal of the excess, and an approximation of the edges under the bladder. One was after the old Emmet method, and in one the bladder was anchored on a higher plane to the broad ligaments and uterus, after its separation from the vaginal mucosa and uterus. In another series of cases the base of the bladder was found to be thrown into horizontal folds of varying degrees of prominence. There were eight patients in this group. In half of these there was no displacement of the mouths of the ureters; in the other four this displacement was very noticeable. The operations done in these cases were as follows: In three, after the separation of the bladder from the vaginal mucosa and the uterus, the prevesical fascia was united under the bladder, the excess of the mucosa was removed, and the edges coapted. In three others, after the separation of the bladder from the mucosa and the uterus, the base of the bladder was anchored by silk sutures higher up on the broad ligament and uterus, or to the shelf made by the united broad ligaments, if the uterus was removed. In one case an oval denudation was made on the anterior wall and the edges coapted. The cystoscopic examination of these eight patients showed the base of the bladder in each instance to be thrown into horizontal folds of varying depth and extent. In some the mouths of the ureters were found displaced; in others, in addition to the displacement, one or both could not be located. Trigonitis of a mild degree of the granular or membranous type was the usual accompaniment.

The uniform method of putting 300 c. c. of water in the bladder was followed in the entire cystoscopic study. When abnormalities were found, as in these and other cases, the bladder was distended to its full capacity to determine whether or not the folds would disappear. In no instance was this accomplished. The convolutions and sulci remained as first seen under the 300 c. c. distention, showing that they were of a permanent character. The kind of operation done did not seem to influence in a marked degree the character and extent of the permanent folds present. This review of the study of the end results on these patients, from the viewpoint of the anatomical condition in which the base of the bladder was left, was not flattering. That the abnormal conditions found were of a permanent character could not be questioned, since they did not disappear under full distention.

A Vaginal Subtotal Hysterectomy Technic Applicable to Cases with or without Procidentia Uteri or Cystocele.—Dr. Dougal Bissell, of New York, described a technic for subtotal vaginal hysterectomy. Subtotal vaginal hysterectomy was preferable to total hysterectomy when the vaginal route for hysterectomy was the route of choice. Subtotal vaginal hysterectomy was less difficult to perform than total vaginal hysterectomy. There was less liability to secondary hemorrhage, and should secondary hemorrhage occur it was under easy control. As the uterine arteries were not tied the uterine and ovarian circulations were not interfered with. There was minimum liability to sepsis as the posterior cul de sac was not opened. Peritoneal drainage was not resorted to. The union was primary. When subtotal vaginal hysterectomy was performed, procidentia of the uterus and cystocele could be corrected at the same time. For procidentia the uterosacral ligaments in additon were shortened. For cystocele the newly formed uterine body was interposed as in the Watkins operation, or the body could be returned to the peritoneal cavity and the posterior surface and part of the base of the bladder sutured to its anterior face. Reconstruction of the fascial shelf between the bladder and the anterior vaginal wall then became necessary.

Clinical Study of Blood Pressure, Pulse Pressure, Hemoglobin in Postoperative Shock, Postoperative Hemorrhage, and Postoperative Cardiac Dilatation.—Dr. John O. Polak, of Brooklyn, New York, stated that the deductions to be drawn from the studies were: There was a constant rise of from five to fifteen points in the hemoglobin readings following anesthesia with ether, when such anesthesia occupied more than thirty minutes. Consequently, allowance must be made for this rise in using hemoglobin estimations as a diagnostic sign in internal bleeding. The erythrocyte count was also increased, but its variation from the preoperative was so slight that it did not warrant any conclusions. In the majority of cases there was a moderate fall in both the systolic and diastolic blood pressure following ether anesthesia. The blood pressure returned to normal, that is, to preoperative reading, in from twelve to forty-eight hours. The inhalation of oxygen after the withdrawal of the ether vapor diminished this fall in blood pressure, but was only transient in its effect. In cases of shock, especially where much blood had been lost during the operation, the fall in blood pressure was greater than after long operation without blood loss, dropping from ten to fifteen millimetres. The pulse pressure was a better index of hemorrhage or cardiac failure than the systolic pressure. There was a constant rise in the leucocyte count in hemorrhage, while in shock the leucocytes fell.

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Book Reviews

[*We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.*]

A Compend of Human Physiology. Especially Adapted for the Use of Medical Students. By Albert O. P. Brubaker, A. M., M. D., Professor of Physiology and Medical Jurisprudence in the Jefferson Medical College; Formerly Professor of Physiology in the Pennsylvania College of Dental Surgery; Formerly Lecturer on Anatomy and Physiology in the Drexel Institute of Art, Science, and Industry, etc. Fourteenth Edition, with Twenty-six Illustrations. Philadelphia: P. Blakiston's Son & Co., 1917. Pp. viii-262. (Price $1.25.)

Quiz compendii are to medical literature what predigested food tablets are to the gastronomic art. The fact that this one has reached its fourteenth edition renders comment superfluous. It is a handy, concise volume, and a complete mastery of its contents would undoubtedly suffice for any State board; whether or not it would be the ideal sort of knowledge of physiology for a practising physician is another story.

Transactions of the American Urological Association. Fifteenth Annual Meeting at St. Louis, Missouri, April 17, 18, and 19, 1916. Publication Committee: Richard Frothingham O'Neil, George Gilbert Smith, Edward L. Young, Jr. Brookline, Mass. The Riverdale Press, 1917. viii-295.

This volume of about 300 pages contains the papers presented by the various members of the society at the fifteenth annual meeting which was held at St. Louis April 17-19, 1916. In addition to numerous photographs, including x ray pictures, a complete report of the discussion is given. Lists of the members, arranged alphabetically and geographically, are added. The volume represents the newest work in this particular subject and is a valuable addition to the library of those specially interested in this branch of medicine.

After Office Hours

A page full of pictures of gas masks of war and peace in *Leslie's* for July 5th suggests to us the idea of a mask for the anesthetist to wear this hot weather. Who has an idea for it?

* * *

The regeneration of a bum, an alcoholic who has sunk to the gutter level, is told in a story by Clarence Buddington Kelland, beginning in the *Saturday Evening Post* for August 4th. It is called The Source.

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The Midsummer Fiction Number of *Harper's* comes out in a delightfully cool cover. It is full of good things; among them we mention a story which is an intricate psychological study, The Hand of Jim Fane, by Katharine Fullerton Gerould.

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Ye Rounde Table is a little literary and dramatic magazine which is bravely struggling through its first volume. It bears the caption, "Uniquely setting forth matters literary and dramatic for the delectation of ye lover of good things." The editor is H. Warburton-Joy, whether Miss or Mrs. we know not.

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Speaking of a sense of humor, we are sorry to see that Stephen Leacock is trying to write too much. Leacock, who is a professor in a Canadian college, sprang into fame by a series of nonsense sketches some years ago. Sunshine Sketches, Behind the Beyond, and others were really funny. But with fame came such a demand for his work that he is overproducing. His contribution to the August number of *Hearst's,* The Sorrows of a Summer Guest, is only mildly funny.

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Since time immemorial the graduation address has been the subject of wit. The Problems of Life, Pleasure and Duty, and other large themes have been the favorites generation after generation. At last we read in the *Outlook* for July 25th of a Minnesota high school boy who reached the hearts of his audience by a talk on The Farmer and His Wheat Market, illustrating by means of an actual sack of wheat how much the wheat shrinks in passing from the farmer to the ultimate consumer.

* * *

The *Star Bulletin,* published in Sing Sing Prison, gives in its August number a sketch of the work done by Dr. Bernard Glueck and his assistants in the psychiatric clinic. Doctor Glueck has only been at this work a year, but he has already attracted countrywide attention by his work. An interesting feature of this same number is an excellent poem, called The Captain of the Pit, by a former prisoner. It is a tale of a sunken ship, the speculation of the monsters of the deep about it, the appearance of the submarine which sunk it, and their crowning of the submarine as the "captain of the pit."

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Official News

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending August 1, 1917:

Bahrenburg, L. P. H., Surgeon. Directed to proceed to Little Rock, Ark., on special temporary duty.

Billings, W. C., Surgeon. Granted six weeks' leave of absence on account of sickness from June 26, 1917.

Carter, H. R., Assistant Surgeon General. Directed to proceed to Camp Meade, Md., on special temporary duty.

Clark, Taliaferro, Surgeon. Granted two weeks' additional leave of absence on account of sickness from July 17, 1917; granted two weeks' leave of absence from July 31, 1917.

Curley, C. P., Acting Assistant Surgeon. Directed to proceed to Providence, R. I., for instruction in examination of passengers and crews on arriving vessels.

Currie, D. H., Surgeon. Relieved from duty at Leprosy Investigation Station, and directed to proceed to Boston, Mass., and assume charge of the quarantine station.

Galloway, T. C., Jr., Assistant Surgeon. Directed to proceed to Columbia, S. C., on special temporary duty.

Grimm, R. M., Passed Assistant Surgeon. Relieved at Little Rock, Ark., and directed to proceed to Atlanta, Ga., on special temporary duty.

Hayne, T. B., Scientific Assistant. Directed to proceed to Camp Meade, Md., on special temporary duty.

Herring, R. H., Passed Assistant Surgeon. Granted seven days' additional leave of absence from July 30, 1917.

Lee, F. S., Consulting Physiologist. Directed to proceed when necessary to factories in Northern and Middle Western States for studies of industrial fatigue.

Phelps, E. B., Professor. Directed to proceed to Chillicothe, Ohio, on special temporary duty.

Pincus, Sol, Assistant Sanitary Engineer. Relieved in studies of coastal waters and assigned to duties in studies and demonstrations of malaria.

Ridlon, J. R., Passed Assistant Surgeon. Directed to proceed to Little Rock, Ark., on special temporary duty.

Safford, M. V., Passed Assistant Surgeon. Directed to proceed to Columbia, S. C., on special temporary duty.

Smith, J. H., Passed Assistant Surgeon. Directed to proceed to Patterson, La., for observation of water supply used by common carriers in interstate traffic.

Sprague, E. K., Surgeon. Directed to proceed to Little Rock, Ark., on special temporary duty.

White, H. F., Passed Assistant Surgeon. Directed to proceed to Little Rock, Ark., on special temporary duty.

White, M. J., Surgeon. Relieved at Marine Hospital, St. Louis, Mo., effective July 10, 1917.

Williams, C. L., Passed Assistant Surgeon. Directed to proceed to San Diego, Cal., on special temporary duty.

Wilson, J. G., Assistant Surgeon. Directed to proceed to Little Rock, Ark., on special temporory duty.

Yarbrough, H. C., Assistant Surgeon. Directed to proceed to Little Rock, Ark., on special temporary duty.

Appointments.

Dr. Anthony A. S. Giordano, Dr. Mark Victor Ziegler, and Dr. James Edge Faris appointed and commissioned assistant surgeons from date of oath.

Promotions.

Assistant Surgeons Francis A. Carmelia, Liston Paine, Lionel E. Hooper, M. V. Safford, and Ernest W. Scott promoted and commissioned as passed assistant surgeons.

Casualty.

Acting Assistant Surgeon T. Dyson Walker, on duty at St. John, N. B., died at the Massachusetts General Hospital, Boston, Mass., July 22, 1917.

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Births, Marriages, and Deaths

Died.

Chappell.—In Jacksonville, Fla., on Friday, July 27th, Dr. Thomas A. Chappell, aged seventy-two years.

Curlette.—In Monticello, N. Y., on Saturday, July 14th, Dr. John F. Curlette, aged sixty-five years.

De Frantz.—In Denver, Colo., on Wednesday, July 18th, Dr. Charles D. De Frantz, aged

Hannan.—In Hoosick Falls, N. Y., on Thursday, July 26th, Dr. Thomas H. Hannan, aged fifty-two years.

Harpel.—In Coshocton, Ohio, on Monday, July 30th, Dr. Frederick T. Harpel, of Shamokin, Pa., aged forty-one years.

Hodgson.—In Toronto, Ont., on Saturday, August 4th, Dr. John Potter Hodgson, of New York, N. Y., aged forty-eight years.

Kelsey.—In New York, N. Y., on Saturday, August 4th, Dr. Charles Boyd Kelsey, aged sixty-seven years.

Kocher.—In Berne, Switzerland, on Wednesday, August 1st, Dr. Theodore Kocher.

Maine.—In Albany, N. Y., on Tuesday, July 31st, Dr. Frank E. Maine, aged sixty years.

Rave.—In Hicksville, N. Y., on Monday, July 23d, Dr. Edward G. Rave, aged seventy-three years.

Ray.—In Cuba, Ill., on Wednesday, July 25th, Dr. Blake E. Ray, aged twenty-six years.

Smith.—In Milford, N. H., on Friday, July 27th, Dr. Arthur W. Smith, aged sixty-four years.

Wilkins.—In Sherman, Tex., on Saturday, July 21st, Dr. John H. Wilkins, of Victoria, Tex., aged sixty-three years.

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Original Communications

RELATIONSHIP OF THE SYNDROME OF ANAPHYLAXIS TO THE VEGETATIVE NERVOUS SYSTEM.*

By Francis M. Pottenger, A. M., M. D., LL. D.,
Monrovia, Cal.

Among the interesting phenomena for which modern medicine has demanded a solution, none has been studied with more interest than anaphylaxis. It is believed that when this phenomenon is thoroughly understood the subject of immunity will likewise be simplified. Richet (1) coined the word "anaphylaxis" in 1902. He conceived of the syndrome recognized as anaphylactic shock as representing a state of lessened protection—anaphylaxis—on the part of the organism so reacting. The reaction of anaphylaxis has been carefully studied and described by many students of immunity; and now so many facts concerning it have been brought forth that, when put together, we have a good understanding of its clinical manifestations, although we are much in the dark as to the real manner in which it is produced and its full significance. I shall not attempt to discuss the nature of the anaphylactic antibody except incidentally, but shall confine my discussion for the most part to the medium through which the reaction expresses itself.

Disturbance in visceral function occurs through the fibres of the vegetative nervous system, or through chemical substances—hormones. Before discussing the main point, I should like to call attention to the fact that phenomena which manifest themselves through disturbed function in internal viscera, express themselves either by stimulating the vegetative nervous system or through chemical substances, which are so selective in their action that they always act upon the same structures with a tendency to produce the same results. The action is usually that of stimulating one division of the vegetative nervous system either in its entirety or in part at the expense of the other. This is evident from the fact that internal viscera are supplied by two sets of nerves, one activating, the other inhibiting; consequently stimuli which disturb the normal nerve balance must act on one of these sets of nerves, either largely or exclusively. As an example, I shall cite adrenine, which is formed by the chromaffin tissue of the body, particularly the medulla of the adrenals. This passes into the bloodstream and circulates through the body, selecting and acting upon the structures which are innervated by the sympathetic nerves. Though acting peripherally at the myoneural junction, in its action it produces the same effects as would result from central stimulation of the sympathetic system. Carbon dioxide, on the other hand, is formed generally in the tissues, acts upon the respiratory centre, and expresses itself through the pulmonary branches of the vagus nerve.

It stands to reason that such chemical substances cannot be of the nature of antigens, otherwise their function would be interfered with, because specific antibodies would be produced which would destroy them. The production of such chemical substances—hormones, as they are called—is the function of certain body tissues; and if a disturbance in function of such tissues exists, a wider disturbance in function may result in other organs dependent upon these hormones for their stimulation.

Such disturbances as come from cellular reaction in defense of the body against foreign protein, whether of bacterial or nonbacterial origin, or from any form of inflammation in which foreign protein is concerned, are produced by substances which result in antigen antibody reactions. This we assume to be the nature of the substances which produce anaphylactic phenomena. If they were to express themselves, they would do so by causing a discharge of nerve force either directly or reflexly through the nerves belonging to the vegetative nervous system; or it is possible that they might act directly upon the tissues at the seat of contact, as the metabolites which result from muscular action or secreting cells are supposed to do in causing vasodilatation.

We cannot conceive of normal body reactions being other than purposeful. In order to understand reactions which are expressed as disturbances in function of the internal viscera, it is necessary to know something of visceral neurology. All unstriped muscles and all secreting glands are innervated by the involuntary or vegetative nervous system. This system, as far as function is concerned, is divided into two sets of nerves which are antagonistic in action and which by opposing each other determine action in the tissues supplied by them the same as the extensors and flexors control a joint.

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*Read by title before the annual meeting of the American Association of Immunologists, April 6-7, 1917.

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These two systems are the sympathetic and the greater vagus. The latter is composed of the great tenth cranial nerve which is widely distributed to the internal viscera, and the vegetative fibres which run in the third, seventh, and ninth cranial and pelvic nerve, all of which have similar action to the tenth cranial in opposing the action of the sympathetics; the former comprises the fibres given off from the thoracic and upper lumbar segments of the cord.

We cannot conceive of a protective mechanism of the body being able to produce any particularly favorable reaction by expending its force on each of these systems in equal strength. If it did, normal equilibrium would remain and no purpose would be attained. Our conception is that the action is spent where it will aid the organism most. We cannot fully understand the purpose aimed at in every body reaction against harmful stimuli; but we are safe in assuming that it is primarily defensive. We must also not lose sight of the fact that a reaction might be primarily protective and yet prove to exert harmful influences. The inhibition of action on the part of the gastrointestinal tract during fright together with increased heart action, vasoconstriction, raised blood pressure, and forcing of glycogen from the liver into the bloodstream, and an increase of adrenine secretion which prolongs and strengthens such action, can plainly be understood as a protective measure. This is for the purpose of stopping all energy which is unnecessary for defense and utilizing the entire strength of the body for escape or attack. It can be readily understood, too, that if such reaction were prolonged, harm would result even though the primary purpose were salutary. This reaction results from a marked stimulation of the sympathetic nervous system, while vagus action is held in abeyance. Stimulation of the sympathetics which results in the syndrome of toxemia must also be purposeful and protective in spite of discomfort and disturbed function which result from it; so must the stimulation of the greater vagus which results in the syndrome of anaphylaxis. Unless we look upon all body reactions which are associated with the destruction of harmful invaders as protective, we mistake the purpose of the physical organism.

It is necessary to emphasize the fact that the vegetative or involuntary nervous system is not wholly divorced from central control. This is shown by the fact that many of the centres which preside over certain actions on the part of internal viscera are found in the brain. The functions of some of the internal viscera are also to a certain extent under voluntary control. The sympathetic and greater vagus systems can be stimulated either centrally or peripherally and produce action; consequently, disturbed function calls for an examination for both central and peripheral irritation.

Anaphylaxis is a reaction which results from the parenteral introduction of protein into the body, whether it gains access to the bloodstream through the mucous membranes, as when undigested protein passes through the intestinal mucosa, or whether it is introduced artificially. When protein is injected into the body, as has been shown by Vaughan, O. Cohnheim, and others, it may circulate in the blood and eventually settle in various tissues. Here it is sometimes found in condition neither ready to be utilized in metabolism nor ready for elimination. Its destruction in these tissues might produce local nerve irritation. When a foreign protein enters the tissues, it has the inherent property of stimulating a reactive mechanism which results in its destruction. Anaphylaxis is associated with the chemical action which takes place in the cleavage of this foreign protein. The character of the anaphylaxis depends upon the rapidity with which the cleavage of the protein molecules takes place. Thus either an acute or a delayed anaphylaxis may occur. It has been taught by some that the difference between an acute and a delayed reaction is due to the reaction being with cellular antibody in the former case and with circulating antibody in the latter. Weil (2) shows experimental evidence that all anaphylaxis is probably cellular. In medical literature the term anaphylaxis has been applied to many different conditions. Not only acute anaphylactic shock but all reactions which are associated with the specific, sensitizing molecule of foreign protein, are roughly classed among anaphylactic phenomena.

Expression of anaphylactic and toxic reactions upon the vegetative nervous system.—Not only does the elaboration of foreign protein result in an anaphylactic reaction, but also at times in a toxic reaction. From study of their relationship to the vegetative nervous system, these two appear as different reactions. There seems to be a general tendency to confuse the two; but the work of Vaughan in separating protein into a toxic, nonspecific and a sensitizing, specific molecule and the study of the toxic and anaphylactic reactions in their relation to the visceral nerves will show that these two reactions are, for the most part if not entirely, separate and distinct. This I shall now try to make plain.

The syndrome of toxemia is evidence of a widespread reaction which expresses itself as a general discharge of nerve force through the sympathetics. It is the same reaction, though differing in degree, no matter what the toxemia; and is always an expression of disturbed balance in the vegetative nervous system, in which sympathetic tonus predominates. It matters not whether the source of the toxins be the diphtheria or typhoid bacillus, pyogenic bacteria, tuberculin, egg white, peptone, or the broken down tissue of some organ which has resulted from inflammation; the reaction shows the same general characteristics, and consists of part or all of the following symptoms, according to the degree of toxemia present: Malaise; aching; chilliness or rigor; nerve instability; lack of appetite; slow digestion; constipation; loss of weight; rapid pulse; vasoconstriction; raised blood pressure; sweats; rise in temperature; blood changes, leucocytosis in which polynuclears predominate; lack of endurance; loss of strength. If the toxemia is very severe, there result vasodilatation, sweating, subnormal temperature, and collapse.

It will be noticed that these symptoms are an expression of increased sympathetic stimulation in all tissues supplied by that branch of the vegetative system, thus: 1, increased tone in the subdermal musculature; 2, increased tone in the muscles of the bloodvessels and heart; 3, reduced secretion in all of the glands of the gastrointestinal tract; 4, reduced motility throughout the gastrointestinal tract; 5, as a result of this action, also partly from central stimulation as well, further changes manifest themselves, such as nerve instability, rise of temperature, general loss of strength, blood changes, as leucocytosis, and metabolic changes.

It would seem that the suggestions of Vaughan that the toxic molecule is found in all protein, is the same wherever found, and does not produce specific cellular resistance against itself holds good in clinical experience. This will explain why foreign protein is capable of producing either the syndrome of toxemia or anaphylaxis. It will also show why reactions of general anaphylaxis do not occur in chronic toxemias while toxic reactions do; also why general anaphylaxis does not appear during inflammation and necrosis of the patient's own tissues, while toxic reactions do. In order to explain the acute anaphylaxis found following experimental protein injection, it is only necessary to assume that the amount of the sensitizing or anaphylactic molecules set free is proportionately greater than the amount of the toxic molecules liberated, or that the newly stimulated cells are oversensitized. It is not unreasonable to assume that the acute sensitization which manifests itself in these early injections of new protein as compared with those which take place after a longer stimulation has occurred and a stronger specific cellular resistance has been developed, may be due to the fact that the sensitiveness of the reaction wears off with the development of greater specific protection. Clinical evidence bears this out, as is shown by comparing the phenomena which follow the experimental parenteral injection of a foreign protein into the body for the first time, according to the manner which has been found to produce anaphylactic phenomena, and the injection of tuberculin —tubercle protein—in the same manner into a patient who has been previously infected and immunized against tuberculosis. In the former case the anaphylactic phenomena are predominant and nearly always appear; in the latter on the other hand, the toxic syndrome is most common and nearly always appears if the dose is sufficiently large, while general anaphylactic phenomena are not observed.

The syndrome of anaphylaxis comprises some or all of the following symptoms: Itching; restlessness; sneezing; cough; rapid respiration followed in severe cases by slow bronchial spasm; increased bronchial secretion; nausea; vomiting; fall in blood pressure; fall in temperature; involuntary discharge of urine; involuntary discharge of feces; lowered coagulability of blood; diminution of polynuclear leucocytes, leucopenia; muscular weakness; convulsions.

It will be seen that while this picture is not wholly one of disturbed equilibrium in the vegetative nervous system, yet it is largely so; and if we exclude the symptoms which occur in severe anaphylactic shock, such as fall in blood pressure, fall in temperature, great weakness, and collapse, which are the same in severe toxemia and probably due to general injury to the central nervous system, we have almost a definite unmistakable picture due to greater vagus stimulation.

The next question is the point of action of the toxic and anaphylactic molecules. In our study of the sympathetic nervous system in relation to disease, we find that there are two distinct methods of reaction: one central, the other peripheral. The central stimulation is often general, expressing itself throughout the structures of the body innervated by this system. Again central stimulation may be selective, such as we find when the vasomotor centre is stimulated calling for vasoconstriction without a general sympathetic stimulation. General sympathetic effect may also be produced by peripheral action of adrenine on the tissues enervated by sympathetic fibres. Selective peripheral sympathetic stimulation may be seen in segmental stimulations, which manifest themselves as reflex action on the surface of the body, producing sensory, motor, and trophic changes in the muscles, subcutaneous tissue, and skin, which receive innervation from the segments of the cord which are in connection with the afferent impulses from some diseased organ, as, for example, is to be noted in the soft parts which receive their innervation from the cervical portion of the cord when the lung is inflamed. Greater vagus stimulation also may be both central and peripheral. The reaction in this division of the vegetative system is usually selective, being confined to one or a few branches. A general stimulation rarely occurs except in patients who are distinctly vagotonic. General anaphylaxis, however, seems to be an exception; for it shows itself as an expression of a more or less general stimulation of structures supplied by the greater vagus. The relationship of anaphylaxis to the greater vagus is evident by a comparison of the syndrome of anaphylaxis and the syndrome of vagotonia; and further by the fact that it can be prevented by using atropine, which opposes the action of the vagus. That the anaphylactic body acts peripherally is shown by the fact that the reaction still occurs when the cord and medulla have been destroyed and the vagus has been cut (4). This, however, does not preclude a central stimulation although it shows that at least part of the stimulation is peripheral. The fact that the vagus stimulation is general suggests either central stimulation or that the reacting antigen and antibody are widely distributed throughout the body.

During recent times we have gradually classified many clinical manifestations as being due to anaphylaxis. Among such are hay fever, asthma, and sensitiveness to strawberries and shellfish. The striking fact is that these phenomena are expressions of vagus stimulation. While the phenomena of acute anaphylaxis are as a rule more general, involving several divisions of the greater vagus, such clinical manifestations as those above mentioned are restricted to one or a few branches. The term anaphylaxis, with the meaning ascribed to it by Richet, can not be applied too strictly, otherwise we shall be led astray. The phenomena of anaphylaxis are apparently those which express themselves, as far as the body structures are concerned, through the greater vagus system of nerves. That such phenomena are due to a protective mechanism can not be doubted, any more than we can doubt that the phenomena which express themselves through the sympathetic system in the face of danger are protective. We must not let the temporary disturbance in function blind us to the protective value of the ultimate outcome of the contest. In connection with this we must bear in mind that when the body meets danger, the very means of defense, although salutary and eventually successful may involve a temporary disturbance of normal function, just as the normal peaceful pursuits of a nation are upset while waging a successful war.

Relationship between visceral inflammation and the vegetative nervous system.—Parenteral digestion of foreign protein is accomplished as a result of the activity of the body cells; so is the elaboration of the patient's own tissues which are broken down by inflammatory processes. These actions are protective in character and result in products which act upon the nervous system; and, if present in sufficient quantities and surrounded by proper conditions, may produce either an increased sympathetic or increased vagus tonus, or both, as previously mentioned. It would seem that, whether we are considering experimental anaphylaxis, or the effects of the employment of tuberculin in one already infected with the tubercle bacillus—local and focal reactions—or hay fever, or asthma, or strawberry rash, or so called shellfish poisoning, the sensitizing, greater vagus, stimulating products are much more in evidence than the toxic products which act upon the sympathetic nerves.

In inflammations of internal viscera, we have the same process except that we are dealing with homologous protein; and if the inflammation is infectious, with both foreign and homologous protein. The breaking down of either native or foreign protein, however, is a matter of splitting up of the more complex protein molecules into less complex substances. The effect of cleavage of the protein of the patient's own tissues is also expressed upon the vegetative nervous system, although we assume that there is an absence of the necessity of the protective phenomena of sensitization which is so evident in cleavage of foreign protein. If the cleavage of either foreign or homologous protein is rapid, the toxic molecules are liberated continuously and, if in large amounts, produce the syndrome of toxemia. Again, as a result of the chemical action, products are formed which irritate the nerve endings in the inflamed parts; and these, probably, in conjunction with other stimulating agencies such as heat and pressure, cause peripheral irritation of the fibres of the vegetative nervous system. The result of this stimulation is shown in reflexes through both the sympathetic and greater vagus systems. Those through the sympathetic are expressed in sensory, motor, and trophic disturbances in the skin subcutaneous tissue and muscles of those areas of the body surface which are in segmental relationship with the afferent impulses carried by the sympathetic fibres to the cord. Those of the greater vagus show in other visceral divisions of the same nerve.

This may be illustrated by inflammation in the lung, which shows reflex sensory, motor, and trophic changes in the skin, subcutaneous tissue, and muscles which arise from the cervical segments of the cord, because the afferent impulses from the inflamed pulmonary tissue are carried by the sympathetic fibres and rami communicantes to this portion of the cord and there reflected through the spinal nerves. The vagus reflexes, on the other hand, show in cough, disturbed innervation of the larynx through both superior and inferior laryngeal nerves, slowing of the pulse which is often quite evident, and commonly some increased secretion and increased motor irritation of the gastrointestinal canal, spastic constipation being particularly common, and nausea and vomiting being frequently met during the acute inflammation accompanying cavity formation.

The relationship which general anaphylaxis bears to the greater vagus division of the vegetative nervous system suggests a close relationship between it and various clinical phenomena, such as hay fever, asthma, urticaria, and shellfish poisoning, as well as to the phenomena which take place during visceral inflammation. In order to understand these phenomena, it seems to me that we must approach them from the standpoint of their expression being a part of, or a result of, the body's defensive mechanism. With our present knowledge it may be impossible to venture a thorough explanation of these phenomena on this basis, yet one can find convincing evidence of this being their true nature. This is shown particularly well in the phenomena which follow inflammation. During inflammation the body is required to combat protein, either native or foreign, or both. As has been previously shown, this protein is broken up into two distinct groups of molecules, one of which, acting centrally, produces the phenomena of toxemia, expressing itself principally through the sympathetic nervous system; the other apparently acting peripherally stimulates both the sympathetic and greater vagus nerve endings. This produces reflex segmental disturbances in the skin and skeletal muscles through the former; and reflex, motor and secretory disturbances in other organs through the latter. The irritation through the greater vagus is apparently related to that which takes place in the cleavage of foreign protein, but from the nature of the case does not produce anaphylactic phenomena.

One can see an evident purpose in this combination. The segmental reflex through the sympathetics and their connecting sensory and motor spinal nerves, shields and protects the underlying inflamed organ by producing painful points over it and by limiting the movement of the muscles. The protective influence of the reflexes through the greater vagus is shown as an augmentor action on other viscera. If the toxic molecules were permitted to express themselves generally, unopposed for a prolonged period of time, upon the sympathetic nervous system, producing continuous inhibition, the patient would succumb; but the peripheral irritation of vegetative nerves which results from the chemical action in the destruction of the protein, produces reflex greater vagus stimulation in the important internal viscera with an attempt to restore equilibrium of function. This is well illustrated in such chronic inflammations as tuberculosis where not infrequently in spite of such a degree of toxemia, as would be represented by a temperature of 102° F., which would naturally be accompanied by loss of appetite and a deficiency in motility in the stomach and intestines and in the gastric juices, we find the patients having sufficient vagus stimulation resulting from the local inflammation in the lung to preserve appetite, give a satisfactory amount of gastrointestinal juices, preserve motility so that the body processes may be carried on in such a manner as to maintain nutrition, and keep up the strength of the individual, or at least to minimize the inhibitory influences.

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ERYSIPELAS AS A COMPLICATION OF MASTOIDITIS.*

By Harold Hays, M. D., F. A. C. S.,
New York.

Many theories as to the causation of erysipelas have been advanced, and yet we are as much in the dark as ever as to the exact etiology. The various lines of treatment that have been suggested cover a list of drugs extending from the time worn treatment with carbolic acid to the newer methods of serum therapy. I have been fortunate enough—or unfortunate, as one may look at it—to have had erysipelas develop in a number of cases of mastoiditis, and I am therefore in a position to relate a few experiences and draw conclusions which are more or less important. The reason why otologists know so little about the treatment of erysipelas is that most of the ear patients in whom this disease develops are immediately transferred to other hospitals where they are lost track of. The result is that when a private patient acquires the disease we are obliged to call in some one else to take care of the case, or else we treat it in a haphazard manner. In my experience I believe that erysipelas is a complication of mastoiditis which in time will readily right itself and no damage need be feared as long as the patient has no other complication, such as diabetes.

Etiology.—The general consensus is that erysipelas is a localized infection of the skin due to a streptococcus. Moreover, the disease is considered contagious by some; by others, infectious. That the disease does not occur as frequently as it is thought one may conclude from the fact that there were only seventeen cases of erysipelas in the New York Eye and Ear Infirmary from January, 1912, to January, 1916. During that time, between three and four thousand patients were operated upon for mastoiditis, which brings the ratio down to less than four to a thousand, or about 0.4 per cent. These patients were not related to one another in any way. In other words, it was found that the cases occurred sporadically and that there was no direct infection from one patient to another, although when a patient acquired the disease there were often eight or ten other patients in the same ward. The ages of the patients ranged all the way from two to sixty-two years, the majority of them occurring between the ages of twenty and thirty years. Eleven patients were females and six were males. Of my private patients in whom the disease developed during the past two years, four were in females and one was in a male. In the cases in which smears from the ear discharge or from the mastoid cavity at operation were taken there was great variation in the character of the organism found. In six, the long chain streptococcus was noted; in two there was a mixed infection, and in two the pneumococcus was reported. Apparently the character of the organism found in the ear or mastoid cavity has no definite relation to the development of this complication. In my experience I am inclined to believe that erysipelas develops more often in females because of the maceration of the hair at the time of operation. On account of my belief that the infection arises from this source, I think it advisable to have the hair thoroughly washed before any operation on the mastoid, if it is possible to do so. This particularly applies to radical operations where there is plenty of time for preparation.

Some patients show a particular susceptibility to erysipelas. There is no doubt that in certain instances there is an hereditary predisposition. In two of my five cases the mother had had erysipelas. In another case the patient acquired erysipelas at the time of the first operation, which was performed by some one else, and again developed erysipelas when I had to do a secondary operation on her later.

I am firmly convinced that we cannot consider erysipelas either a contagious or directly infectious disease. I know I am at variance with the best authorities, but my personal experience has been such as to lead me to believe that only patients who are particularly susceptible can contract the disease from others. My reasons for this statement are as follows:

1. In the isolation pavilion in Bellevue Hospital are a number of patients with so called infectious skin diseases, all of whom are taken care of in the same pavilion and by the same doctors. The patients are separated so that the erysipelas patients are in one room, the impetigo patients in another, and so forth, but they are in close enough proximity so that infections could be transmitted. Moreover, it is reasonable to suppose that if the same doctors and the same corps of nurses take care of all these patients, frequently a disease would be transmitted from one patient to another. This seldom or never happens.

2. It is the common experience for erysipelas to break out in a surgical ward, and within the course of twenty-four to forty-eight hours such a complication is discovered. The ward is frequently emp-

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*Read before the Otological Section, New York Academy of Medicine, April 13, 1917.

tied and fumigated, but it is seldom that the patients who are in the ward acquire the complication from the one patient infected. If the disease were contagious or highly infectious, one would expect other cases to occur, particularly as no special precautions are taken until the complication is discovered. Although the house surgeon doing the dressings may wear gloves, I have seen an intern wear the same gloves for all dressings, but take no precautions as far as the patients are concerned, except to dip the hands of the gloves in a bichloride of mercury solution.

3. In one of my recent cases before there was any evidence of a skin infection, a swelling developed in the neck below the mastoid wound, accompanied by a temperature of 104° F. As there seemed to be signs of infection, the patient was taken to the operating room and an incision was made, extending down through the deep fascia. No pus was found. Apparently this was a deep seated erysipelas which only came to the surface on the second day. In the meantime, however, four or five other mastoiditis patients were operated upon in the same room, without any particular precautions being taken. In not one of these cases did erysipelas develop.

4. I have frequently had to dress other mastoid wounds or to operate in other mastoid cases, either in the same hospital in which the first patient acquired erysipelas or in other institutions, and in no case that I know of have I ever transmitted the disease. Of course, one may argue that under these circumstance I took extra precautions, but there is no doubt in my mind that if erysipelas was a highly infectious disease I would have seen at least one instance of transmission.

5. I have never known a physician or nurse in charge of an erysipelas case to contract erysipelas. One would naturally think that if the disease were contagious or infectious such a complication would happen frequently.

It has generally been understood that the reason erysipelas develops so often as a complication of mastoiditis is because the pus from the wound has a tendency to spread out on the surrounding skin and in this way infect it. However, if one observes carefully, he will note that in the majority of cases, the erysipelas complication or infection occurs in front of the ear and not behind it. It is hard to explain why. We usually notice the dusky area of redness over the parotid region first, the infection spreading from this part forward over the face. If the suppuration from the mastoid wound causes the erysipelas, why does not the infection spread back toward the occiput, instead of forward toward the nose? The one case in which I have observed an infection on back of the head occurred in a patient in whom the erysipelas spread over the entire face affecting the other ear, and then extended back to the base of the skull. I have, therefore, come to the conclusion that the secretions from the mastoid wound or the infection of the mastoid cavity has very little to do with the occurrence of this complication. I believe the organism that causes the infection is present in the patient's hair and that the complication results many times from a lack of local resistance of the tissues in front of the ear. Another important fact arises here. It is possible that Nature is using up so much energy in the building up of the mastoid wound that she takes away a great deal of resistance from the tissues in the neighborhood. It is likely that the anastomotic lymph channels are filled with fluid which goes toward the mastoid wound and thereby depletes the surrounding area. If this is so, one can understand why such an infection takes place away from the mastoid wound and not in it.

Symptoms.—In the majority of cases that I have recorded, the complicating erysipelas took place on the second or third day after the operation, but in many the complication developed on the fourth or fifth day and in one instance it occurred on the ninth day after the operation. In one recent private case, a simple mastoid operation was performed on February 11, 1917, for a subacute mastoiditis. The patient left the hospital on the eighth day, and on the ninth day came in to see me with the wound almost completely healed. Four days later after he had gone home and while he was under the care of another surgeon—for I was ill—his temperature rose to 140° F. and he was again taken to the hospital. In this instance the erysipelas developed on the twelfth day in a patient in whom the wound was almost completely healed.

As a rule, the first symptom noted is a sudden high temperature which may or may not be associated with a chill. If neither sinus nor dura was exposed at the time of the operation, one may suspect erysipelas before any lesion presents itself, but if one or both of these structures was exposed during the operation, it is frequently necessary to delay diagnosis until other symptoms arise. As a rule, the first sign of the disease may be noted from twelve to twenty-four hours after the initial rise in temperature. The first sign is a dusky, brawny induration of the skin which has a sharp line of demarcation. If this is outlined with a silver nitrate stick, any extension of the inflammation may readily be seen as the disease progresses. Whenever the temperature suddenly rises high, I immediately look for a sign of inflammation or redness or browniness in front of the ear over the parotid gland. If nothing is seen there, I am perfectly willing to expose the operated area to look for other trouble, such as may arise from a mastoid wound.

During the progress of the disease, the temperature remains remittently high—between 103° and 106° F. This temperature may be lowered somewhat by administering cold applications or antipyretics. It is better as far as prognosis is concerned for the temperature to remain high because this indicates that Nature is using all her powers to fight the disease. A low or subnormal temperature indicates some complicating lesion, usually very serious. At times the patient may become delirious mainly from the high temperature, but the delirium is usually of short duration and should not be a cause of worry. The beginning skin inflammation may be very small, but usually within the course of twenty-four to forty-eight hours the lesion creeps forward until the entire side of the face is involved. The lobe of the ear, the cheek, the nose, and eyelids are markedly inflamed and puffed out, and in the majority of cases the eye becomes completely closed. In two instances, I have seen the disease spread over the nose to the opposite side and in the one instance mentioned, the inflammation extended even behind the opposite ear. It is surprising to note that the chief complaint of the patient is a fear that the inflammation is beyond control. One must continually encourage him and insist that he is going to get well.

During the course of the disease, or even in the beginning, the blood count helps very little. The counts range anywhere from 22,400 to 5,800. The differential count is also of very little importance and is of little benefit in determining a prognosis. The differential count ranges from eighty-seven to seventy-two per cent. of polynuclears. The blood culture is of value only in eliminating a complication such as sinus thrombosis. It is negative in all cases of erysipelas.

CASES OF ERYSIPELAS 1912-1916.

Year.	Sex.	Age.	Disease.	Operation.	Day of Compli.	Temp.	W. B. C.	Dif.	Blood culture.	Infecting Organism.	Disposition of case.	Remarks.
1912	F	18	Ac. mast.	Simple mast.	4	104^2	22,400	83	....	Strepto.	Transferred	
1912	F	9 mos.	Subperiosteal	Secondary	3	104^6	......	..	....	Mixed	Transferred	
1912	F	10	Om. P. C.	Radical	3	100^6	......	..	....	Mixed	....	
1912	M	31	Ac. mast.	Simple	5	105^8	12,800	83	Neg.	Strepto.	Transferred	
1912	M	2	Ac. mast.	Simple	7	103^4	......	..	....	....	Transferred	
1913	F	26	Om. P. C.	Secondary	3	103	......	..	....	....	Transferred	
1913	M	24	Furuncle	Incision	1	103	......	..	....	Mixed	Transferred	
1914	M	36	Ac. mast.	Simple	7	103^4	......	..	....	....	Transferred	
1914	F	30	Ac. mast.	Simple	4	105^4	......	..	....	Strepto.	Transferred	
1914	F	9	Subperiosteal	Simple	4	104^2	......	..	....	....	Transferred	
1914	F	38	Ac. mast.	Simple	9	104	......	..	....	....	Transferred	
1914	F	22	Ac. mast.	Simple	5	104^2	14,400	75	Neg.	Pneumo.	Transferred	Erysipelas opposite side
1914	M	32	Furuncle	Incised	3	105	......	..	....	....	Transferred	
1915	F	36	Ac. mast.	Simple	6	105^8	19,000	88	Neg.	....	Transferred	
1915	M	54	Subperiosteal	Simple	2	105^4	......	..	....	....	Transferred	
1915	F	61	Ac. mast.	Simple	3	105^8	15,000	89	....	Strepto.	Transferred	
1915	F	10	Om. P. C.	Secondary; radical	3	103^4	......	..	....	Pneumo.	Transferred	
PRIVATE CASES.												
1916	F	22	Ac. mast.	Simple	2	104	......	..	....	....	Transferred	
1916	F	28	Ac. mast. (double)	Simple	2	104^8	9,600	72	....	Staphylo.; strepto.	Cured	
1916	F	35	Ac. mast.	Simple	1	103	5,800	70	....	Strepto.	Cured	
1917	F	35	Ac. mast.	Simple	2	104^4	9,000	72	....	Strepto.	Cured	
1917	M	30	Ac. mast.	Simple	12	104	......	..	....	....	Died	

Differential diagnosis.—When the temperature within the first twenty-four to forty-eight hours after an operation for mastoiditis rises to 104° or 105° F., one is naturally anxious to know the cause of such a condition. As no skin lesion indicating a complicating erysipelas develops during this time, one has to be on the lookout for certain other complications which are even more serious. Among these are primarily sinus thrombosis, and then brain abscess, meningitis, and pneumonia. Within a short time these other complications may be ruled out if the skin lesion presents itself. Usually when a patient runs a high postoperative temperature, one must resort to every means of diagnosis.

To rule out a sinus thrombosis or to determine whether it is present one must first recall whether the sinus was exposed during the operation, whether a perisinus abscess was present, or whether the sinus was accidentally injured at the time of operation. Although the white blood count is not definite in a sinus thrombosis, the relative count, or the proportion of polynuclears to the number of white blood cells, is of importance. As a rule, the number of white blood cells varies from 9,000 to 15,000, while the differential count is usually high—even eighty per cent. A blood culture should be taken. If it is negative, it may mean nothing, but if it is positive, the probability is that we are dealing with a sinus condition. Moreover an initial chill associated with high temperature appears in sinus thrombosis, the temperature becoming intermittent instead of remaining high.

It is more difficult at times to diagnose a brain abscess or meningitis, for the temperature remains high in these conditions as in erysipelas. However, in the first twenty-four to forty-eight hours after the onset of the fever, other evidence is usually present to allow one to determine what complication has occurred. If no definite signs are present, one must either open the mastoid wound and search for a brain abscess, or do a lumbar puncture to determine the character of the cerebrospinal fluid. There may be some rigidity of the neck in erysipelas, arising either from the mastoid operation or from the extension of a deep inflammatory condition to the muscles of the neck, but Koenig's sign is not present and the reflexes are not increased.

A deep seated pneumonia may frequently be difficult to determine or to differentiate. A lobar pneumonia may cause steady high temperature, but a bronchopneumonia will give an intermittent temperature. As a rule, the blood count in pneumonia is extremely high, ranging from 18,000 to 25,000 white blood cells. Such a high blood count is seldom present in erysipelas.

Prognosis.—From my experience in private cases in which erysipelas has been a postoperative complication of mastoiditis, I consider the prognosis extremely good, provided the patient has the proper care and attention to his mastoid wound and provided the erysipelas is treated properly. Such care contributes much to increasing the patient's general resistance to the disease, rather than in counteracting the inflammation locally. Although I am not cognizant of the general run of erysipelas cases, I am of the impression that the disease is rarely fatal, except in those cases in which there has been a complicating condition such as diabetes. As most of our erysipelas cases are transferred to other hospitals where we lose track of them, it is only in the private cases that one is forced to determine definitely the outcome. In my experience in private practice, this complication occurred eight times at varying intervals, no case being directly traceable to another. One patient, the last, died from an acute nephritis. I shall cite the case briefly:

CASE I.—J. O., male, aged thirty years, when first seen, had a subacute mastoiditis of six weeks' duration. There was edema and tenderness over the mastoid, profuse discharge of thick creamy pus from the canal which was very much narrowed. A simple mastoid operation was performed the following day. No dura or sinus was exposed. All except the lower angle of the wound was closed. The patient was out of bed on the fourth day and left the hospital on the ninth day with a clean wound almost completely healed. On the twelfth day, my associate, Doctor Smith, reported that the patient had a temperature of 104° F. He was again taken to the hospital. As I was very ill, I did not see the patient again. It was reported that erysipelas had developed in front of the operated ear, high temperature, 104° to 105° F., for ten days, then a sudden drop to normal, when suppression of urine occurred. Temperature rose two days later to 103°, and then remained irregularly high. The erysipelas spread down to the back. From continual delirium he passed into coma and died.

All the other patients made complete recoveries. In fact, although I feel very chagrined whenever erysipelas arises in any of my cases, I am so optimistic that I invariably give a good prognosis. Even when a patient is in very poor physical condition, a fatal outcome may not necessarily result. In one case, which I shall cite, a marasmic child of seven months acquired a general erysipelas after a double mastoid operation. The child got well after a prolonged convalescence.

Treatment.—No two physicians will use the same treatment for erysipelas, and as the majority of patients recover, one is forced to come to the conclusion that the patients get well in spite of treatment. In the class of cases of which I am speaking, there are two conditions to deal with: the mastoid wound and the complicating erysipelas, two distinct conditions, for, as I stated before, the erysipelas is seldom in the mastoid wound. The wound should be dressed under strict asepsis and with the same care as usually used, and should be taken care of before the area of erysipelas is touched. A sterile gown and sterile gloves should be worn. The wound and ear canal should be cleaned out in the usual manner, with particular precautions not to allow any of the instruments or dressing to touch any of the outside infected area. Antiseptics in the wound are totally unnecessary and often harmful; they tend to diminish the resistance of the newly formed tissue. A wet dressing of aluminum acetate or boric acid solution is very soothing and does no harm.

In care of the erysipelas lesion the treatment is both local and general. As I stated at the beginning of this paper, the various lines of treatment extend from the time worn treatment with carbolic acid to the newer methods of serum therapy. Among local applications may be mentioned ichthyol, carbolic acid, silver nitrate, tincture of iodine, mercuric ointments, and wet dressings of boric acid, aluminium acetate, magnesium sulphate, etc. Although we have a localized inflammation to deal with, the constitutional symptoms are out of all proportion to the extent of the local inflammation. In other words, there is a systemic change in the patient, a toxemia which varies according to the degree of his resistance. I have found it impossible to combat the disease locally. One must therefore resort to soothing local medication and not use drastic measures which may sear the patient for life. The most soothing application is a cold compress of a saturated solution of magnesium sulphate. The compress should go well beyond the inflamed area. As the eye on the diseased side is usually closed by the inflammation, it should be bathed frequently with warm, wet, cotton sponges. The edges of the nostril are dry and frequently cracked. Applications of liquid albolene or sterile vaseline should be made to the nostril and should extend well into the nose, as the inflammation does not stop at the edge of the nostril. Most patients complain of the tightness of the mastoid bandage, which irritates the inflamed forehead. Care should be taken to apply the bandage loosely or to place cotton on the forehead before putting on the bandage.

By far the most important part of the treatment consists in increasing the patient's resistance. The disease of the mastoid and the operation following have already affected the system. The high temperature in itself is not alarming as long as the erysipelas is spreading. It may be combated by frequent alcohol sponges or by the administration of antipyretics. It is preferable not to give such drugs as antipyrine, acetanilid, etc., on account of their depressant action on the heart. But aspirin, to which is added a small dose of caffeine, is permissible. I have not had much experience with the various serums, but I believe the general consensus is that they are of little use. No specific vaccine has been found. However, there is one preparation, Hiss leucocyte extract, which can now be obtained from leading drug houses, which I consider almost a specific for uncomplicated erysipelas, particularly when it is associated with ear diseases. Since the extract can be obtained commercially, I have used it in all my private cases with brilliant results. Within a short time the temperature has become lower, and in every instance the patient has recovered.

The theory on which the leucocyte extract is used is that it increases leucocytosis and by so doing greatly improves the patient's powers of resistance. The extract is made by causing a purulent exudate in the pleural cavity of a rabbit through the injection of a sterile aleuronat solution. After the exudate has collected in sufficient quantity it is aspirated, centrifuged, the sediment separated, and an extract made of it. The first experimental studies were performed to ascertain the effect of the extract in protecting animals against small doses of various bacteria—such as the typhoid bacillus, streptococcus, pneumococcus, meningococcus, and gonococcus. It was found that the extract had a decided protective action. Hiss and Zinsser (1) state: "The action of the extract may be due to an enhancement of the bacteriolytic action of the animal's plasma or to the action of digestive substances usually not liberated from the leucocytes; but it is most likely due chiefly to poison, neutralizing or destroying bodies which act on the endotoxins." In 148 cases of erysipelas treated by these authors with the extract, good effects were listed in all. The average duratin of the disease was 3.1 days after treatment was begun. Alexander Lambert (2) arrived at the following conclusion, after treating fifty cases of erysipelas by this method: "The extract will abort the infection if treated within the first forty-eight hours and will shorten the course of older infections. About fifty per cent. of babies under one year treated with the extract have quickly recovered." One of the large drug houses supplies the extract in ten c. c. sterilized syringes, with sterilized needles attached. Ten to twenty c. c. of the extract should be injected on the first day, ten c. c. the next day, and, if necessary, ten c. c. on the third day. The injection should be made in the buttocks or in the abdominal wall or under the breast. I have never seen an infection from its use in erysipelas. In a case of postoperative sinus thrombosis without erysipelas, a localized abscess developed, the infection probably coming from the blood. The injection is usually painful, but patients seldom complain of any subsequent pain. After the injections, the temperature gradually falls, and within a few days the local inflammation disappears. I shall briefly cite two cases:

Case II.—E. P. C., female, aged thirty-five years, had a discharge from the ear for eight days with slight mastoid tenderness. X ray was positive. She was operated on for acute mastoiditis on the ninth day; temperature 100.4° F. On the first day after operation the temperature rose to 103° F.; on the second day to 105°, and erysipelas was seen. On the third day, ten c. c. Hiss leucocyte extract was given in the morning and ten c. c. in the evening. None was given the next day. On the following day ten c. c. was given, and on the fourth day, the temperature began to come down and the local inflammation began to disappear.

Case III.—M. S., female, aged twenty-five years, had double acute otitis media for two weeks with slight mastoid symptoms. X ray showed disease of both mastoids. Operation on both mastoids was performed on the fifteenth day. Temperature rose to 103.8° F., and remained high on the following day, when signs of erysipelas were discovered in front of the right ear. Ten c. c. of the extract was given on the third, fourth, and sixth day after operation, or second, third, and fifth day after the diagnosis of erysipelas was made. Temperature then dropped to 98.8° F., and remained normal.

About a year ago, another line of treatment suggested itself to me, which would be particularly applicable to the extreme cases of erysipelas with high temperatures, prolonged delirium, and the extension of the inflammation. The treatment consisted of the directed injection into the gluteal muscles of the erysipelas patient of two or three ounces of citrated blood taken from a convalescent erysipelas patient. Such treatment has done wonders in scarlet fever cases, and Doctor Zinger told me that he had treated one erysipelas case in that way with gratifying results. Dr. T. Lawrence Saunders permits me to cite one case where this experiment, among others, was tried on an infant under his care who ultimately recovered.

Case IV.—This was a marasmic child seven months old who had a double mastoiditis which necessitated operation after which bronchopneumonia and erysipelas developed. The erysipelas spread over the scalp and eventually reached every part of the body. No treatment was of any avail. I told him of my idea and, as I had a convalescent erysipelas patient who had just left Bellevue, we were able to get a small amount of her blood, which proved to be free from syphilis. The erysipelas eventually disappeared. The child acquired a number of small abscesses on the scalp, and elsewhere, which had to be incised. The child finally recovered.

Whether the injection of the blood had anything to do with the recovering will never be decided. As yet, I do not know whether the work at Bellevue was successful or not. I offer the suggestion, as it is in line with the newest work in the treatment of disease of unknown origin.

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11 West Eighty-first Street.

NASAL OBSTRUCTION A FACTOR IN THE PRODUCTION OF DISEASE.*

By W. Peyre Porcher, M. D.,
Charleston, S. C.

It has become a fad of recent years to attribute many diseases to anomalies of the teeth and tonsils. Like religious fanatics of old who called "fire and sword and desolation a godly thorough reformation," so extremists of today have gone for these organs tooth and nail, or tooth and tonsils, rather, and eradicated healthy and unhealthy organs on the bare possibility that pulp stones, rhinoliths, or some other pathological condition might be present. These organs, being visible and accessible, may be made to bear the brunt of ills, imaginary or otherwise. The teeth and tonsils do often become diseased and cause diseases of other organs at a distance. In fact, only recently two striking illustrations have occurred in my practice. The first was a case of rheumatism of the knee joint which had lasted for several months. A culture was taken from one of the crypts of the tonsils from which a pus discharge was exuding. An autogenous vaccine was made and administered hypodermically; the rheumatic pains promptly disappeared and never returned. The second case was that of suspected tuberculosis in a young man aged nineteen years. The patient had an afternoon temperature of about 99° F. which had been running for some time. A diagnosis of tuberculosis was made both by x ray and by vaccine, but an abscessed tooth was also found and treated, with the result that the fever promptly stopped and he has gained flesh and can take unlimited exercise without any rise in temperature. Of course, where diseased teeth and tonsils are so manifest the diagnosis should be easily made, but how often must obscure conditions in the deep seated cavities in the nose be overlooked unless the physician is thoroughly competent to make the diagnosis? In this age of medical enlightenment the failure to examine the nose and throat in many of the most common ailments which afflict humanity would scarcely be excusable. This does not apply, as is usually supposed, to diseases affecting the upper respiratory tract alone, because many affections of remote organs and reflex neuroses, etc., are directly attributable to nasal obstruction and diseases of the lateral sinuses. It has been common in recent years to attribute every case of migraine to some error of refraction. Of course, it is manifestly true that impure air or the improper performance of the function of respiration is far oftener productive of headache. As it has been said that headache is the cry of the brain for fresh blood, it must necessarily be true that it is the cry for more purified air.

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I have been surprised to find that both graduates and postgraduates often completely ignore the organs of respiration. In fact, it is not uncommon for practitioners of medicine to boast of their ignorance of these important organs. There is only one way in which the gravity and importance of diseased conditions in the nose and throat can be recognized and that is by actual experience on the live subject clinically and on the cadaver. Unfortunately written articles and lithographic plates give but a poor impression of the relation of these parts or their clinical significance. Unfortunately also the diseased condition, if situated far back in the nose or in either of the lateral sinuses, cannot be easily demonstrated by one person to another. In fact even although complete relief may be given to a patient by a surgical procedure, it is often very difficult for the surgeon himself to see just what he has done. For example, in order to reach either the ethmoid or sphenoid sinuses, the anterior end or in some cases the whole middle turbinate has to be removed. This operation is commonly done, but careful examination is often required to see the parts after the removal of the bone. It would be impossible for me to give an idea of the wonderful results occurring after the restoration of the normal calibre of the nose except by giving the actual testimony of the patients themselves.

Most of these cases are tuberculous pulmonary or bronchial inflammations in which the disease in the nose has either been entirely overlooked, or, worse still, was purposely ignored as being in any way an exciting cause of the inflammatory conditions affecting the organs lower down.

For many years past innumerable papers have been written in regard to the early history and signs of tuberculosis of the lungs and bronchi. Where the early history points to a catarrhal condition in the nose as so commonly occurs, is it not rational to look to that organ for some predisposing cause? Of course, according to the modern teaching of the day, almost every inflammation of the lungs and bronchi is at once attributed either to a tuberculous diathesis or a predisposition to tuberculosis. This word predisposition means only failure or inability to diagnose the exact inciting cause of the disease. We generally say the patient caught a severe cold and acquired tuberculosis, yet how seldom do we make a critical examination of the nose to discover if there was any abnormal condition in the nose which not only rendered the patient more susceptible to what we call a severe cold, but keep up the inflammation so as to render the patient a fit subject for consumption? No scientific explanation has ever been given of the exact meaning of the words "inherited predisposition." Is it not rational to believe that these words mean a condition in the nose and throat which developed before the actual disease of the lung began? Although extremely tolerant of disease, perhaps more so than any other organ, the nose finally yields to repeated invasion and chronic processes set in. These processes may either be a simple cartilaginous spur projecting from the septum or a far more serious purulent condition involving the lateral sinuses.

In the opinion of most authorities and of the writer the presence of a cartilaginous spur is more frequently a factor in the production of acute inflammation in the nose than any other condition. By the mere fact of their presence the nose is rendered far more susceptible to inflammation and repetition of this inflammation results in chronic purulent conditions which end in serious involvement of all the air passages lower down. Is it not reasonable, therefore, that rigid examinations should be made for the presence of such inciting factors in the production of acute inflammation in the nose? Of course all this should be done long before there is any breaking down of lung tissue or persistent bronchitis or tubercule bacilli found in the sputum. I have in mind at present three cases which have more or less recently come under my observation in which this condition was markedly demonstrated.

CASE I.—A lady had been under the care of a specialist in a neighboring city for several months for the treatment of pulmonary tuberculosis. On examination I found a large septal spur in her right nostril. As is usual in these cases there was no marked obstruction to respiration in this case or any outward sign of its presence. On that account I judge the specialist in whose care she had been deemed it of no moment and therefore did not urge its removal, or, perhaps as occurs in many instances, being a tuberculous case, he was afraid that the wound might take on a tuberculous condition and refuse to heal. I have known eminent specialists who refused to operate on this ground. It has never been my experience, however, that there was any retardation in the healing process. In this instance the operation was done with the electric trephine and was both bloodless and painless under cocaine and adrenalin. The patient at last reports was getting up at 4 a. m. and performing her household duties.

CASE II.—A similar growth was removed from the nostril of a woman whose recovery was so complete that she was, at last report, skipping rope to reduce her flesh. When asked what portion of the treatment she derived the most benefit from she at once replied, "The operation on the nose."

CASE III.—A young man not under my immediate care, was sent north for pulmonary tuberculosis. He was in a large sanitarium for many months and returned, having been benefited but far from well. He stated to me that the growth had been seen and recorded, but that no operation had either been performed or advised for its removal. His attacks of asthma and bronchitis had persisted after his return and he was finally operated on by a specialist in a neighboring State for relief of the nasal condition.

The astonishing fact is that this young man should have been so long under the care of eminent men who entirely ignored the presence of the growth. In this case the catarrhal condition in the nose was so manifest that any one sitting near to the patient could have easily detected it. Chronic purulent sinusitis had set up which needed repeated operations for its correction. The patient was in imminent fear of death before he got in the hands of a surgeon who advised immediate operation. Of course neither the patient or his physician could give credence to the fact that men of such eminence as those in charge of the sanitarium could fail to appreciate the gravity of a purulent ethmoiditis as well as involvement of the surrounding sinuses. It would be needless to allude to atrophic degeneration or scab formation in the nose where the disease has progressed so far that the function of the nose as a purifier and moistener of the respiration has been almost entirely abolished. Here of course there would be asthma, bronchitis, cough, and finally breaking down of lung tissue. Chills, coryza, wet feet, drafts, etc., are the traditional causes of acute coryza, yet but few physicians look for the more frequent underlying or predisposing causes, namely, pathological conditions in the shape of sharp spurs, etc., in the nose itself.

To the bacteriologist, these influences resulting in a hypersecretion of mucus, merely supply a culture medium upon which the bacteria commonly present are able to grow rapidly. Under ordinary circumstances the nasal secretion is considered to be antigermicidal, but an inflammatory secretion, strange to say, is considered to be a most excellent medium for the growth of the bacteria and hence increased virulence is not improbable. It is stated that the symptoms of infection from different bacteria vary; certain bacteria, notably Micrococcus catarrhalis and Bacillus fœtidus affect chiefly the nose and pharynx, while others find their most convenient lodging place in the lower respiratory organs. Admitting, therefore, the truth of all this, it becomes all the more imperative to investigate all conditions of the inner nostril in any disease affecting the respiratory organs.

85 Broad Street.

THE SCOPE AND UTILITY OF FLUOROSCOPY.

By I. Seth Hirsch, M. D.,
New York,
Director of X Ray Laboratories, Bellevue and Allied Hospitals.

Röntgenoscopy, or examination by means of the fluorescent screen, is one of the important methods of Röntgen diagnosis. Because of the simplicity and directness of the fluoroscopic method, it has become an essential part of the equipment for clinical diagnostic work according to the most modern standards. At the present time, it is generally conceded that the information which may be gleaned from the x ray examination is sometimes pathognomonic and characteristic but always valuable either in the negative or positive phase; and when considered in association with the clinical data makes for great accuracy of diagnosis. It is this close relationship between the clinical and physical methods and the Röntgen method which must be emphasized. It is reflected in the important indirect contribution which röntgenology has made to these older methods, by correcting, amplifying, and elaborating them. These methods, the old and the new, must and do supplement each other and there is much truth in the statement of Wenckebach that he is the better röntgenologist who knows his clinical medicine and he the better clinician who knows his röntgenology.

A hasty survey of some of the difficulties in the differential diagnosis will indicate the gaps, unfortunately not a few, which röntgenology fills in our diagnostic knowledge. In the abdominal cavity the contribution has been well nigh revolutionary in its effect on physiological and diagnostic problems. So thorough a clinician as Dr. Ludwig Kast says in his article on the Influence of Röntgen's Discovery on Medicine:

> It is perhaps no exaggeration to say that in no field of internal medicine has Röntgen's discovery accomplished so much as in abdominal diagnosis. The contour, position, and motility of the stomach and intestines in the living were not correctly known until the x rays portrayed them on the screen. The new facts not only corrected previous findings, but also led to physiological discoveries of unusual value. Among these were the following: the importance of the tonus of the gastric muscle; the interesting play between the gastric peristalsis and the pyloric ring: the help which the antrum pylorus lends to the propelling force of the pyloric vestibule, churning and expelling the food within well defined rules; the importance of the pylorus in correlating gastric and intestinal secretory processes; the difference in the rate of discharge of different food articles; the segmentation and pendulum movements and the peristaltic rush of the small intestines; the antiperistalsis of the ascending colon and its relation to the ileocolic sphincter: the sweeping peristaltic waves of the colon, so different from the peristalsis of the small intestines; the formulation of the so called law of the intestines—the stimulated point leading to contraction above and relaxation below.

Its value in the differential diagnosis in diseases of the abdomen is so obvious as to make unnecessary any elaboration. The demonstration of gastric and duodenal ulcers, the accurate localization of abdominal tumors, and the determination of intestinal adhesions have become matters of routine, while with improvement in technic the diagnosis of gallstones is daily becoming more accurate. In the differential diagnosis of diseases of the chest the contribution of the Röntgen examination has been of exceeding value. A moment's consideration, let us say, of the pulmonohepatic region—a region where lie many diagnostic pitfalls—will emphasize this. The close anatomic relationship of the viscera in this locality, the similarity of the subjective symptoms due to their disease, the difficulty of isolating the objective signs, and the frequency of the concomitant involvement of several organs make this region in particular one wherein the utilization of every clinical and diagnostic method is essential for the proper interpretation of the pathological manifestations. The conditions which are likely to be confused with each other may be enumerated as follows: Consolidation of the right base with occlusion of the bronchi; pleuritic effusion, free or encysted; abscess in the lower lobe; bronchiectasis; pleural fibrosis with atelectasis; hydropneumothorax; pericardial effusion; diaphragmatic pleurisy; subdiaphragmatic abscess; abscess of the liver; diaphragmatic hernia—eventration; diaphragmatic paralysis.

On no mere theoretical or fantastic basis are the above conditions enumerated. The subjective symptoms of pain, dyspnea, cyanosis, cough, fever, and chills, though they serve frequently to indicate involvement of this or that particular organ, do not, however, always absolutely clear the diagnosis. Indeed, it may be said that the subjective symptoms, common as they are to most of the pulmonary diseases, have but little diagnostic value. For instance, there may be mentioned the similarity as to site, duration, and character of the pain of diaphragmatic pleurisy, basal pneumonia, and subdiaphragmatic abscess, while the absence of pain in pleural effusion and liver abscess and the presence in both these conditions of chills, temperature, and dyspnea is generally appreciated. Occurring either as a complication of a pulmonary disease or otherwise, pericarditis with effusion does not always present a subjective picture which would serve to identify it. In fact, it is the complications of the pulmonary diseases which show subjectively only as an increase in the intensity of the symptoms which tax our diagnostic efforts. Nor can the severity of subjective symptoms always be accounted for by a proportionate variety and number of physical signs. Persistent cough and foul expectoration with the general effects of chronic pulmonary inflammation may show few and unimpressive physical signs.

The results of the physical examination may not always clearly determine the nature of the lesion. Pneumonia of the right base with plugging of the bronchi might be easily differentiated from pleural effusion, were it possible always to determine the degree of displacement of the heart. However, even with fairly extensive right sided effusion, this cannot always be done. The diagnosis of postpneumonic conditions presents many problems so familiar as not to require elucidation but it is sufficient to say that their immediate solution is not always possible by clinical means but much watching, waiting, and persistent scrutiny are necessary. The differential diagnosis between pleural effusion and subdiaphragmatic or liver abscess is difficult because the physical signs may be identical. Even the insertion of a needle and the withdrawal of pus does not tell all, since it is not easy to decide whether the pus came from above or below the diaphragm. The difficulty in the differentiation of emphysema from a partial pneumothorax is well known, as is the problem of determining the extent and size or even the presence of an effusion associated with pneumothorax. Variable dullness with diminished respiratory murmur and marked costovertebral tenderness may be the only physical signs of a perinephritic or of a liver abscess.

Again, an enlargement or displacement of the right heart may be indistinguishable from a patch of consolidation in the lower anterior portion of the right base through which the heart sounds may be transmitted with great clarity, in marked contrast to their feebleness over the left side, because of a possible emphysema. A pericarditis with effusion may be mistaken for dilatation of the heart. Consider eventration: Its general clinical picture with more or less sudden onset with respiratory crisis suggests the advent of pleurisy, and the physical findings of tympany, respiratory immobility, and cardiac displacement will suggest hydropneumothorax, yet the x ray appearance is absolutely characteristic and pathognomonic.

A definite train of gastric and intestinal symptoms is associated with congenitally small hearts (Laennac, Virchow, Muller, His, Wenkebach, Adler). Röntgenologically this condition is simply and graphically demonstrable. The diagnosis of aneurysm by the older physical methods, responsible for much clinical humility (Osler), is far surpassed in accuracy and definiteness by the Röntgen method. The diagnosis of incipient tuberculosis by the ordinary physical methods is difficult because of the scarcity of signs, the normal variations in the percussion note and respiratory murmur at the apical area and the difficulty in the differentiation of the intrapulmonic from the adventitious sounds.

Besides this the beginning processes of pulmonary tuberculosis are, as proved by Rieder, Ghon, and others, not in the apices, but in the central portion of the lung in or about the hilum and its lymph nodes and these changes are not readily registered by physical signs. By the Röntgen method, however, the variety, shape, size, and manner of extension of the early and late changes are frequently made manifest before physical signs disclose them. Though it is conceded that some of the earliest changes are not pathognomonic of tuberculosis individually or collectively, still, when studied in conjunction with carefully analyzed data, they gain in importance as evidence, and the later changes are usually proved radiographically to be more extensive than the physical signs would indicate. The signs of diffuse miliary infiltration may be only a little roughening of the respiratory murmur. Cavitation may exist without audible manifestations. Tumors of the lung, metastatic or primary, give but few signs and symptoms early in their existence. Extensive bronchiectasis may exist with few signs. The operative treatment to which this latter disease is being subjected necessitates the determination of the number, form, size, and location of the bronchial dilatation. This, particularly where multiple foci exist, cannot be done clinically.

Patches of consolidation in central portion of the lung are surely overlooked with great frequency, if, according to Wintrich, a patch of consolidation needs to attain the size of two by five centimetres and be superficially situated in order to produce sufficient percussion dullness. Yet the smallest of such foci may be isolated by the Röntgen method, and it behooves the clinician to utilize the data furnished by the x ray examination, data which are accurate records by physical agencies, requiring but proper interpretation for their translation into valuable knowledge. The tendency to discredit or ignore what workers in this field have accumulated by laborious research and painstaking effort is deplorable. It is deplorable, too, that the knowledge of the interpretation of the fluoroscopic and radiographic picture is not more general and it is surely incumbent on the medical man to acquaint himself with the röntgenological appearance of the structures as it is with the appearance of a granular cast or the tubercle bacillus. Not that the last word in interpretation has been said, but sufficient has been established on well proved grounds to make the method indispensable to the clinician. It is conceded that in some points the Röntgen diagnosis has not as yet attained incontestable form and that the method is not infallible, yet these are no excuses for its neglect. Who will contend that the last word has been said on auscultation or percussion? Surely, as has been pointed out, these time worn and time honored methods have been studied by the best medical minds these hundred years, and yet even today a voluminous literature testifies amply to the fact of their incompletion and fallibility.

Time was when the practice of this diagnostic art was entirely in the hands of the Röntgen specialist. But, through the labors of these workers the methods and the principles have been so elucidated that the torch may now be passed to the internist for the illumination of the devious and dark paths of clinical diagnosis. The plate examination is comparatively far more complicated than the fluoroscopic and requires numerous accessory appliances, and though it has the advantages of permanency and greater accuracy of its records, nevertheless, the simplicity, convenience, and rapidity in obtaining results make the fluoroscope an instrument of greater general utility.

The requisites of safe and successful fluoroscopy are: 1, a ray of proper quantity and quality; 2, a screen of proper quality, size, and suspension; 3, proper sensitization of the eye; 4, protection from deleterious effects. Careful attention to the first three requisites will continue in a large measure to the establishment of the fourth. Generally speaking, the fluoroscopic stative should be of such construction as to permit the maximum mobility of tube, patient, and screen. This means independence of screen movement from tube movement.

The x ray tube should be completely enclosed in a box lined with lead, the container being more heavily covered over the active hemisphere. The tube box should be equipped with iris or a slit diaphragm of both, the latter being of greater utility. Means for cooling the tube should be provided; a fan is usually sufficient. The opening of the box should be at least five by five inches and covered by a sheet of aluminum one millimetre thick. The box is to be suspended by counterweights and to be freely movable in all directions by a single handle which should also contain the handles for diaphragm and be long enough to bring the hand of the operator moving the tube completely out of range of the most divergent ray. The tube box should hang on a device which makes it part of a lead partition which moves behind another immovable lead partition containing a large fibre window against which the patient rests. In this way a double lead partition with an intervening air space is provided. The distance of the target of the tube from the patient should not be less than twelve inches.

The fluoroscopic apparatus is to stand firmly and a ledge or forward supports are to be avoided so that a couch or chair may be wheeled directly against the permeable fibre window. Means should be provided for a shelf or a table to be placed in front of the permeable window in order to permit the examination of the patient in the lateral position. All that has been said in reference to the vertical fluoroscopic stative holds true for the horizontal excepting that it seems preferable in many instances, on account of giving greater comfort to the patient, that the canvas topped horizontal table be used. Means should be provided for keeping the canvas taut.

The screen is to be suspended independently by counterweights and should be of such weight and suspension as to be closely and firmly against the patient without pressure. The screen should furnish a maximum illumination with a minimum amount of current, proper contrast, freedom from lag, permanence of coating, airproof mounting, and lead glass protection. Screens with considerable lag are a disadvantage when studying the movement of the various organs. It is an advantage also to have an arrangement on the back of the screen whereby the plate holder may be clamped in any position for the purpose of making an exposure during fluoroscopy. Means should also be provided for easy and rapid tracing of the fluoroscopic image, as drawn on the lead glass, on tracing paper attached to the screen holder. A fourteen by seventeen screen should be used in all instances when possible, even though the entire screen is rarely illuminated during fluoroscopy, it nevertheless offers a certain amount of protection to the operator. From the lower edge of the frame of the screen should be suspended an apron of lead rubber at least eighteen inches long and as wide as the screen. Several cuts in this will permit the use of the palpation spoons.

Too great emphasis cannot be laid on the problem of protection. The Röntgen ray is an agent capable of causing considerable damage to the organism. Though this appears to be generally appreciated, it is nevertheless surprising to note the utter disregard of this danger during fluoroscopy, particularly with the use of the Coolidge tube, where many of the limitations which gave a certain margin of safety when the Crookes tube was used do not exist. Carelessness in providing suitable protective measures is bound, sooner or later, to lead to disastrous results. It must not be forgotton that the late skin effects may, and usually do, come on from four to seven years after prolonged exposure. Immunity from such effects for a year or two instils a false sense of security. Eternal vigilance is the price of an intact skin. Such additional protection devices as lead rubber gloves are essential and ordinary leather gloves should be worn underneath the rubber gloves. As a substitute for the hand, compression should be made with the wooden compressor, spoons, or "distinctor" as Holzknecht devised it. Lead glass goggles and leaded aprons are useful in further increasing the safety of fluoroscopy. The tube, if of the Crookes variety, should be of medium focus and "air regulated"; if of the Coolidge variety, the "sharp" focus tube.

The quality of the tube should be such that three to four milliampères may be used with a tube of sufficiently high vacuum to back up from five and one half to six and one half inches in equivalent gap. What should be sought for is detail with sufficient contrast. Should it be necessary to move in and out of the fluoroscopic room, colored glasses should be worn. Sensitization of the eye is extremely important. The illumination of the fluoroscopic room should always be indirect, dim, and of a bluish green tint, the color of the fluorescence of the screen. Sensitization may also be accomplished by tiring the eye for its complementary color, red.

Previous to the examination, the room, which should be well ventilated and the air kept in motion, should be darkened. The observer should remain in partial darkness for at least ten minutes and in absolute darkness for five minutes, before the first examination is begun.[1] The visible light from the tube itself must be eliminated. The static glow of the wires carrying the high tension may be eliminated by the use of a tin or iron piping or heavily covered cable. The patient should stand or be seated on a revolvable stool directly against the stative. Those who are too ill, may be examined directly on the horizontal scope or on a chair with a canvas back against which a vertical stative may be placed. It is not necessary to bare the body. A buttonless or hookless shirt prevents irritation of the skin of the precordium which may manifest itself reflexly as a variation of heart action—myopathic heart reflex.[2] Besides this, the wearing of a shirt helps to reassure and calm the patient, who is usually frightened by the circumstances attending the examination and emotional quiet is essential for the proper examination, particularly of heart cases. The examination in the vertical position should be followed by one in the horizontal posture.

The examiner should have everything at hand, so that there need be no stumbling or fumbling in the dark or turning on of lights. The examiner need not necessarily stand directly in front of the screen, for the observations may be just as accurately made when standing to one side and thus out of the direct path of the rays. The examination must be thorough but rapid. The energizing of the tube must be intermittent. It is a foolhardy and useless procedure to fluoroscope a patient over a long period of time. A glance and then an interval for orientation and thought, then another period of observation, followed by a period of darkness for consideration as to what is observed and what is to be sought or still to be determined. By this method the interest of the patient is safeguarded and prolonged exposure is prevented. It should always be borne in mind that there exists an idiosyncrasy on the part of some individuals to the ray. This has been established beyond a doubt. The "dried out," emaciated individual, suffering from old nutritional disorders, is to be subjected to an examination for a shorter period of time than the average case.

Working with a gas tube, whose equivalent spark gap value is seven inches or with a Coolidge tube of six inches and using two to three milliampères of current, through one millimetre of aluminum, an exposure of fifteen minutes is the limit of safety at the usual target skin distance if a skin reaction is to be avoided. With the constant moving of the body of the patient, incidental to the examination in all directions, no part should, therefore, even receive a large fraction of a skin dose.

The thorax should be studied according to the following scheme:

SCHEME FOR RÖNTGENOLOGICAL STUDY OF THE CHEST.

1. PULMONIC FIELDS:
   - Shape
     - Triangular
     - Rounded
     - Irregular
   - Size
     - Height
     - Width
       - Equal
       - Unequal
         - Large
         - Medium
         - Small
   - Illumination
     - Bright
     - Brilliant
     - Deficient
     - Absent
       - General
       - Local
         - Location
         - Borders
           - Sharp
           - Indefinite
   - Expansion
     - Equal
     - Unequal
     - Diminished
2. HILUM SHADOWS:
   - Shape
   - Size
   - Structure
   - Density
   - Calcification
   - Pulsation
3. PULMONIC MARKINGS:
   - Number
   - Size
   - Shape
   - Extension
   - Density
     - Distribution
       - General
       - Local
4. TRACHEAL AND BRONCHIAL OUTLINES.—Air Content:
   - *Trachea*—
     - Size
     - Shape
     - Position
     - Bifurcation (site)
   - *Main Bronchi*—
     - Relation to hilum shadow
     - Relation to aortic arch
5. DIAPHRAGM:
   - Position (relative)
   - Shape
   - Contour
     - Regular
     - Irregular
       - Concave, wavy
       - Convex, billowy
   - Movement
6. VERTEBRA, RIBS, AND SPACES:
   - Structure
   - Direction
   - Width
7. COSTODIAPHRAGMATIC SPACE:
   - Size
   - Shape
   - Illumination
8. MEDIAN SHADOW:
   - Outline
     - Left aorta
     - Pul. art.
     - Left auricle
     - Left ventricle
     - Right auricle
     - Right aorta
   - Size
     - Small
     - Normal
     - Large

M. R......Maximum deviation of heart shadow to right of median line
M. L........Maximum deviation of heart shadow to left of median line
T. ....Total heart width = M. R. + M. L.
P. ....Total pneumonic field radius
L. ....Heart length, "apex to base"
V. ....Angle of ventricular line to horizontal = 45°

   - Position
     - Normal
     - Transposed
     - Displaced
   - Axis
     - Vertical
     - Oblique
     - Transverse

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[1] Precise measurements have shown that ten minutes in the dark increases the sensibility of the retina to the light of the fluorescent screen fifty to one hundred times. After twenty minutes in darkness the sensibility is increased 200 times.

[2] According to Abrahams the degree of myocardial retraction, that irritation of the precordial region produces, as estimated by the x ray, 1.2 centimetres.

- Shape
  - Normal
  - Spherical
  - Oval
  - Triangular
  - Rectangular
- Movements
  - As a whole
  - Its individual chambers
  - The great vessels

9. AORTA:
- Size
  - Small
  - Normal
  - Large
    - Length from junction of right auricle to summit of arcus
    - Width
      - At base
      - At arcus
- Shape
  - Ascending
  - Arcus
  - Descending
- Position
- Density
- Movement

10. UPPER MEDIASTINAL SHADOW:
- Size
- Shape
- Outline
- Position
- Tracheal position

11. RETROSTERNAL SPACE:
- Size
- Shape
- Illumination

12. RETROCARDIAC SPACE:
- Calcification
- Shadows

13. ESOPHAGUS[1]:

PATHOLOGICAL FINDINGS
INTERPRETATION
DIAGNOSIS

The examination should be made in a systematic and definite manner, each portion of the pulmonic fields and the central shadow being scrutinized in a regular definite sequence. The tube is centred over the middle of the chest and the diaphragm opened widely so as to obtain a view of the entire thorax. The tube is so energized that the pulmonic fields are just barely visible, for in this way slight differences in illumination and the variations in illumination during quiet breathing can be determined. This is not so readily appreciable when the fields are later fully illuminated for the study of the pulmonic markings. The illumination of the screen is gradually increased until the proper view of all the detailed structures of the lung is obtained and a rapid survey of the entire thorax is made. The diaphragm is then closed to a horizontal strip and moved so as to bring both apices in view, and their illumination is then compared. The slit is then closed laterally so as to show but one apex at a time and these are now carefully studied for miliary or peribronchial infiltration, pleuritic thickening, etc. Thus successively, first with longitudinal slit, both and then the individual pulmonic fields are covered from apex to base, and finally a comparative study of the domes of the diaphragms is made.

With a vertical slit, the hilum shadows are studied, first comparatively, then individually. Finally the borders of the median shadow are scrutinized, the maximum deviation to the right or left of the central shadow roughly measured and compared to the diameter of the right pulmonic field at the level of the highest point of the right diaphragmatic dome.

A relative accurate orthodiagraphic tracing of the heart shadow may be made without the use of the special complicated and dangerous orthodiagraphic apparatus. One method is to fix the screen firmly against the chest. With a narrowed diaphragm, not more than one centimetre square, the contours of the heart are traced so that the heart outline bisects the small square of illumination of the screen. The heart outline may be traced on the chest of the patient, by using a small screen, six by eight, which in its centre contains a perforation large enough to admit a pencil point. The screen is attached to the handle of the tube container in such a way that tube follows freely every movement of the screen. With a diaphragm opening in the tube box sufficient to illuminate the screen, the heart borders are marked out by a series of points on the skin through the hole in the screen when the hole, showing as a dark spot on the illuminated surface, falls at the periphery of the heart shadow. In both these methods it is important that the tube be centred in its container so that with the smallest workable diaphragm opening the central ray is obtained. When the perforated screen is used, the screen must be so adjusted that the central ray passes through the perforation. Means should be provided for making a tracing of the fluoroscopic image. This may be done in two ways. It may be made directly on the glass covering of the screen and from this transposed to paper, when the examination is at an end. Another method is to affix an arrangement to the screen, whereby a piece of clean glass upon which the tracing is made may be slipped in front of the lead glass. The patient's name and other data are placed thereon and this may be filed in an envelope as a record or transposed to paper. Tracing paper may be suspended on a roll at the top of the fluoroscopic screen, so that a piece may be pulled over the screen and a tracing made. The tracing of the heart borders and the diaphragmatic domes should be made during normal breathing and also at the end of forced inspiration and expiration, in vertical, horizontal, and lateral postures. Such records of a case gives considerable information regarding limitation of motion, not only in respiratory but also in cardiac and pericardial diseases.

Two manipulative procedures are utilized in fluoroscopy: palpation and magnification. In röntgenoscopy of the chest palpation is not necessary but magnification is extremely important. The withdrawal of the screen not only adds contrast to the diaphragmed image but magnifies it and thus gives valuable information. By this procedure, for instance, the pulsations of the hilum shadow in mitral disease and even in normal but very thin individuals may be made out. Shadows due to calcareous deposits may be differentiated from shadows of large vessels seen in cross section, etc.

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[1] For the examination of the esophagus a special bismuth mixture should be used. This consists of a teaspoonful of mucilage of acacia in which is suspended by thorough stirring one heaping tablespoonful of bismuth. A part of a teaspoon of the resulting colloidal mixture is sufficient to clearly outline the entire esophagus and permit the study of its lumen, walls, and peristalsis. The examination must be made in the oblique positions. (1)

Palpation may be made with the hand or with the wooden spoons devised by Holzknecht. The modified Buicky diaphragm and compression cylinder as devised by Lippman, renders great service, not only as a means of compression, but for the fine differentiation of structures. Particularly in the examination of the abdomen, fluoroscopy without palpation is but one half of the examination. Palpation permits the study of the outline and differentiation of actual defects due to invasions of the visceral wall from extravisceral conditions causing pressure; the determination of fixity and mobility and of areas resistant or sensitive to pressure; the isolation of shadows and their localization; the stimulation of peristalsis; the artificial blocking for the study of the lumen by overdistention.

For the study of the gastrointestinal tract the administration of a contrast mixture is, of course, essential. Previous to the administration of bismuth the abdomen should be studied on the fluoroscopic screen for the purpose of determining the presence of excessive gas. Normally the air may be visible in the abdominal cavity in several positions. 1. In the left hypochondrium an oval shaped shadow directly underneath the diaphragm is due to gas in the cardia. In the normal stomach it is of oval shape, its long axis parallel to the long axis of the body and situated in the central portion of the diaphragm. The height of the oval shadow diminishes and the width increases as the organ is filled and it becomes semicircular in shape. In marked dilatation of the stomach it is very large, wide, and semicircular and is visible as such when hypersecretion exists and a determination of the fluid content may thus be made before the administration of bismuth. 2. In the region of the bulbus duodeni, it appears as a triangular or rounded bubble. 3. It may be seen in the region of the cecum; 4, in the splenic flexure of the colon, particularly in the proximal part, and 5, in the rectum.

The examination is continued by palpatory fluoroscopy with a nonsuspended mixture of contrast salt in water. The contrast salt sediments rapidly through the water in the stomach to the greater curvature and pylorus. By palpation it may now be spread over part of the stomach wall. The value of this procedure lies in that it permits: 1. The study of the method of filling the stomach. This should be studied by individual swallows of contrast mixture. The morsel drops from the esophagus, halts at the narrowest portion of the collapsed stomach and then glides along the lesser curvature to the pylorus and then the greater curvature. The deviation in the course of the stream or in the method of filling gives many important clues. 2. The determination of mucous membrane irregularities. Such irregularities in the lumen as are produced by tumor formations, a niche or a diverticulum, may be outlined by the mixture, the granules of bismuth being deposited within these crevices. The above morphological data may also be determined by the usual suspended contrast mixture but because the stomach is thus completely filled with contrast mixtures, small penetrating or perforating ulcers on the posterior wall will be overlooked. 3. The study of the stomach tone. The tone being the property of the gastric muscle by which it maintains its contents in tubular form, a normally tonic stomach will be full—fluid level—with five ounces as with fifteen. 4. The study of the antral activity. The actions of the antrum may be observed because the water is not retained in the stomach and the peristaltic activity begins almost immediately; thus the hyperactivity of the duodenal ulceration or the lessened waves of the atonic stomach resulting from old pyloric ulceration may be noted. 5. The study of pyloric patency. The pyloric incompetency of a scirrhus infiltration of the pylorus without antral contractions can be differentiated from the rapid outflowing associated with hyperperistalsis, of duodenal and periduodenal disease. 6. The study of duodenal morphology. Either by pressure on the pylorus or by blocking at the pars horizontalis inferior of the duodenum, the pars descendens, and pars superior and bulbus of the duodenum may be filled and overfilled for the study of form, peristalsis, antiperistalsis, and mobility.

This test is then followed by an examination of the stomach filled with a suspension mixture of contrast salt, barium in buttermilk being most commonly used. The examination is then made according to the following scheme:

SCHEME FOR ANALYSIS OF RÖNTGENOLOGICAL EXAMINATION OF GASTROINTESTINAL TRACT.

Study of Filled Stomach.

A. MORPHOLOGY:
  Type { Hyper, Ortho, Hypo, Subtonic } Its relation to habitus
  Axis
  Size
  Position { Greater curvature, Lesser curvature, Pars pylorica, Antrum } In relation to the mid and interspinous line
  Tone
  Outline
    Defects
    Niche
    Contractures { Temporary, Permanent }
    Spasm { Local, General }
  Peristalsis
    Depth { Length, Height }
    Origin
    Frequency
B. MOBILITY:
  1. Variation due to posture
  2. Variation due to retraction of abdomen or palpation
C. MOTILITY:
  Six hours P. C.
  Carbohydrate bismuth meal 300 grams
  a. Residue
    Size
    Shape
    Position
  b. Secretion
    Size and shape of air bubble (fluid level)
    Kaestle's capsules
  c. Differentiation of pyloric obstruction from spasm
    1. Water test
    2. Papavarine
    3. Atropine

- d. Bulbus duodeni
  - Shape
  - Size
  - Outline
    - Defects
    - Niche
    - Contractures
    - Spasm
  - Sphincteric hiatus
    - Form
    - Size
    - Position
  - Motility test (duodenum)
    - Residue
    - Size
    - Position

On a similar scheme the remaining portions of the gastrointestinal tract are studied.

The examination of the colon may be made either by the ingestion of a contrast meal or the injection of a contrast enema. If by meal, then the examination is made at varying intervals after its ingestion until the colon is empty. A simple form of enema, useful for this purpose, is made by suspending the four ounces of barium in six ounces of mucilage acacia and adding enough warm water to make one and one half pints. The enema is given with a very short rubber tip, at one and one half feet pressure. By palpation and pressure the course of the enema may be traced, the various loops isolated and their morphology and mobility studied. The examination must be made in the vertical as well as the horizontal posture. When motility examinations become important the first examination should be made within four hours after the ingestion of the meal, in order to note the arrival of the meal at the ileocecal junction. The second examination is made six hours after the meal, and subsequent examinations at nine, twelve and eighteen, and twenty-four hours and longer, depending on the necessities of the examination. After a fluid meal the appendix is usually found filled at about the ninth hour, when the ascending colon will have become well filled and the cecum and appendix distended by the filling from the ileum and the antiperistaltic movements which are not infrequently seen traveling from the proximal part of the transverse down to the cecum. This portion of the bowel may be studied systematically according to the following scheme:

- Ileum terminal, Cecum, Appendix
  - Position, Mobility — Posture
    - Lateral
    - Trendelenburg
  - Content
  - Form
  - Size
  - Outline

- Ascending, Transverse, Descending
  - Content
  - Position
    - Distal
    - Proximal
  - Form (Transverse) — Abnormal Looping
    - No loop
    - Loop to right
    - Loop to left
    - Bilateral loop
  - Outline defect
    - Permanent
    - Temporary
  - Haustra
    - Origin, Large, Small — Regular, Irregular
  - Motility
    1. Small movements or segmental
    2. Haustral or microdiastaltic movements
    3. Mass or megadiastaltic movements
    4. Antiperistalsis
    5. Pendular

- Sigmoid
  - Shape
    - No loop
    - Right loop
    - Left loop
    - Median loop
  - Size
- Rectum
  - Position
  - Outline
  - Content

REFERENCE.

1. HIRSCH: The Röntgen Ray Examination of the Esophagus, *Interstate Medical Journal*, April, 1916.

11 EAST SIXTY-EIGHTH STREET.

REFRACTIVE ERRORS CAUSING RETARDATION IN SCHOOL.*

By WILLIAM MERLE CARHART, M. D.,
New York,
Oculist, Children's Clinic, Bureau Child Hygiene, New York City Department of Health; Member of the American School Hygiene Association.

A considerable number of school children every year in both city and country schools fail to be promoted from grade to grade for various causes. These children are either eliminated entirely from school life or their education is retarded by the necessity of repeating all the lessons of the grade in which they have failed to pass. In New York grammar and high schools some children have the misfortune to be left back a number of times. Such retardation is not only a waste of the taxpayers' money, if preventible, but is a positive detriment to the children, who become discouraged, and take perhaps a more or less intense dislike to school life. Not all truants are incorrigible. Many can be reformed by correction of the physical defects which handicap their efforts to succeed in classroom work. In fact, it is my belief that nine out of ten truants dimly realize the impossibility of keeping up in their classes while so handicapped. To force them to attend school before their physical defects are removed is not only cruelty to the child but a great waste of time and effort for the teacher.

Some years ago Dr. Leonard P. Ayres made a study of the causes of retardation in school and published his findings through the Russell Sage Foundation in a notable book entitled *Laggards in Our Schools*. In that volume Doctor Ayres touches upon defective vision and eye strain as contributing in a marked degree to retardation and elimination of pupils in the public and private schools of all our cities. Since the publication of this work additional study to determine the causes of retardation has been carried on by various investigators, nearly all of whom have laid stress upon its ocular origin in a great proportion of the delinquent children. No child with high refractive error uncorrected by glasses is in proper condition to do the work assigned in school, and for many a child close application to books involves unendurable eye strain. It is a natural consequence that such children either leave school entirely or are retarded year after year through failure to pass their examinations.

When a boy or girl is bright and active on the playground but unable to concentrate his attention upon his books for any length of time, there is in most cases considerable refractive error present, usually either simple or compound astigmatism or excessive hypermetropia. Properly fitted lenses will correct this refractive error, and will remove the strain upon the ciliary muscle for accommodation for near work, thus enabling the child to do his lessons without a constant effort to maintain visual acuity. Many of these children may have good vision for distance, being far sighted, and teachers and parents may consider the child stupid or lazy when he falls behind in his lessons, not realizing that excellent sight for distance is still consistent with enough astigmatic error to cause a great deal of eye strain for close work. Such children are not to be considered mischievous or bad because they are restless and inattentive in school, nor should they be forced to continue school work without glasses at the sacrifice of irreparable damage to their eyes. In the estimation of one prominent oculist eye strain in childhood may mean neurasthenia in the adult, and many men and women have weak eyes all their days because of unrecognized refractive error during school life.

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*Read at the Tenth Congress of the American School Hygiene Association, June 9, 1917.

There is no more practical and beneficent work done anywhere than the medical school inspection by physicians trained to recognize accurately and thoroughly the symptoms of eye strain or than the careful correction, by oculists of wide experience and training, of existing refractive errors with properly fitted lenses. Such correction can not be done accurately by physicians temporarily detailed, however competent in general medical practice, nor should an examination of the eyes of children be rushed in mad zeal for inflated statistics. If an oculist thinks he is only doing his duty when he examines a child's eyes in his office carefully and slowly, taking at least fifteen or twenty minutes before he writes his prescription, surely the helpless children in a public clinic should not be subjected to tests of their eyesight for refractive error entirely completed at the rate of one every five minutes or less. Fortunately children are markedly tolerant of wrongly fitted glasses, and I have seen many a child wearing persistently for months lenses which would drive most adults to distraction in a few days. It is by no means uncommon for the oculists of our children's clinics to find children fitted with lenses for simple myopia when the real diagnosis should have been hypermetropia, and as for astigmatism, in many of these tots that particularly important ocular defect is either entirely overlooked or inaccurately corrected. I am mentioning these facts in the hope that enlightened public opinion may be aroused to the importance of the work now being done for child hygiene in the children's clinics of all our large cities. Too often recalcitrant municipal authorities fail to realize the necessity for adequate provision of competent oculists properly supported if the child in the public schools is to be freed from ocular defects which handicap his efforts to gain an education. Would that our boards of estimate and standardization experts could personally note the remarkable change of attitude toward his lessons when the boy or girl with high refractive error is properly fitted with glasses! The child can now study without headache or blurrings of vision, and his restlessness and inattention pass off to such an extent that some of them make up with ease the grade rank appropriate to their age after being left back. Is not such a result worth while?

In 1897 I had an opportunity to examine the refraction of the eyes in 1,000 school children with particular reference to the detection of astigmatism as shown by the Javal ophthalmometer, which was at that time a comparatively new instrument, having been introduced into this country in 1890 through the example and efforts of my old teacher and friend, the late Dr. D. B. St. John Roosa. From the examination of these children I published some tables of the percentages of refractive error found in their eyes. These tables are based upon children of various ages in two village schools, not only those suspected of ocular defect but all the children in the classes from kindergarten through high school. They thus give a good survey of the refractive errors found in the average school child at that date, although being taken in a village community largely American born, they are not perhaps strictly commensurate with conditions among foreign born or mixed city population. It has been repeatedly shown that refractive errors such as myopia, myopic astigmatism, and mixed astigmatism, are present in a greater proportion of cases and to a higher degree among a foreign born city population than in native American stock of average vitality in a village community.

TABLE I.

PERCENTAGES OF REFRACTIVE ERROR IN ONE THOUSAND SCHOOL CHILDREN, AGES 5-18 YEARS.

	Percentage.
Emmetropia	13.90
Hypermetropia	36.20
Compound hypermetropic astigmatism	44.00
Myopia	1.40
Compound myopic astigmatism	3.50
Mixed astigmatism	1.00

TABLE II.

PERCENTAGES BY AGES OF SAME ONE THOUSAND CHILDREN.

	5 to 8 years.	9 to 12 years.	13 to 18 years.
Emmetropia	10.00	16.43	14.33
Hypermetropia	53.48	37.27	22.87
Compound hypermetropic astigmatism	33.48	40.05	58.55
Myopia	0.87	1.85	1.17
Compound myopic astigmatism	71.74	3.01	5.26
Mixed astigmatism	0.43	1.39	0.88

For extended comment on these statistics I must refer you to my original articles (1). In the second table it will be noticed that the short, immature hypermetropic eye decreases rapidly in percentage as the child develops, being 53.48 per cent. at five to eight years of age and only 22.81 per cent. at thirteen to eighteen years. The stress and strain of school life causing an increased distortion of the eyeball through irregular yielding of its structure is shown in the increase of astigmatism, hypermetropic, mixed, and myopic in nearly equal degree, and myopia itself without astigmatism is found more prevalent in the middle years of school life for the same reasons, although children with much myopia and consequent excessively impaired vision, by dropping out of school in the grammar grades, cause the percentage of high school myopia to be less than in the middle years of school life. The increase of emmetropia demonstrates the physiological lengthening of the eyeball as the child matures and is again greatest in the middle section of the table.

In contrast with these tables of the refraction of one thousand village school children of all ages it is interesting to compare the refraction found in very young city children before they have been using their eyes in school for any length of time. This present year I had the good fortune to examine the children's eyes in the kindergarten and 1A grades of the Yorkville public school in East Eighty-eighth Street, Borough of Manhattan, New York, which is a large boys' and girls' school in a population of mixed foreign and native born families. The eighty-seven children in this visual survey presented statistics which show the existence of refractive errors and abnormalities of sight even at that tender age, although it is encouraging to note that these refractive errors do not occur in so great a percentage or to so high a degree as in later years. The comparison of these two sets of statistics quite clearly demonstrates that many of these refractive errors are increased in degree where present, and when absent can be caused directly by the stress and strain of the use of the eyes in school.

These young children of kindergarten and 1A grades were very carefully examined both with the ophthalmoscope and the shadow test (skiascopy), and in addition their vision was taken subjectively, although in such young children, five to seven years old, objective methods were more relied upon, since children at these ages can rarely be trusted to answer accurately questions involving visual judgment. Years ago Doctor Roosa's associate, the late Doctor Ely, demonstrated that the normal baby is born farsighted, which merely represents the too short eyeball of immaturity, and so I was not surprised to find that ninety-one per cent. of these children were more or less hypermetropic. As bearing out my contention for over twenty years that myopia is always abnormal and means an eye elongated and weakened by local or constitutional disease or dyscrasia, only 1.1 per cent. of these little children could be proved to have any myopia at all. The myopia of later years is merely to be laid at the door of the strain of school life, and should in most cases be entirely preventable through early and accurate correction with glasses of whatever refractive error originally exists. If we remove the eye strain caused by the efforts of the ciliary muscle to compensate for defective vision due to high refractive error, we can often prevent the yielding of the tissues of the eyeball which results in the distortion of structure constituting myopia. A weakened eyeball elongates through the turnstile of astigmatism into myopia more easily in the undeveloped and plastic years of early childhood than in adult life. Few cases of high myopia due to functional overstrain and not to constitutional or local disease develop after school years are safely passed.

That vague term emmetropia, meaning an eye optically without structural defect so that the rays of light are focused perfectly on the retina, was discovered in only 2.4 per cent. of the cases. This seems to bear out the contention of George M. Gould that there is practically no such thing in civilized man as an eye without some hypermetropia, myopia, or astigmatism, and that the more careful and accurate our examination the rarer the optically perfect eye becomes. Astigmatism is not easily demonstrable in these little children with the ophthalmometer, as they cannot usually hold their eyes still enough for its accurate reading, but at least fifteen per cent. of them were surely astigmatic to a greater or less degree with the shadow test. Vision was surprisingly good in nearly all of these children, seventy-seven per cent. of them reading 20/15 Snellen test type with ease at twenty feet. In eighty-seven per cent. vision was approximately equal in both eyes, but in thirteen per cent. the right eye had the better sight. Thus early in life the right eye is the dominant eye. The 5.75 per cent. of cases of convergent squint all carried out Gould's theory of right eyedness of the human race, all of these children having the right eye turn in by preference and fixing objects with the dominant right eye. In twenty-three per cent. of these children the refractive error was sufficient for me to prescribe glasses, the other sixty-seven per cent. being without symptoms of eye strain and not having any great amount of ocular defect were left without glasses. I regret to note that a considerable proportion of those for whom glasses were prescribed failed to get them, owing possibly to a lack of appreciation of the need of wearing glasses on the part of the parents of these children, although by the insistent advice of the oculist and school nurse the most urgent cases were supplied.

In conclusion I wish to emphasize the following statements as a summary:

1. Retardation in school has as one of its principal causes the existence of refractive errors in the eyes of the school children. As Doctor Ingalls has said: "It is a waste of time to send a child to school when his eyes are not in proper condition to do the work assigned."

2. Children are born hypermetropic if normal, and the excessively short eye in adult life is an eye which has not lengthened in axis as the child matures. Most adults are, however, somewhat hypermetropic, since emmetropia, or the optically perfect eye is rare. A moderate degree of hypermetropia can be considered almost physiological in civilized man.

3. The myopic eye is always an eye structurally weak, if not diseased, and prolonged use of the myopic eye in childhood, especially if uncorrected by glasses, will surely result in increase of the myopia and consequent diminution of vision. As the eyeball grows in strength and vitality, this functional myopia increase tends to stop, and for this reason few adults whose eyes are not actually diseased are any more nearsighted at fifty than at twenty years of age.

4. Astigmatism of all varieties represents an irregular yielding or distortion of the eyeball, by which the eyeball has different radii of curvature in different axes. Corneal astigmatism is believed by most authorities to be due to pressure of the

lids in prenatal life on the plastic eyeball of the infant, but my belief, backed up by these statistics is that it is rarely congenital, if the child is born normal, and is directly caused by the stress and strain of near work in school in the great majority of instances.

5. Of these refractive errors, astigmatism either with or without hypermetropia is a prolific cause of headaches and eye strain, while marked hypermetropia is very apt to cause decided asthenopia for near use of the eyes; myopia does not usually give any particular subjective symptoms of eye strain, although it causes considerable decrease of visual acuity for distance, and so may interfere markedly with the duties of school life.

6. The symptoms and physical signs of eye strain can be easily recognized by the trained observer, and there is no more brilliant success in school hygiene than the results in improving the eyesight and in relieving eye strain which follow proper correction of refractive error in children.

This work in order to do justice to these immature and helpless wards of the educational and health departments of our government should be performed by oculists of wide experience and training who can bring to the public service devotion and ability equal to their task.

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1. CARHART: New York Medical Journal, April 17, 1897; June 12, 1897.

616 Madison Avenue.

A PARAFFIN WAX TREATMENT FOR BURNS.

By Charles Augustus Behney, A. B., M. D.,
Philadelphia.

During the summer of 1916 extraordinary reports reached America regarding a new remedy used in France for the treatment of burns. This substance, the now well known ambrine, was discovered and commercialized by Barthe de Sandfort, who is carefully guarding the formula of the preparation. A company has been formed for its exploitation and it is placed on the market at three dollars a pound, a price which prohibits its general use. The substance is brown in color, waxy in appearance and consistency, and has an odor somewhat resembling crude petroleum. When heated it becomes a liquid which is clear brown in color. This, upon cooling, solidifies at 43° C., and when painted on the body quickly hardens into a thin film, which adheres to the skin and is malleable and slightly flexible. It is maintained that this dressing, 1, gives greater immediate relief than any dressing heretofore employed on burns; 2, is more comfortable; 3, is painless on removal; 4, hastens healing and permits the healing of large areas without grafting; 5, permits healing to take place with less scar formation and fewer contractures.

Believing that an efficacious substitute could be found, I undertook to determine a combination which would be simple, cheap, and satisfactory. No effort was made to analyze the original ambrine, but a study of the problem showed that the following properties were the essentials of such a dressing: 1, bland and nonirritant; 2, impermeable to air, moisture, and heat; 3, melting point slightly above body temperature; 4, flexible; 5, adhesive to the sound skin; 6, nonadhesive to granulating surfaces; 7, unaltered in composition by heat; 8, favoring epithelial proliferation. Many trials of various materials in different proportions were made before the following formula was finally adopted as best fulfilling these requirements:[1]

Paraffin (M. P. 40° C.), ...	87 per cent.
Beeswax (yellow), ...	10 per cent.
White resin (turpentine), ...	3 per cent.

Paraffin is a convenient base, can be secured at almost any desired melting point, and in itself possesses most of the desired properties as outlined. The wax is added to make the mixture more malleable. The resin renders it adhesive and elastic and is reputed to stimulate epithelium. When melted this mixture solidifies at 45° C. The cost of this mixture is approximately fifteen cents per pound. In preparing the material, the resin is heated to melting. To this is slowly added the wax and finally the paraffin, maintaining constantly a temperature above the melting point of the resin. When the mixture becomes clear it is poured through fine gauze into convenient sized sterile pans and allowed to cool. When a deodorant is desired betanaphthol 0.5 to one per cent. can be incorporated. Eucalyptol or oil of pine can be added after the liquid is partially cooled. The dressing as outlined by De Sandfort consists of three layers: 1, a layer of the waxy substance directly upon the burned surface; 2, a thin layer of absorbent cotton; 3, a second layer of wax which, while still hot, penetrates the cotton and fuses with the first layer and both unite into one solid sheet of wax reinforced by the cotton.

In our cases the following technic has been followed: The lesion is thoroughly cleansed by irrigation with sterile water or normal salt solution and then dried. Drying is best accomplished by the use of a patent hair dryer, though this is not essential. The application of the first layer of wax is made with a soft camel's hair brush or an atomizer. The application of the wax should extend for about an inch beyond the margins of the lesion on all sides. The thinnest layer of absorbent cotton obtainable, or gauze, is now placed over the wax. The second layer of wax is applied with a brush so that it completely saturates the cotton and firmly seals down the margins of the dressing to the sound skin. For additional protection a heavy layer of raw cotton is usually placed over all and the dressing maintained by means of a gauze bandage. The best results are obtained by redressing every twenty-four hours.

For a period of time there will be active suppuration underneath the dressing. This need not cause alarm, since it soon subsides and does not cause sepsis. With one exception, a case complicated by an abortion, retained secundines, and pneumonia, not a single case showed symptoms of septic absorption. While many of the cases showed albumin and a few casts in the urine, there were never signs of severe renal involvement. With the disappearance of the devitalized tissues, the granulations become vigorous and healthy. Properly managed they should not become annoyingly exuberant. If for any reason they demand it, they are best controlled by firm pressure. Silver nitrate should never be used if it can be avoided. Early in our study of this treatment it was employed and these cases are the only ones which do not show everywhere smooth and flexible regeneration of the epidermis.

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[1] Since these observations were made and while clinical tests of our preparation were being carried out, a number of formulæ have been published in recent numbers of the *British Medical Journal* and the *Journal of the American Medical Association*. Many of these formulæ are no doubt good and deserve trial.

Where the destruction of tissue overlies a joint, the limb should be dressed in extension and exercise begun early. Exercise even while the dressing is in position is not painful. Healing under this treatment is far more rapid than with any other method; yet, unless there remain numerous islands of epithelium in the midst of the burned area from which the new skin can regenerate, the process of healing requires considerable time in extensive burns. It seems therefore advisable to graft by the Thiersch method as soon as the granulations are in condition to permit it, usually in about three weeks. After the grafts have become firmly established the paraffin wax dressing is resumed.

Comparison was made with ambrine by dressing adjacent parts of burns on the same individual with the two preparations and it was impossible to find a single feature in which ambrine was superior to the paraffin wax dressing. This dressing was employed in thirteen cases of second and third degree burns at the University and Presbyterian Hospitals and at the Dispensary of the University House with highly gratifying results. It was also applied in cases of burns at the Chester Hospital, following the recent disaster at Eddystone, and the effectiveness of the dressings here also measured up to our expectations.

CONCLUSIONS.

1. A preparation of paraffin, wax, and resin is as good as ambrine and comparatively inexpensive.
2. Applied as outlined it makes a comfortable dressing which can be removed without causing pain.
3. It relieves pain and diminishes shock.
4. It enables the patient to become ambulatory earlier.
5. It lessens toxic absorption from burns involving large areas and does not cause sepsis.
6. It promotes the separation of the devitalized tissues.
7. It minimizes the formation of scars and contractures.
8. It should be applied as soon as possible for the first dressing and should be used for all subsequent dressings.
9. After healthy granulations have been obtained it is advisable to hasten epidermal proliferation by grafting.
10. The use of silver nitrate is always undesirable.

2601 Lombard Street.

Treatment of Diphtheria.—A. D. Pattello (*Texas Medical Journal,* June, 1917) prefers an initial dose of 10,000 units where the patient is three or four years old. It is best administered intravenously. If this can not be done, it should be given intramuscularly.

ETIOLOGY AND TREATMENT OF BRONCHIAL ASTHMA.

By Mark J. Gottlieb, M. D.,
New York,
Director of the Laboratory for Clinical Research.

Bronchial asthma is a disease characterized by paroxysms of coughing, wheezing, dyspnea, cyanosis, and in some cases expectoration of frothy or thick yellow and often profuse sputum. The underlying cause is to our mind an anaphylaxis frequently complicated by an infection of the bronchial mucous membrane. From the evidence at hand, it is more than probable that the primary cause of bronchial asthma is a sensitization to one or more of the proteins, either animal or vegetable. To substantiate the assertion we have the following parallelism of asthma to anaphylaxis which cannot be denied. The majority of people who are subject to anaphylaxis have shortness of breath and cyanosis at some time during their attack; either of these symptoms is ameliorated in a very short time after the administration of adrenalin and when the sensitizing substance is removed or not applied, the symptoms do not occur. The bronchial symptoms in both instances are very often associated with urticaria, erythema or eczema; and last, but not least, upon administration of the antigen in a larger dose than usual to a sensitive individual typical attacks of bronchial asthma lasting from one half to two hours, have been produced by the author upon several occasions.

The substances most common in the production of this allergy are the excreta and the emanations of horses, cats, and other animals and insects; the pollen of anemophylous plants; certain foods, especially egg white, bologna, fish, tomatoes, apples, cheese, and strawberries; and finally the proteins of bacteria. In a great many cases where a primary sensitizing factor cannot be found, it may be assumed that the protein derived from the disintegrating bodies of the infecting agent plays that important rôle. For this hypothesis adequate proof is still wanting. In February, 1914, the writer attempted to determine whether a certain patient who was suffering with asthma had an allergy to pneumococci or streptococci which were found in his sputum. To this end, the bacteriologist was instructed to make bacterial extracts of the respective organisms. Skin scarifications were made on the patient's arm and the extract rubbed in; a distinct reaction occurred from the streptococci but, unfortunately, the extract was made with glycerin, and it was decided the reaction was due to that, and not to the specific action of the organism extract. Recently Goodale has shown that reaction to bacterial extracts occurs within fifteen minutes in sensitive individuals and it bids fair to open up a new and broad field in the therapeutics of these ill understood conditions. Of the thirty-seven cases of bronchial asthma studied by us six were tested with a variety of proteins with the following results: two reacted to horse serum; one to horse serum and tomato extract; one to egg white; one to potato, and another reacted to ragweed pollen. Of 164 cases of hay fever, the histories of which have been reviewed by the writer, seventy-five had asthmatic symptoms during their attacks of pollinosis. This fact emphasizes our previous assertion that the basis of asthma is an anaphylaxis. Many of these cases have asthma throughout the year due to a superimposed infection.

The secondary etiological factor is bacterial infection of the bronchial mucous membranes; the most common among these are members of the diplostreptococcus group. Other organisms, such as Micrococcus tetragenus, Diplococcus catarrhalis, staphylococcus, and influenza bacillus, are occasionally found, but it appears that these are only contributory factors.

The source of the infection is varied. Naturally, the upper respiratory tract offers the most accessible path through which infection can travel to the bronchial tree. Chronic infections of the nasal accessory sinuses are the most common foci and very often run pari passu with bronchial asthma. Next in order are chronic cryptic tonsillitis, tooth and alveolar infections, chronic cholecystitis, and appendicitis. The above mentioned nidi for infection are the most common, but an infection in any part of the body may transmit organisms by the bloodstream to the bronchial mucous membrane. It is a curious fact that bronchial asthma has occasionally apparently been cured by the removal of a diseased gallbladder or appendix. Of the thirty-seven cases which we have studied the organisms cultured from the sputum were as follows: seven, streptococcus; eight, pneumococcus; seventeen, streptococcus and pneumococcus; two, pneumococcus and staphylococcus; one, pneumococcus and Diplococcus catarrhalis; one, pneumococcus, streptococcus, and staphylococcus; one, pneumococcus, Micrococcus tetragenus, and influenza bacillus. In this group of thirty-seven cases, there were twenty-six males and eleven females, making the incidence of the disease in the sexes twice as frequent in males as in females. The ages of these cases occurred in the various decades as follows: two in the first; two in the second; four in the third; nine in the fourth; fourteen in the fifth; four in the sixth, and two in the seventh respectively. The youngest patient was six years and the oldest was sixty-four years of age. Naturally the age was recorded at the time the patient first came for treatment, although he or she may have suffered with this condition for many years, therefore the age as given is no indication of the age at which this disease is most frequently acquired. In the majority of these cases, heredity plays a very important rôle. Almost every history, if studied carefully, will reveal in either the direct or collateral branches of the family some allied ailment.

From the foregoing data, one can formulate the natural history of a case of asthma descriptively as follows: Given an infant, whose family history contains manifestations of anaphylaxis such as hay fever, asthma, urticaria, eczema, or erythema. This child becomes ill with some intestinal disorder and in the course of treatment, a weak solution of egg white is administered a few times. The child recovers and does not partake of egg albumen until such time as it is considered a suitable diet for his age. At the time of the first exhibition the child is sensitized, and at the second, symptoms of anaphylaxis appear in the form of a severe gastroenteritis, spasmodic asthma, urticaria, or eczema. The parents imagine that the child was poisoned with something other than egg; from this time on whenever egg is exhibited, symptoms occur, and finally an infection of the nasal accessory sinuses and bronchi supervenes, and when egg is again exhibited the typical clinical picture of bronchial asthma may become manifest.

The most effective method of eradicating this disease and ailments akin to it, is a campaign for the education of the public in its prevention. Once an article of diet has been given to an infant or child, it should be administered continuously thereafter, because if a food is once given and not taken months or years afterwards there is danger of sensitization especially if there is a family history of asthma, eczema, urticaria, erythema, or hay fever. Infection of any sort should be speedily and efficaciously dealt with, particularly infections in cavities where drainage is never complete, because of the anatomical arrangement of the parts. Prominent among these are the nasal accessory sinuses, tooth sockets, gallbladder, and appendix.

The determination of the etiological factor, other than the bronchial infection is not easy and should be undertaken with the thoroughness of a research in each case. All possible foci of absorption should be thoroughly investigated. The nose should be examined for infected sinuses, the teeth x rayed so as to display possible alveolar abscesses, and the history of a gallbladder or appendix infection should be carefully considered, and if found a possible cause, be attacked surgically at the earliest possible date. The foods which most commonly cause anaphylaxis should then be considered. We are in the habit of taking the fresh food, crushing it in a mortar, and triturating it with 8.5 per cent. sodium chloride solution in sufficient quantity to make a thick suspension which is then strained through several thicknesses of cheesecloth. This is sterilized at 55° C. for one hour each day until found sterile, and is used as a stock solution from which dilutions are made according to the demand. In case of liquid foods and serums, they are diluted directly with 0.85 per cent. sodium chloride and used as such. These antigens are injected intracutaneously to determine to which the patient is allergic. The patient is also tested with pollens. If the patient is anaphylactic to food substances which can be left out of the diet, he is instructed not to partake of them, but if he is sensitive to the dust of horses, casein, or the inexorable egg, treatment is instituted with the idea of disensitizing the patient by the administration of gradually increasing doses of the antigen. The sputum is cultured to determine which organism or organisms are present, and if any of the diplostreptococcus group are found, an autogenous vaccine is prepared and administered for the purpose of combating the infection.

RESULTS.

Twenty-seven of the thirty-seven patients whom we have had under our care had distinct nasal factors which were corrected and in addition autogenous vaccines were administered. Seven had two series of injections each consisting of fifteen doses. Five have been free from symptoms over four years, thirteen for over two years, and nine had a return of their symptoms but they have stated that the attacks were not as severe or so frequent as before treatment. Ten patients were not benefited.

CONCLUSIONS.

1. Bronchial asthma has always an underlying anaphylaxis.
2. The cause of the anaphylaxis is not the same in every case.
3. The anaphylaxis may be multiple.
4. In the majority of cases there is a superadded infection.
5. The nasal accessory sinuses are the most important avenues through which infection occurs.
6. Bronchial asthma is curable if the etiological factors are found and dealt with accordingly.

I wish to express my thanks to Dr. Seymour Oppenheimer for his cooperation in this work and for the privilege of observing many of these cases occurring in his practice, and for the opportunity of studying his case histories of asthma and pollinosis.

45 East Sixtieth Street.

RACE RETROGRESSION.

By Robert H. MacNair, M. D.,
Springfield, Mass.

If we would be guided by historical records of Scripture it is impressive to note that in the ancient Hebrew tribes sterility was invariably considered a severe curse in the family. It was recorded that in the prolific family circle of Jacob when Rachel became sterile for a time she cried out to her good husband, "Give me children or I die." There also seemed to be not a little jealous rivalry between Rachel and Leah in bringing forth sons. A little further back good Abraham prayed to the Lord that the barren womb might conceive, even though his wife was past the child bearing period. Later, Samuel's mother even made a vow to the Lord, that if she should be blessed with a son he should be literally given to the holy service in the temple. On down through the ages the progress of this natural function of man can be traced, until the period of advanced Christian civilization. From the retrospective consideration of the important process of race propagation, let us look into conditions along the same line applying to the modern era of the world's humanity.

If there was progress in propagation among ancient generations, assuredly the conclusion is obvious that the situation today must be termed retrogression, a process directly opposed to progress. While we may not be willing to admit that intellectually or physically we are undergoing retrograde metamorphosis, we are most assuredly face to face with the fact that, instead of bewailing the ill fate of sterility as did the Hebrew mothers, the young woman of today too frequently bewails the misfortune of bringing forth an heir. It would seem that sociologists and other scientists have adduced a number of reasons for such an unnatural state of modern society. It might be argued upon the basis of the very high cost of living; it may not seem wise to bring more mouths into the world to feed or more little bodies to clothe, with young minds to educate, etc. However, while various arguments are being formulated, good Dame Nature is crying out against another outrage by modern man; the highest product of her handiwork is doing most to obstruct her work by direct violation of natural laws.

The suggestion may be offered at a venture, by way of formulating another reason for this violation, that the serious cause may be found in man's disinclination to acknowledge one of the most universal natural laws, viz., the law of compensation. It has been handed down since the very dawn of creation as an immutable rule that there are offsets to everything that man may conceive of as an attractive advantage. Every advantage has its disadvantages; there are also many blessings in disguise. One interesting instance is recalled that may serve as an illustration of the compensation that came—it was also termed retribution—to an apparently normal couple that for a number of years seemed directly to thwart Nature's course. The evidence in this case came from authentic sources and indicated that a healthy, vigorous young couple fought against natural function for a number of years. Finally, however, it was concluded that an offspring would add to the happiness of the couple—to comfort their declining years, probably. In due time the offspring came. It was a son. He developed physically but not mentally until a period of growth was reached when it was determined that he was an idiot. In that case we might say there was compensation with a vengeance, even though it might have been argued that the case was a mere coincidence. A number of coincidences might be added to this in connection with the same violation of natural laws from the working experiences of many modern gynecologists. The records may possibly indicate that not a little organic and serious functional trouble directly results from the frequent obstruction of Nature's work.

If the propaganda of scientific birth control would act as a preventive of such serious aftertroubles, there may be much benefit from substitutions of a lesser for a greater evil. But then, in line with that same widely applied law of compensation, the business of the good gynecologist would most assuredly suffer. In this section of the country, the New England of steady habits—when the Puritan was here—large families became such prize rarities that one good farmer and his wife with a round dozen husky children, many of whom it was my privilege to welcome first into a strange and so called cold world, sent a photograph to a President of the United States, one who was a vigorous exponent of the large family group. The proud parents received an autographed letter of thanks and congratulation.

Unquestionably there are social causes that produce effects to render very many prospective mothers unfit for the natural function of child bearing.

However, there are precious few that could not in time be eliminated by a stricter conformity to natural life requirements in the growing and developing prospective mother. It would doubtless be worth the elimination of an enormous pile of modern conventional rubbish if by conforming to the simple requirements of a wholesome natural life more of the physical strength and vigor with less of the tendency to sin against a most generous nature, could be developed into the race of modern man. How, may we ask, will modern birth control bring about an improvement in a social question that other scientists than the gynecologist have spent considerable time and labor upon? One set of workers, the sociologists, have endeavored to bring about measures to prevent a social evil, while the gynecologists have labored to correct abnormalities that too frequently result directly from violations against nature. When the normal fetus is allowed to develop *in utero* to term and succeeds in making its safe entrée to the world toward which it was directed *nolens volens,* whether from other conventional rules or otherwise, natural lactation fails and the ever convenient nursing bottle is resorted to, by such unnatural feeding, for normal growth and development, many victims come under the care of another line of medical scientists—the pediatrists. It must seem logical that, under such substitution for nature's plan of feeding, there must result inevitably a process of deterioration in both the physical and mental organism in the succeeding generations. Most frequently during the entire period of what should be natural lactation, the anxious mother is kept under a constant strain of anxiety which in time reacts disastrously upon the sensitive nervous system. Then, too frequently also, the long list of neurasthenics is again added to. The above suggested causes with clearly apparent effects are so prevalent that a simple allusion to them is sufficient.

To indicate the one and only true remedy would seem exceedingly simple; however, its simplicity must assuredly be the stumbling block to its universal application. The reason may be found in the fact that modern conventionality does not countenance simple, natural life methods, not as an every day working formula, as the good Dame Nature does. We might contend that it would be vastly better and more sensible to serve the very best interest of the race of man by conforming to the simple rules of growth, development, and usefulness in the temporal life. The latter course would also insure more natural and lasting happiness than for modern, progressive humanity to be aping sticklers of conventionality. But what is to be gained by contending anything different from that which appeals most fascinatingly to the faddy, changing fancy of modern, Christian civilization?

There seems to be a constant attraction in new things, possibly because we live in an exceedingly faddy era. It may also be due to the fact that we are so very progressive along almost every line. It has been thought that one of the reasons why history repeats itself with such unerring regularity, is because of the constant and repeated violation of natural laws.

423 Main Street.

A CASE OF BLINDNESS AND FOCAL INFECTION DUE TO ETHMOIDITIS: CURED.*

By Harry Rodman, M. D.,
New York.

This case illustrates not only the necessity of studying the accessory sinuses and the nasal chambers in all ocular disturbances, but also the importance of searching for a focus of infection in all cases of rheumatism and in joint affections principally. At the Hospital for Deformities and Joint Diseases, we consider it a matter of routine to make an x ray examination of the teeth and gums, to examine the tonsils carefully macroscopically and biologically, and to x ray the sinuses, if symptoms at all warrant it, in every case of rheumatic and other joint conditions, as well as to search for other foci in the genitourinary and intestinal tract, etc. We have, consequently, drawn some very interesting conclusions. The close relationship of joint diseases to focal infection has been known for a long time through clinical histories and symptoms, but only lately has this theory been demonstrated scientifically in medical literature. I shall, however, leave such details to pathologists and shall relate the following history:

Case.—Louis N., aged twenty-three years; occupation, clothing cutter. Family history negative. No tuberculosis, no gonorrhea, no syphilis. He has always been in good health with the exception of a chronic nasopharyngitis with a discharge from the nose as long as he can remember. The present history dates back eight months, when he began to complain of pains in the left orbitomaxillary region and over the region of the left ethmoid extending to the eyeball. He was treated palliatively by his private physician, but the pains increased in severity and vision in his left eye began to fail, until he became blind in that eye. Joints and muscles, large and small, were involved secondary to the focal infection of his ethmoiditis. He had received treatment at various clinics for rheumatism. He became a patient of our hospital a month ago and was referred to my department. He then was suffering with total loss of vision in his left eye and acute general involvement of joints and muscles, particularly of both knee joints. We examined the nares and found the left side entirely blocked with a deflection of the septum high up, the middle turbinate completely occluding the middle meatus and wedged up tightly against the septum. After using astringents, we were able to shrink the middle turbinate and found pus exuding from above and below the turbinate, showing sinus involvement. An x ray examination demonstrated positively a empyema of his left ethmoid. On February 19th I removed his middle turbinate at one sitting. One week later I removed the anterior and posterior ethmoid cells, and within one week his orbital pains disappeared; his joint disturbances improved markedly, and most important of all, his vision became clearer, until at the present date it is almost normal.

On March 16th I performed a submucous resection of his nasal septum, and with the exception of some slight pains in his left knee joint at present, for which he is receiving treatment, he is entirely cured. On July 1st, when I saw him last, his vision was perfectly normal and no further evidence of joint involvement was present.

The conclusions to be drawn from this case then are to investigate carefully and to search diligently for a focus if infection in every case of arthritis and rheumatic lesions, and to examine the nares and accessory nasal sinuses in all ocular disturbances.

780 West End Avenue.

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*Case presented at a meeting at the Hospital for Deformities and Joint Diseases, March 27, 1917.

Medicine and Surgery in the Army and Navy

THE MEDICAL DEPARTMENT OF THE UNITED STATES ARMY.*

First Communication: General Organization of the Army.

By William W. Reno, A. M., M. D.,
Major, Medical Corps, U. S. Army.

The land forces of the United States consist of the regular army, the organized land militia—National Guard—and such volunteer forces as Congress may authorize. The conscripted forces become for the time being a part of the regular army. The land forces are grouped under two general heads: the coast artillery and the mobile army. The coast artillery is charged with the care and use of the fixed and movable elements of coast fortifications, including submarine, mine, and torpedo defense, as they apply to coast defense. The mobile army is the great offensive fighting branch. Coast artillery is essentially defensive. The mobile army is organized for offensive operations against an enemy, and on this account requires a maximum mobility. The basis of organization of the mobile army is the division. A division of troops is a selfcontained unit made up of all necessary arms and services, and complete within itself with every requirement for independent action incident to its ordinary operations. When several divisions operate together they constitute an army corps. Two or more corps constitute an army. A line of communications is established for each important force about to engage in field operations of an extensive character. In general the line of communications is the connecting link between the fighting force and the base of supplies. Along this line all sorts of supplies pass forward—principally men, food, ammunition, guns and other offensive weapons, and medical supplies. Toward the rear the principal traffic is empty supply wagons, trucks and other vehicles, and ambulances carrying wounded.

In time of war the activities of the military establishment embrace, 1, the service of the interior, and 2, the service of the theatre of operations.

THE SERVICE OF THE INTERIOR.

The service of the interior is carried on by the bureau chiefs of the War Department and department commanders. The bureau chiefs are the technical advisors of the Secretary of War and chief of staff. They are kept informed of the plans of the field forces and recommend the steps to be taken to insure the successful execution of these plans, as far as their respective departments are concerned. The bureau chiefs are the adjutant general, the inspector general, the judge advocate general, the quartermaster general, the surgeon general, the chief of ordnance, the chief of engineers, and the chief signal officer. They are all stationed in Washington, D. C., and coordinate the duties in their respective departments. They are directly responsible for the efficient operation of the general depots of supply, general hospitals, arsenals, and other military establishments placed under their orders. They are charged with the accumulation of the necessary supplies and material and with forwarding the same in accordance with regulations to the point where they come under the control of the department commander, the commander of the field forces, the commander of the port of embarkation, and in certain instances the commander of a concentration camp. They formulate estimates for the necessary appropriations to carry on the operations of their respective departments or corps.

The department commander is responsible for the recruitment, training, and equipment of all military forces not specially excepted within the limits of his department, and for their mobilization and dispatch to concentration camps. He is advised by the War Department where troops of his command are to be sent, the time at which they should arrive, and the commander to whom they should report. He is responsible for their movement, transportation, and supply while en route. He sees to it that adequate records of physical examinations are prepared and that all men going forward to the theatre of operations are protected by the prescribed prophylactic treatments. He keeps the War Department informed of the state of preparedness of the troops under his command. He is responsible for the defense of all portions of his department except where an independent commander has been assigned by War Department orders. In this latter case the responsibility of the department commander does not extend to the area of operations of the independent commander.

The general staff is a body of officers especially selected to assist the Secretary of War in the supervision of all branches of the military service with a view to their coordination and harmonious cooperation in the execution of authorized military policies. The head of the general staff is called the chief of staff. The general staff is also charged with the duty of preparing plans for the national defense and for the mobilization of the military forces, the collection of military information of foreign countries and of our own, the preparation of plans of campaigns, battles, engagements, and expeditions overseas and elsewhere, and the preparation of war diaries or a history of campaigns. Some of the officers of the general staff are also assigned to duty with commanders of armies, corps, divisions, and territorial departments. These are collectively called general staff serving with troops. Those not so assigned are under the immediate direction of the chief of staff in Washington and are called the War Department general staff. All the President's commands with regard to the army are given through the Secretary of War and the chief of staff.

THE SERVICE OF THE THEATRE OF OPERATIONS.

In the theatre of operations the functions of the War Department and of the various commanders are, in general, as follows: The War Department designates the commander of the field forces, assigns him a definite mission, prescribes the zone under his command, and supplies him with the means necessary to the accomplishment of his mission. The commander of the field forces exercises supreme authority over all military and administrative matters within the zone assigned him, organizing the means placed at his disposal so as to insure efficiency, and directing and controlling all operations necessary to the accomplishment of his mission. The commander of the line of communications is responsible to the commander of the field forces for the efficient operation and defense of the line of communications and directs and controls all administrative and staff services attached thereto. All military units larger than a company have headquarters and staffs. The headquarters of squadrons, battalions, and brigades have no administrative functions. The headquarters of an independent detachment has for the time being administrative functions and during such periods is temporarily assigned an administrative staff. The commander of an army concerns himself with only the broad questions of strategy and military policy. He assigns general missions to his subordinate commanders and leaves them to work out the necessary details. On this account he is assigned only such administrative and technical staff as he may require for these broad functions.

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*This is the first of a series of articles which will appear in the Journal on this subject.

The staff functions of the headquarters of units larger than a brigade may be separated into two groups: 1, general staff group, and 2, a technical and administrative group—record, inspection, law, supply, sanitary, engineer, ordnance, and signal. On the general staff the chief of staff is the mouthpiece of his commander and should enjoy his complete confidence and a considerable degree of independence in the performance of his duties. He controls and coordinates the operations of the troops and all administrative and technical services under the orders of his commander. He is provided with such assistants as are necessary. To each such assistant is particularly assigned the work of one or more of the three general divisions of general staff work, viz.: The first, or combat, section concerns itself with orders, movements, and dispositions of the forces; combats, detachments; war diaries. The second, or administrative, section concerns itself with organization, losses, reinforcements, police, and discipline; questions of supplies of all kinds; signal and telegraph service; evacuation and care of sick and wounded; relations with the line of communication and all general correspondence. The third, or intelligence, section concerns itself with the movements and dispositions of the enemy, including exploration, reconnaissance, and the gathering and distribution of information; interpreters, newspaper correspondents, and various agents; relations with the enemy, flags of truce, deserters, and prisoners of war; relations with the civil authorities of the occupied territory, requisitions, etc.

The technical and administratve staff includes the representative of the various staff corps and departments who may be assigned to the headquarters. These officers perform the duties appropriate to their office under the instructions of their commander. During the period of grand tactical operations with commands larger than a division and when a line of communication is in operation, their functions are advisory. Upon completion of the grand tactical operations and upon the discontinuance of an organized line of communications, or if no line of communications has been organized, these staff officers assume a more immediate control of their respective staff personnel, depots, hospitals, etc. The functions of the technical and administrative staff of a division are so intimately connected with the maintenance of the division as to preclude the separation of any of its personnel for any extended period of time from its headquarters. These staff officers are the technical advisers of the division commander, and control directly the operation of such portions of their respective corps personnel as may be placed under their immediate orders.

The commander of the line of communications reports directly to the commander of the field forces. The mission of the tactical units and administrative groups assigned to a line of communications is to relieve the combatant field force, as far as possible, from every consideration except that of defeating the enemy. It is necessary that the commander of the field forces be relieved from the consideration of details and thus be free to consider the broad lines of action to be followed by his command. Therefore, a force of considerable size, especially one composed of all mobile arms, operating independently against an enemy, should ordinarily establish a line of communications. Lines of communication will be more or less elaborate depending upon conditions such as the strength of the force and its mission; the length of the line; the terrain; character of the operations.

COMMENT ON EXEMPTION BOARDS.

By J. Milton Mabbott, M. D.,
New York,
Member of Local Board for Division No. 154, New York City.

Origin and organization.—The public, through various sources of information, and particularly through the influence of the newspapers, has adopted certain terms in relation to the draft of men for the war of the United States against Germany which serve a useful purpose. By common consent, we are all speaking of "exemption" and "exemption boards." Under the authority vested in him by act of Congress, approved May 18, 1917, the President of the United States, through the War Department and supplementary channels, caused the registration of the young men of the country in upward of 4,000 separate areas, each containing, roughly speaking, about thirty thousand inhabitants. Each of these areas is technically known as a division. In New York City, such an area represents approximately one half of an assembly district. There is a tendency to call the local division an "exemption district," but the word district should be reserved technically for much larger application. A single district comprises all the divisions on Manhattan Island, formerly constituting the city and county of New York.

Method of selection and duties of members of local boards and medical examiners.—The law provides that certain men who registered in each area should be entitled to exemption from the draft. This would naturally exclude German aliens, American citizens already enlisted in the army, and any man physically unfit for service. In addition to these it was deemed practicable to excuse, among others, those men who are the sole or chief support of wife, child, aged and infirm parent, or dependent brother or sister under the age of sixteen years. How should it be determined who were entitled to exemption? We understand that Congress assumed that three representative citizens, residing in or near each area and organized as a local board for the purpose, would be able to render first judgment in such cases in a satisfactory manner. The combination of a doctor, a lawyer, and a layman has always been looked upon as ideal where medical, legal, and civic questions were involved. And in so far as it was feasible, most of the exemption boards were so constituted by appointment of the President. After accepting the appointment and taking the oath of office, these three men, or two of them, met and organized by electing a chairman and clerk, or secretary, and thus became qualified to proceed as "Local Board for Division No. ....." That is the legal designation of an exemption board.

The regulations provided that unless there were objections, the doctor of the board was expected to assume charge of the physical examination of all persons called for service under the selective draft. If the doctor, for good and sufficient reasons, declined to serve in this capacity, he could still serve on the board which would then appoint a medical examiner. It happened that on certain boards there were two physicians and on at least one board in New York City all three members are doctors; this happened, it is said, because among the names submitted to the President, representatives of the community had failed to nominate other citizens who seemed equally qualified. This board decided for itself which should be its medical examiner.

How the appointments were made seems to have caused a tempest in a teapot, here and there, with talk of politics and even medical politics! I feel free to say, on information and belief, that so far as the Borough of Manhattan is concerned, the plums were not eagerly sought either by politicians or doctors. A New York physician, at the request of the President, prepared and submitted a partial and provisional list for the consideration of an informal gathering of about thirty physicians, holding membership, probably, in every representative medical society in the city, but present simply as individual citizens, assembled on short notice over the telephone. With the aid of a medical directory the list was completed, with an alternate name for each division wherever there was a second man in the area who was favorably known to anyone present. We were informed that one serious objection would suffice to cross a name off the list. Nothing was said about compensation. From *Regulations Governing Disbursements Incident to the Registration and Selective Draft,* we since learned that no member of a local board can claim compensation in excess of four dollars per day; and that only for each day upon which a meeting is actually held. There is no allowance for personal expenses or meals, except for necessary travel outside of the local division on special business of the board.

If required, an additional physician may be appointed by the board. This is practically essential as the Regulations require examination by another doctor where the first examiner finds the men physically disqualified. One other additional physician may be appointed by the board if the number of persons to be examined in any one day shall exceed eighty; two other additional physicians if the number shall exceed 120; three more for upwards of 160; and "other additional physicians may be appointed by the local board in like ratio under similar conditions." If the local board is working harmoniously, the additional physicians are apt to be friends or acquaintances of the medical member or other members of the board, vouched for by the proposer and unanimously chosen by the board. They are thus qualified for service until more definitely appointed by the Government. They need not reside in the area under the jurisdiction of the board. Those physicians and such others as may be called upon in an advisory capacity seem to have acquired the reputation of constituting a medical board in any division which has been so organized. The regulations recognize nothing beyond the medical member of the local board, and each additional physician individually.

Compensation.—The compensation of examiners is limited to a charge of not more than one dollar for ten, or less than ten, examinations; not more than two dollars for twenty, or between ten and twenty, etc.; and not more than four dollars for the maximum number examined by one physician on any one day. The national Government bears the expense and hopes, we are told, that board members and examining physicians will work gratuitously unless they actually need the money. "The State of New York will particularly take pride in keeping down the Government cost of securing the State quota for the draft." I have not heard that statesmen and legislators have set the example of declining to put in a claim for such munificent remuneration. A report on health and habits, mind and body, together with a record of physical examination, stripped, is not really dear at "ten for a dollar," so to speak, and there should be no imputation of poverty in accepting the fee. Probably very few New York physicians will bother about it.

Decisions and provision for appeal.—The physical examination and all work of the board are covered by a full set of regulations, and these are supplemented and modified by instructions and suggestions from the provost marshal general's office at Washington, representing the President and the War Department, and the adjutant general's office for the governor and the State of New York; the latter has designated a very capable representative to facilitate the work in New York City. The local board passes upon the reports of the physical examination and all claims of exemption. A small number of district boards will sit as a court of appeals. Provision is made for an appeal from a decision of the local board, either on behalf of the Government or of the man. Blanks covering practically every ground for a claim of exemption or appeal are furnished on application. They are in the hands of the local board. With few, if any, exceptions the decision of a district board is final. There seems to be no provision for an appeal to the courts.

Physical examination of recruits under the draft.—The most striking thing about this examination is that the official form for the record omits any specific reference to the lungs and calls for uranalysis only in suspicious cases. I am aware that this matter is fully covered in the instructions elsewhere. The evident purpose of the Government in this preliminary physical test is to weed out the obviously unfit; but that is not all. It is still more important to retain under the draft those young men who possess the requisite physical and mental qualifications for military service. When the examining physician is in doubt, the benefit of the doubt is to be given tentatively in every case to the Government; the candidate is held for further examination. Even when the examining doctor of the local board considers the man physically defective, the regulations definitely provide for a second and independent examination by another physician, and the board must pass upon the reports of the two doctors in determining its recommendation for exemption. And, again, that is not all. The Government may require the district board to pass upon such cases where the disqualification is not sufficiently obvious.

It is in this respect that the preliminary examination under the draft differs from the strict military examination under the volunteer system, especially in times of peace. Then we were trying to exclude all but the finest young men of the country. Now we are at war! Let no one forget that fact! The nation is employing a system of selection which is the fairest that could be devised. It is the obvious intention of the Government to exempt every man who is unfit, or whose services are more important in civil life than in the military establishment. On this first enrollment of nearly ten million men, there will be plenty to supply over and over the required quota for the first National Army. But no man may be permitted to shirk his duty under fictitious or exaggerated claims of disability now that it means that under such circumstances some other man must take his place. Hence, it is my interpretation that the first physical examination conducted by the local exemption board is obviously for the purpose of excluding those who are obviously unfit.

Thus far I have used the word "exemption" and omitted all reference to the term "discharge." There is a difference, but we need not go into that. I mention it simply for the sake of accuracy. It should be understood that exemption, as we are employing the word, is only temporary. If the local board exempts a man and issues a card of exemption, and the Government does not appeal from the local board to the district board, nevertheless, under certain circumstances the man may be summoned to appear again later. This is true whether the exemption is for physical, financial, or other reasons. Of course, where the disability is absolute, there is little likelihood of a second call. Complete records are to be kept on file. The recruits not exempted by the local board become provisional members of the new army. They now in their turn have the right to appeal from the decision of the local board and all records of such cases will be forwarded to the district board, which will pass upon the evidence and may order further physical examination if in its judgment such further examination is necessary. If the candidate is held by the district board, he may still be rejected later.

This leads to an understanding of the comparatively inadequate physical examination by the doctor of the local board. As I have said, the purpose of the first examination seems to be to weed out the obviously unfit. Before acceptance in the military service of the United States, each drafted man who has not been exempted by the local or by the district board will be subjected to "physical examination at the place of mobilization" by a surgeon of the army or navy, or such other qualified medical officer as the Government may appoint. In the first quota of the draft the standard requirement will probably be high. Considerable numbers who have passed the exemption boards will probably be rejected.

The method of selection as outlined above is probably as good as could be devised. The medical examiners taken from civil practice and placed upon the local boards may be comparatively inexperienced and, one may say, to that degree incompetent. After a thorough perusal of the regulations and requirements of the first examination, however, it seems to me the average doctor may be looked upon as well qualified for his task. He has the privilege of summoning to his aid in an advisory capacity, among the additional examiners granted under the law, men of greater experience, or even experts if he knows such men who are willing to serve.

Some one asked Mr. Conkling, at a recent meeting of exemption boards, "What would you do if you found they were not willing to serve?" "Well," he replied, "I think I would tell 'em what I thought of 'em and try for someone else!"

The writer has been fortunate in associating with himself for the local board examinations Dr. Alfred C. Prentice, formerly surgeon and major of the Seventy-first Regiment. As about six hundred young men were notified to appear for examination within three successive days, we arranged to devote practically our whole time to this work on the days appointed. As it seems to be assumed in the regulations that one doctor cannot examine more than about forty men a day, our Local Board for Division No. 154 unanimously recommended Dr. Albert E. Sellinings, Dr. Colin L. Begg, Dr. Charles E. Nammack, Dr. Attilio M. Caccini, and Dr. Frederick Van Vliet as additional examiners, and we believe we have organized a unit which will handle the work with ability and despatch.

The question was very properly raised, "Why should we doctors be obliged to examine all the men summoned to appear before the local boards although a large percentage of these will be granted exemption by reason of claims based upon industrial positions and support of relatives and on proof that they are aliens not subject to the draft?" Mr. Conkling's answer was, "Well, first of all, because it's orders from the War Department." And certainly that settles it. But, naturally, there is a reason behind the order. Doctors understand as well as any class of men the importance of a complete history of everything bearing upon a case. In the case, for instance, of a man to whom an exemption card was issued on the ground of being the sole support of an aged and infirm parent and who is released from the obligation of support by the death of the parent, his exemption automatically expires and he is again subject to military duty. Suppose the man has lost an eye, he would still be exempted on that account. There can be no better time than the present to record all the conditions on which he is entitled to exemption.

The investigation of an alleged defect upon which a man bases a claim must be more rigid than the rest of the examination. At first glance, one would have assumed, perhaps, that this alone would have comprised this phase of the work of an exemption board. Such a plan would be very shortsighted. The order of procedure has been well thought out in a spirit of fairness, let us assume, to everybody, including the doctor. I can speak for every examining physician when I say that the doctors are doing their duty.

19 Fifth Avenue.

MEDICAL NEWS FROM THE FRONT.

Treatment of Penetrating Wounds of the Chest (Continued).—Insects and Disease in the War.

Geneva, *July 16, 1917.*

To continue a topic of my last letter, another series of cases which is of particular interest is one reported by Sencert, of Nancy, amounting to 130, 106 of which were due to rifle bullets, and twenty-four to either shrapnel or bursting shell. Thirty men died. Rifle bullets perforating the thorax gave a mortality of five per cent., while wounds from artillery projectiles gave forty per cent. mortality. Death is usually the result of severe pleuropulmonary complications which are not influenced by late operation. It is proper to classify penetrating wounds of the thorax as slight, medium, and serious cases, and in a general way it can be said that in the present war the mortality is 3.33 per cent. for the first, twenty-four per cent. for the second, and forty per cent. for the third. Schmid, of Nice, who gives the same percentages, says that although thoracic wounds from rifle bullets usually present mild symptoms, there is no hard and fast rule as to this, because some end fatally. Hartmann's total has been thirty cases, one of which resulted from a bayonet thrust. In his experience rifle bullets generally pass through the chest on account of the penetrating force of the projectile, while shrapnel and bursting shell, having a lesser force, are rather more prone to remain in the cavity. He shows that shrapnel shot may remain in the thorax without causing any untoward effects, but he lays stress on a case in which a projectile lodged behind the heart resulted in serious symptoms.

Resection of the ribs, followed by removal of the projectile, is indicated in cases of thoracic wounds from bursting shell, and Hartmann had five recoveries in five cases. It is evident that statistics of penetrating chest wounds are not always correct, because the serious cases causing rapid death are not included, as they are overlooked by surgeons in the large base hospitals for the reason that they never reach them. It is likewise true that some wounds are recovered from with extraordinary rapidity and without complications, but this is rather the exception.

Briefly, penetrating wounds of the thorax are more or less serious, according to the nature of the projectile; those produced by shrapnel and bursting shell usually result in death. Pulmonary complications in bullet wounds of the chest are either serious or limited in extent and are then recovered from in most cases. As soon as pleural complications assume a certain gravity they almost invariably end in the formation of a pyothorax and should be dealt with surgically without delay by thoracotomy with resection of the ribs and free drainage.

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The present war has given rise to much research work on insects, particularly lice, bedbugs, etc., and their relation to disease and its spread. The results so far obtained may be summed up as follows: The intestine of the bedbug, Cimex lectularius, is in the normal state free from bacteria. The insect is endowed with manifest bactericidal and parasiticidal properties, but all the parasites which this insect may derive from the blood or integuments of man or animals are not destroyed with equal rapidity. Some of them, such as the Trypanosoma cruzi, resist the parasiticidal action, multiply, and are found alive in the dejecta. If a bedbug bites a healthy subject a few days after having become infected from a diseased subject, the insect is quite capable of inoculating microbic diseases, such as the plague and leprosy, perhaps tuberculosis as well. As far as the plague and tuberculosis are concerned, the part played by the cimex is a secondary one when the common factors of these diseases are considered, but in the case of leprosy, a disease inoculated by a domestic insect of nocturnal instincts, the cimex must be looked upon as the principal, if not the sole, cause of infection.

The bedbug also transmits recurrent fever, thus acting as a substitute for lice, Pediculus capitis and vestimenti, but the part played by it is evidently secondary. It is an important etiological factor in the transmission of Trypanosoma cruzi, but it is not probable that it intervenes in the transmission of other trypanosomoses. It does not transmit either typhus or leishmanioses. Cimex hemipteros and Leptocimex boueti act in the same way as the Cimex lectularius, the former in the case of spirochetosis and leishmaniosis, the latter in respect to oppilation. Cimex pipistrelli transmits the trypanasomosis of the bat. The hemipterous insects of the family of Cimicidæ are, therefore, pathogenic, or at all events are to be looked upon with suspicion. Their destruction is a question of utmost importance to the health of armies.

MEDICAL NEWS FROM WASHINGTON.

Training of Ambulance Companies at Allentown, Pa.—Status of Medical Officers' Reserve Corps Enrolment—Special Courses in Military Laboratory Work and Military Röntgenology for Medical Officers—Surgeon General Asks for Automobiles for Field Work.

Washington, *August 13, 1917.*

The ambulance companies organized at Allentown, Pa., under command of Major Elbert E. Persons, of the army Medical Corps, have about completed their training and are nearly ready to be sent abroad. Before being ordered to field service, as in the case of other army organizations, a most careful physical reexamination of the personnel is being made, particular attention being given to the identification of cases of tuberculosis, for which purpose Contract Surgeon William S. Wray, U. S. Army, has been ordered to proceed to Allentown and examine the command.

The ambulance companies will supplement and assist the organizations of the army engaged in the transportation of the sick and wounded from the zone of the advance to the base hospitals and from the base hospital to the general hospitals. The personnel may be used to man ambulance trains, hospital trains, hospital ships, and other agencies for sick transport by land and water, or for the establishment of emergency hospitals. Every ambulance company includes one captain; four first lieutenants; one sergeant first class; eleven sergeants; five mechanics; two cooks; two assistant cooks; twenty chauffeurs; two musicians; forty-three privates, and such other personnel as may be approved by the Secretary of War. The training of the companies has included instruction in first aid, elementary hygiene, and the drill of sanitary troops. The men have been made familiar with the use of the various appliances, including improvisations, for transporting sick and wounded, such as litters, ambulances, and other vehicles, with the fitting up of trains and ships for patients, and with other similar duties. Instruction also has been given in the organization and conduct of rest stations, and some of the men of every company have been made proficient in methods of disinfection.

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The first 12,000 trained medical officers of the 24,000 needed this year for the military establishment are already in sight. The Medical Officers' Reserve Corps now numbers 350 majors, 1,367 captains, and 7,158 first lieutenants. These figures embrace only such men as have formally signified their acceptance of commissions. Several thousand others have qualified, but for some reason have failed to accept proffered commissions. In a majority of cases it is believed that this delay has been caused by a desire to settle private affairs and to secure substitutes to take care of civil practice. As rapidly as shelter is ready, the prospective medical officers will be sent to the training camps at Fort Oglethorpe, Ga., Fort Benjamin Harrison, Ind., and Fort Riley, Kans. Recently the average number receiving orders to the training camps has been about 200 a day. Moreover, for the training of medical officers and sanitary personnel generally on duty with troops, special courses have been instituted at posts, garrisons, and field encampments, the courses being so arranged that spare time may be devoted to them. A medical detachment has been organized for each national army cantonment, to which places the detachments will be sent in advance of the troops, in order that preparations may be complete to safeguard the health of the recruits. Only highly trained men will be assigned to troops sent abroad, selections being made from those most fitted for this duty as the contingents prepare to embark from time to time. In addition to the 24,000 medical officers, it is estimated that the medical and sanitary service of the military establishment will require some 120,000 enlisted men.

* * * * *

Selected members of the Medical Reserve Corps continue to be sent to pursue other courses in order better to fit them for special work at hospitals, camps, and in the field. Instruction in laboratory work is being given at Rockefeller Institute for Medical Research at New York under direction of Major Simon Flexner, Medical Reserve Corps, and Dr. Alexis Carrel. Courses in military röntgenology are being conducted under supervision of Major Leon T. LeWald, Medical Reserve Corps, at Cornell Medical College, and by Major Lewis G. Cole, Medical Reserve Corps, at New York; by Captain Edward S. Blaine, Medical Reserve Corps, at Chicago; Captain W. B. Bowman, Medical Reserve Corps, at Los Angeles; Major Frederick H. Baetjer, Medical Reserve Corps, at Baltimore; Major Willis F. Manges, Medical Reserve Corps, at Philadelphia; and Major Alfred L. Gray, Medical Reserve Corps, at Boston. Major Arial W. George, Medical Reserve Corps, also has been assigned to this instruction duty at Boston. Orders have been issued assigning Major George C. Johnston, Medical Reserve Corps, to active duty at Pittsburgh, to take effect about September 1st, for duty as instructor in military röntgenology.

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The surgeon general of the Public Health Service has asked that Congress enact legislation that will give him authority to purchase motor vehicles for field work. He says that in much of the field work of the service in which it is necessary that workers travel daily through localities where there is no regular means of transportation, the use of motor vehicles is indispensable. In consequence of the statutory prohibition of the purchase of motor propelled, passenger carrying vehicles, such vehicles, when required, necessarily have to be hired by the day or the hour. The rental rates are such that the amount expended in many instances in a month would pay for an automobile and its entire operating expenses during that time. As a measure of economy, both in money and in the time of officers, it is advocated that the purchase of automobiles be authorized. In the work that the Public Health Service is now undertaking for the sanitation of the extra cantonment zones, work that is of the utmost importance to the health of the civil and military population, it has been found necessary to use automobiles in order that sanitary surveys may be made rapidly and that proper supervision may be exercised over work that is now under way.

Editorial Notes and Comments

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EDITORS
CHARLES E. DE M. SAJOUS, M.D., LL.D., Sc.D.,
Philadelphia,
SMITH ELY JELLIFFE, A.M., M.D., Ph.D.,
New York

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SHALL THE NATION GO BONE DRY?

It has been felt by every one that the entrance of the United States into the world arena would mean sooner or later the serious consideration of prohibition, relative or absolute. Just how pressing such a consideration is and whether or not it should be allowed to have precedence in the legislative mind over such questions as food control, revenue measures, etc., are matters about which there is a wide difference of opinion. At the time of writing this, the matter of absolute prohibition has not been settled by any means. In this, as in other matters which we have been forced to deal with since the declaration of war, we turn to the experience of our allies for guidance. Lord d'Abernon, chairman of the Board of Liquor Control for England, summed up that nation's experiences admirably in a lecture before the Royal Institute of Public Health on May 16, 1917.

He alluded first of all to the surprising neglect of the significance of the liquor traffic in its effects on the health and wellbeing of the community before the war, in spite of the widespread knowledge of alcoholism in all of its phases. This he attributed, in part at least, to the tendency to regard the subject as a social question belonging to the moral sphere rather than to the domain of hygiene and public health. He lamented the fact that the question had not been approached as if it were one in preventive medicine, but had instead been the football of two opposing and extreme forces, liquor interests and prohibitionists. The result had been, to continue the figure of speech, to keep the subject up in the air; in other words, there had been no progress. Since the outbreak of war had rendered necessary some mitigation of the attendant evils of alcohol, the Board of Liquor Control had followed rather a middle course, which consisted of legislation regulating the strength of alcoholic beverages and the times during which their sale was permitted.

Lord d'Abernon quoted many figures tending to show the result which this regulation had had on public health. Thus in 1914, the figures showing the deaths due directly and indirectly to alcoholism showed an upward tendency, while in 1915, there was a distinct movement in the opposite direction. It must be remembered that the policy of restriction only came into force in the latter half of 1915. Then in 1916, the decrease was enormous, amounting to over forty per cent. in the case of men and to nearly fifty per cent. in the case of women. On examination of the statistics for drunkenness in England and Wales, the same sort of movement was found—an increase for 1914 over 1913, a moderate decrease in 1915, and a tremendous decrease in 1916. He concluded from these figures that much had already been done to limit alcoholic excess by a policy of moderate restrictions on drinking, in spite of many handicaps; also that the experience of the last two years had demonstrated that intemperance could be diminished to a considerable degree by legislative and administrative action.

These conclusions of Lord d'Abernon will be encouraging to those who believe that we must look to legislation to cure the alcoholic evil. Whether we go bone dry or not, there is no doubt that some regulation of the liquor traffic must be imposed during the course of the war. Perhaps this will be such a system as is in use in Sweden; perhaps something else. At any rate Doctor Mayo will find many in the profession to join him in his indictment of John Barleycorn in his presidential address before the American Medical Association in June of this year.

TESTS FOR ALLEGED DEAFNESS IN EXEMPTION CLAIMS.

In the examination of men claiming exemption from military service it becomes very important to know the exact degree of hearing in the individual case. Many will claim deafness when in fact the hearing is practically normal, and unless the examiner is very astute a candidate gifted with a fair degree of histrionic talent may be rejected although physically fit in every other respect. A recruit may be quite honest in his belief that his hearing is permanently impaired, when the removal of a mass of inspissated cerumen will fit him for service. There is often a history of otalgia since childhood without visible signs of old scars in the drums. Such cases must be studied with especial care, for a patient may be totally deaf with a drum that looks normal, or on the contrary may have a good degree of hearing when the drum is almost totally destroyed. In the former contingency, the causes commonly met with are degeneration of the cochlear nerve after the acute infectious diseases such as meningitis where the middle ear itself escaped infection or degeneration due to chronic constitutional disease such as syphilis. There are many cases of syphilis that have been treated with arsenical preparations which are complicated by a neurorecidive in the nerves of vision or hearing. Such deafness usually comes on suddenly, not uncommonly in the morning when the patient arises, no sign of its presence having been manifest on the previous day, or it may come on gradually over a period of one year or more. This type is absolutely incurable. Apoplectiform types are also to be noted such as those which follow embolism or fracture of the skull through the labyrinth. The falling tests which have been applied in work with the Exemption Board are not new, but are probably not widely known in America. Every specialist who has studied otology in Vienna has seen them demonstrated, or has applied them himself while working in the various clinics. In Austria there are, or rather were, a great many requests for exemption from military service because of partial or absolute deafness, and it therefore became necessary to weed out the malingerers from those actually unfortunate. The two most commonly applied were the Stenger test and the reading test.

The Stenger test depends upon the following principle: Two tuning forks of exactly the same size, pitch, and amplitude are set in vibration; one of the forks is held an inch away from the right ear. When the other fork is brought up to the left ear, the fork at the right ear is no longer heard by a person who has about the same degree of auditory acuity in both ears. To test a recruit who says he is deaf in his left ear, set the forks vibrating by striking one against the other. Hold one fork in front of the right ear. It is heard, of course. Then bring up the other fork toward the left ear and ask if the fork at the right ear is still heard. If it is not, then the left ear is functioning; if it is heard the left ear is not functioning. In a normal case the sound of the vibrating fork will not be heard by the right when the left fork is approximated or vice versa, as has just been explained. The contingency of two deaf ears does not often present itself with malingerers; for there is always plenty of evidence from friends or acquaintance that the examined man heard before coming up for examination. A satisfactory test in such case is to line up the malingerer with a number of other recruits known to possess good hearing, and when their undivided attention is obtained, say in an ordinary voice, "All those who are deaf will now be excused from service." Taken off his guard the malingerer will inadvertently drop out of line. Or one may say, "Do you expect that your brother will be exempted too?" In his anxiety the candidate is quite sure to make some answer.

Another exceedingly valuable test is the so called "reading test." If a normal person is asked to read aloud continuously and suddenly has the sound of his own voice excluded by two noise apparatuses, he will unknowingly raise his voice almost to a shriek. Suppose he claims a severe degree of deafness in his right ear. If he is asked to read aloud and the noise apparatus is set going in his left ear, the voice will be raised if the deafness is real; and, if not, there will be no change in loudness or pitch. This test requires the Bárány noise producer, *lärm apparat,* to be carried out effectively.

Malingering is simply a condition of mind, and it is quite easy to tell from nervous strain, the highly exalted mental state, the effort to exaggerate every little symptom and to know just what is going on within. Moreover, men who have always enjoyed a good measure of health get sadly mixed on symptoms, and any clinician with a grain of experience will recognize at once that the alleged symptoms are spurious. The hearing tests are especially important, for it might prove nothing short of a calamity to admit a man to service who misunderstood the commands. Government requirements of at least fifty per cent. hearing are very just to everyone concerned; no one who cannot hear a whisper in a quiet room at ten feet should be accepted. That is a minimum which protects the soldier against surprise attacks, and below this limit the battlefield becomes a much more dangerous place than it really is for the normal man.

SOME EXPERIMENTS UPON EPINEPHRIN.

The question of the indispensability of epinephrin to the welfare of the bodily organism is discussed and elaborated by the recent experiments of G. N. Stewart and J. M. Rogoff upon the liberation of epinephrin from the adrenals [*Journal of Pharmacology and Experimental Therapeutics,* July, 1917]. These experimenters had already determined that the section of the nerve supply of the adrenal prevented the liberation of epinephrin in any demonstrable quantity in cats as long as five weeks after the operation. The method of interrupting the nerve supply is to section the fibres to the semilunar ganglion, including the splanchnics, or the two sympathetic trunks, also including the splanchnics, in the thorax. The blood from the adrenal vein is collected in a cava pocket and then released to test the dilatation of the pupil and retraction of the nictating membrane of the eye. Though these tests proved negative, allowance must be made for a great dilution of the blood before it reaches the structures involved. Therefore more sensitive and more convincing tests were also made directly upon rabbit intestine and uterine segments.

Both acute and survival experiments were undertaken. The value of the first lay in the test of the effect of nerve section proceeding piecemeal, but could not be counted upon for thorough accuracy, since some epinephrin might continue to be washed out from the adrenal capillaries, and moreover some nervous action might still exist upon the adrenals of the sectioned nerves. In the survival experiments these difficulties were obviated. The result of the acute experiments was to prove undoubtedly the reduction of the liberation of epinephrin to a small fraction of the original normal output, but there remained still enough of the epinephrin to cause reaction in the rabbit tissue, although the eye tests proved negative. The survival experiments were more conclusive as to the dependence of the output of epinephrin upon this nerve supply, since in them the negative results appeared decisively in the rabbit tissue tests, where in a number of cases absolutely no epinephrin was detectable. Besides this, the normal healthy condition of the cats experimented upon as long as fifteen weeks after the nerve supply was severed, the other adrenal being excised, seemed to prove that life and health may be preserved without the liberation of epinephrin from the adrenals, unless, as the writers suggest, the quantity necessary is, even in the blood of the adrenal vein, below the limits of detection according to the methods employed.

That the liberation of epinephrin is entirely under the control of certain nerves they believe to be sufficiently indicated by the experiments. The detection in some cases of a small amount of epinephrin, even though an exceedingly small fraction of the normal output, they explain on the ground of some minute fibres of the innervation having been overlooked in section. Further corroboration of the ability of the organism to survive the withdrawal of the supply of epinephrin is demonstrated, they believe, by those lesions of the spinal cord survived by both men and animals, where the innervation path of the adrenal has been interrupted. The possibility of the discharge of a certain amount of epinephrin from the sporadic chromaffin tissue is suggested, though no weight is put upon the suggestion in the absence of any knowledge of such liberation from this substance. Whatever vitally indispensable quality may be possessed by the adrenals seems to be able to be carried on in an emergency through the blood or lymph when an interruption takes place in vegetative reflex arcs.

THE NEW FIELD AMBULANCE SERVICE.

The close affiliation between the American and the French troops is forecast by the order issued some days ago for the reorganization of the tactical units of the American army along the French lines. A division in the American army has heretofore comprised about 28,000 men. The French division has only about 19,000 men. Since the American troops are expected to cooperate closely with the French, General Pershing recommended and the War Department has adopted the suggestion that the French divisional unit be taken as a model so that a division of American troops can occupy a portion of the line when vacated by a French division without confusion and the need for readjustment.

Nor is this the only direction in which the French models have influenced the organization of our army. The field ambulance service carried on by the American volunteers for the French army has been taken over by the Medical Department of the United States Army and a corps has been organized and is being drilled along similar lines which will furnish the mobile ambulance for a great portion of the French army at the front. Under this plan one ambulance unit, consisting of a lieutenant, forty-five men, twenty ambulances, three motor trucks, and one staff car will be supplied to each division of the French army. At least 160 such units will be supplied, in addition to those provided from the volunteers already in France. Twenty such units have already sailed for France under the command of Lieutenant Colonel Percy W. Jones, Medical Corps, and are probably now on the French front.

One of the interesting features of the inauguration of this corps is that it has been so promptly provided to meet the emergency. It is hardly two months since the concentration camp for the organization and training of these units was established at Allentown, Pa., under the command of Major E. E. Persons, Medical Corps, who has since been promoted to the rank of colonel. Over 5,000 men have been enrolled at the camp, about a thousand have been sent abroad, and 4,100 are now under training. While the officers have so far been drawn from the Medical Corps or the Medical Officers' Reserve Corps, they will gradually be replaced in France by nonmedical officers promoted from its ranks, leaving the medical men at liberty to do purely medical work.

GIVE THE NONCOMMISSIONED VETERAN A CHANCE.

The motor ambulance convoy of the Royal Army Medical Corps comprises four officers and eighteen men of that corps and four officers and 157 men of the Army Service Corps. In the French service the ambulance unit is smaller, and has no medical officers attached to it, the function of the ambulance convoy being one purely of transportation. Both these armies have realized the necessity for conserving the time of the trained medical man by relieving him of nonmedical duties as far as possible. Our own service might well follow suit and give well earned promotion to the senior members of the noncommissioned staff on whom the medical officers taken in from the reserve corps must lean to a large extent for aid in their administrative details. The old and noncommissioned officers in the line have been given a chance to gain commissions. It certainly seems that the service would be the gainer if a similar opportunity were given to the older noncommissioned officers in the Medical Department.

THE NATIONAL SERVICE HANDBOOK.

"It is not an army we must shape and train for war; it is a nation." This statement by the President is the keynote of a document which represents the democratization of war, the National Service Handbook, issued by the Committee on Public Information. Nothing is to affect the outcome of the great struggle so directly as the unity of thought, purpose, and action of the whole people. The assumption by each individual of the nation of a definite responsibility in service for the whole is the goal and the means to this end is offered in the most widespread publicity which this organ gives to all forms of service. An encyclopedia of a fighting nation—information, facts, instruction on every phase of activity connected with the prosecution of the war are here gathered together for universal consumption and individual application. It is the duty of every citizen and patriot to acquaint himself with the whole. He may be familiar with much of it but it crystallizes, defines, and correlates the great purpose and brings home the reality of the struggle, still so far away. The section which is of especial interest to our readers, Medical and Nursing Service, gives general and specific information on the plan, organization, and operation of medical military service and of the Red Cross. Its definiteness and conciseness preclude the plea of misinformation and ignorance as to one's duty and responsibility and satisfy the doctor's desire for authoritative direction. This desire the JOURNAL is constantly endeavoring to meet and this channel of cooperation with the Government is of utmost importance to the public and the press which serves it.

TO EXEMPT MEDICAL STUDENTS.

As the result of an active agitation in the medical profession the Council of National Defense has asked that the medical students be exempted from the draft so that they may be able to continue their studies and enter the service as surgeons. Dr. Victor C. Vaughan, of the Medical Advisory Board of the Council, is carrying on an active agitation to this end and has obtained from the Secretary of War his approval of the movement. Only recently we pointed out editorially the necessity for the exemption of the medical students, and it is gratifying to note that this need has been recognized by the Government authorities.

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News Items

Fort McHenry to Be Converted Into a Military Hospital.—Buildings costing $500,000 are being erected by the federal government at Fort McHenry, Baltimore, on ground which was loaned to the city for a park, but which has since been reclaimed. These buildings, though originally planned for the use of the Immigration Bureau, will be used as a base hospital by the army, and the old buildings at the fort will also be refitted for hospital uses.

A Social Centre for Ambulance Men in France.—Mrs. H. C. Coe, of New York, the wife of Major Coe, of the U. S. Army Ambulance Corps, has collected a considerable fund for the establishment and maintenance in Paris of a social centre where the men of the American Air and Ambulance Services will be afforded all the comforts of a home when on leave in Paris. When Mrs. Coe sails for France she will take with her an American cook so that her guests will have home cooking.

Medical Stenographers Wanted.—Attention is directed to the fact that medical stenographers are needed in the offices of the Surgeon General, Washington, D. C. The salary at the start will be $1,000 a year, and the hours those of other departments of the service. The necessary civil service examination has been so simplified that it will present no difficulties. For further particulars write to Major H. D. Corbusier, Surgeon General's Office, Washington, D. C.

National Surgical Dressings Committee an Auxiliary of the Red Cross Society.—Announcement is made that the National Surgical Dressings Committee, one of the most important of the war relief organizations in this country, has become an auxiliary of the American Red Cross Society. The arrangement with the Red Cross provides that the surgical dressings committee shall retain its name and organization and carry on its present work in the United States as a national auxiliary of the Red Cross. It may solicit funds in its own name, but no solicitation shall be made in the name of the Red Cross unless all the proceeds therefrom are turned over to the Red Cross organization. The French section of this committee will become the surgical dressings service department of the American National Red Cross. It will administer in France all the surgical dressings work of the Red Cross.

Physicians Who Are Drafted May Get Commissions.—According to a ruling of the War Department, physicians who have been drafted are not prohibited from applying for commissions in the Medical Officers' Reserve Corps.

Personal.—Major E. E. Persons, Medical Corps, U. S. Army, commanding the Ambulance Corps training camp at Allentown, Pa., has been promoted to the rank of colonel in the National Army, and several members of his staff have likewise received promotion.

The Manual of the Medical Department of the Navy.—A new edition of 4,000 copies of this volume is in the hands of the printer. The revision includes changes in the regulations since the last edition, standardization of surgical dressings and shell wound dressings for all ships, description of identification tags and method of preparation, a chapter on female nurses, and information in regard to the reserve personnel.

Promotion of Public Health Service Officers.—A board of commissioned medical officers has been convened to meet at the call of the chairman for the mental and physical examination of certain officers of the Public Health Service to determine their fitness for promotion to the grades of surgeon and passed assistant surgeon. Detail for the board: Assistant Surgeon General W. G. Stimpson, chairman; Surgeon M. W. Glover, member; Surgeon E. A. Sweet, recorder.

Intensive Training for Neurologists and Psychiatrists.—The Surgeon General of the Army has made arrangements for a course of intensive training for selected officers in neurology and psychiatry at the Boston Psychopathic Hospital. This course will cover a period of six weeks, and First Lieutenant Arthur P. Powelson, Medical Reserve Corps, is the first student to be ordered to pursue the course. This is in line of the special efforts being made to identify among the military personnel those in any way affected with brain and nervous disorders.

New Building for the Knickerbocker Hospital.—Plans have been filed for the new building of the Knickerbocker Hospital, which is to occupy the entire block front on Convent Avenue between 130th and 131st Streets. The estimated cost of the building is $350,000. It will be six stories high, with a large roof garden and a circular operating room on the top floor. Two floors will be devoted to private wards, containing about 200 rooms, and the general ward rooms will provide for over 200 additional patients. The present hospital occupies a plot at the northwest corner of Amsterdam Avenue and 131st Street. It was formerly known as the J. Hood Wright Hospital.

More Red Cross Base Hospital Units for Service in France.—The following Red Cross base hospital units are being organized and will soon be ready for service abroad: No. 19, Rochester, N. Y., General Hospital, Dr. John M. Swan, director; No. 20, University of Pennsylvania Hospital, Philadelphia, Dr. John B. Carnett, director; No. 26, State University of Minnesota, Minneapolis, Dr. Arthur A. Law, director; No. 27, University of Pittsburgh Medical School, Dr. R. T. Miller, director; No. 31, Youngstown, Ohio, Hospital, Dr. Colin R. Clark, director; No. 32, City Hospital, Indianapolis, Dr. Edmund D. Clark, director; No. 34, Episcopal Hospital, Philadelphia, Dr. A. P. C. Ashhurst, director; No. 37, Kings County Hospital, Brooklyn, Dr. Edwin H. Fiske, director, and No. 38, Jefferson Medical College, Philadelphia, Dr. W. M. L. Coplin, director.

A Pharmaceutical Corps for the Army.—At a conference held at the office of the Surgeon General on July 24th, between a board of army medical officers and a committee of pharmacists, the pharmacists were requested to submit a formal argument setting forth their views as to the need for and the benefit which might be obtained by the establishment of a pharmaceutical corps. This brief has been submitted to the Surgeon General for consideration and is signed by George M. Beringer, president of the National Pharmaceutical Service Association, and Joseph W. England, of the Committee on National Defense of the American Pharmaceutical Association. The brief cites the method of organization followed in the German, the French, and the Spanish armies as a precedent which could with advantage be followed by the army of the United States. A bill providing for such a corps has been introduced into congress by Congressman George W. Edmonds, of Philadelphia.

Medical Society of the Missouri Valley.—The thirtieth annual meeting of this society will be held in Lincoln, Neb., Thursday and Friday, September 20th and 21st, under the presidency of Dr. C. R. Woodson, of St. Joseph, Mo. The meeting place and headquarters will be at the Hotel Lincoln. The arrangements for the meeting have been placed in the hands of a committee appointed by the Lancaster County Medical Society, under whose auspices the meeting will be held. Dr. K. S. H. Hohlen is chairman of this committee. The scientific program has been limited to twenty papers, including one or two patriotic addresses. Dr. Charles Wood Fawcett, of Kansas City, is secretary of the society and will be glad to furnish more detailed information regarding the meeting.

Venereal Clinics in Queens.—The Department of Health of the City of New York has established venereal advisory clinics in each of the four health centres in the Borough of Queens, with two consultation days a week for each clinic. The medical advisor will consult only with those applicants who are not under the care of a physician, and who come to the Health Department for advice regarding venereal diseases and sex matters. Under no circumstances will he interview patients sent by physicians or private institutions for the Wassermann and complement fixation tests, unless requests for advice are made by those physicians or institutions sending the patients. Such patients as require treatment are referred either to their family physicians or to approved clinics. All applicants are given a circular of information regarding venereal diseases, and a card of instruction regarding syphilis and gonorrhea. The histories that are taken are kept under lock and key and are regarded as absolutely confidential.

A Base Hospital Organized by the University of Virginia.—A base hospital has been organized by the University of Virginia, to be known as Base Hospital No. 41, with Dr. William H. Goodwin, associate professor of surgery, as director. The medical staff includes the following physicians: Dr. Lomas Gwathmey, Norfolk; Dr. Minor Carson Lile, New York; Dr. Kyle B. Steele, Richfield Springs, N. Y.; Dr. Leroy W. Hyde, University; Dr. Joseph S. Hume, Norfolk; Dr. John W. Burke, Washington, D. C.; Dr. Robert E. Pound, New York city; Dr. Gordon L. Todd, Princeton, W. Va.; Dr. Herbert F. Jackson, New York city; Dr. Hugh P. Nelson, Charlottesville; Dr. Dan H. Witt, New York city; Dr. Edward C. Ashby, Greensboro, N. C.; Dr. John D. Barnwell, New York city; Dr. Claude C. Caylor, Washington, D. C.; Dr. Lucius G. Gage, University; Dr. George C. Parry (dentist), Philadelphia; Dr. Edward B. Broocks, Charlottesville; Dr. Walter E. Miller, Norfolk, and Dr. George Y. Gillespie, Bryn Mawr, Pa.

Base Hospitals at Camps and Cantonments.—Arrangements are being completed for the establishment of a base hospital at each of the military camps and cantonments, and members of the Medical Corps of the regular army have been assigned to command them, as follows: Captain Jay D. Whitman, Camp Upton, Yaphank, Long Island; Captain William L. Sheep, Camp Travis, Fort Sam Houston, Tex.; Captain Omar H. Quade, Camp Meade, Annapolis Junction, Md.; Major Ferdinand Schmitter, Camp Lee, Petersburg, Va.; Captain Joseph A. Worthington, Camp Taylor, Louisville, Ky.; Captain Shelley U. Marietta, Camp Gordon, Atlanta, Ga.; Captain William H. Smith, Camp Green, Charlotte, N. C.; Captain William H. Allen, Camp Wadsworth, Spartanburg, S. C.; Captain Roy C. Heflebower, Camp Hancock, Augusta, Ga.; Captain James S. Fox, Camp McClellan, Anniston, Ala.; Captain Arthur O. Davis, Camp Cody, Deming, N. Mex.; Captain Charles C. Demmer, Camp Wheeler, Macon, Ga.; Captain Sanford W. French, Camp McArthur, Waco, Tex.; Captain John M. Willis, Camp Logan, Houston, Tex.; Captain Thomas E. Scott, Camp Sevier, Greenville, S. C.; Captain Philip B. Connolly, Camp Doniphan, Fort Sill, Okla.; Captain George E. Pariseau, Camp Bowie, Fort Worth, Tex.; Captain Chester R. Haig, Camp Sheridan, Montgomery, Ala.; Captain James E. Baylis, Camp Shelby, Hattiesburg, Miss.; Captain George F. Lull, Camp Beauregard, Alexandria, La.; Captain Robert W. Kerr, Camp Kearny, Linda Vista, Cal.; Captain Addison B. Davis, Camp Freemont, Palo Alto, Cal., and Major Ernest G. Bingham, Fort Des Moines, Iowa.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

THE USE OF INEXPENSIVE DRUGS IN PRACTICE.

By Louis T. de M. Sajous, B. S., M. D.,
Philadelphia.

(*Continued from page 281.*)

A comparison of nitroglycerin with sodium nitrite as regards relative advantages and disadvantages in the treatment of conditions associated with high blood pressure led in the preceding issue to a general conclusion in favor of the latter drug, partly owing to its more prolonged action. That sodium nitrite is at present about twenty per cent. less expensive than nitroglycerin, dose for dose, was also noted.

In connection with this an unofficial drug, erythrol tetranitrate seems likewise deserving of consideration. Injected intravenously in animals in doses molecularly equivalent to doses of nitroglycerin, this substance has been found to exert quantitatively the same action as nitroglycerin when taken by mouth, however, its action is greatly reduced as compared to nitroglycerin, owing to the fact that it is insoluble in water. The dose has therefore to be much larger—0.5 grain instead of 0.01 grain—and the effects arise more gradually and are more prolonged. Thus, in the clinical investigations of Wallace and Ringer, 1909, the action of erythrol tetranitrate on the blood pressure was observed to begin only after fifteen to thirty minutes, as against ten to fifteen minutes in the case of sodium nitrite. The time of maximum effect, moreover, was noted as thirty-two to sixty minutes after the ingestion of the drug, as against twenty-five to forty-five minutes in the case of sodium nitrite and eight minutes in that of nitroglycerin, and the total duration of the effect was two to four hours, as against one to two hours in the case of sodium nitrite and thirty to thirty-five minutes with nitroglycerin. The maximum extent of blood pressure reduction from two grains of erythrol tetranitrate in patients with arteriosclerosis was sixty millimetres Hg, as against fifty-three millimetres Hg in the case of sodium nitrite and thirty-two millimetres with nitroglycerin.

While thus apparently advantageous as a substitute for the official drugs where a prolonged or continuous hypotensor action is desired, erythrol tetranitrate has at least one drawback. As noted by Wallace and Ringer, the nitrite headache is in normal subjects especially severe after the erythrol compound, and may even persist many hours after the return of the blood pressure to its original level. Erythrol tetranitrate is also known to be dangerously explosive, while sodium nitrite is nonexplosive. In these respects sodium nitrite is thus distinctly preferable to the unofficial compound. Wallace and Ringer specify, however, that in cases of abnormally high blood pressure the nitrites rarely induce headache, which may, indeed, be relieved by them if previously present. Probably, therefore, headache after erythrol tetranitrate is not as troublesome in high pressure cases as elsewhere. According to Matthew, neither erythrol tetranitrate nor sodium nitrite, on continuous use, establishes a condition of tolerance such as follows nitroglycerin.

On the whole, while all points are not uniformly in favor of sodium nitrite, it presents advantages sufficient to deserve preference. To secure a continuous therapeutic action, therefore, the frequency of repetition of the dose of sodium nitrite need not be as great as the blood pressure might indicate. Even were it deemed desirable to administer sodium sodium nitrite at shorter intervals than erythrol tetranitrate, the fact that the latter is at present about seventy-five times more expensive, dose for dose, would doubtless in many instances be held to outweigh the greater inconvenience attending more frequent ingestion of the former. That sodium nitrite is, as has been asserted by some, a relatively feeble agent seems controverted, not only by the comparative blood pressure observations already referred to, but by the experience of Wallace and Ringer with a patient who was given six grains of this salt, a fall of pressure from 210 to 100 millimetres Hg resulting.

In some groups of cases the substitution of erythrol tetranitrate for sodium nitrite because of its prolonged action may seem particularly desirable. Thus, the late Professor Huchard, with Fiessinger, 1909, considered the erythrol compound especially indicated in patients with angina pectoris who are awakened at night by the pain. It should also be borne in mind that the different nitrites in some cases show unexpected variations in their relative efficiency, one member of the group for some obscure reason acting more satisfactorily than another already tried. In a general way, however, the evidence at hand seems to show that sodium nitrite, the least expensive of the nitrites, can as a rule be substituted without prejudice for the other members of the group in cases not of the emergency variety. Nitroglycerin has been recommended in aortic insufficiency with marked hypertrophy and severe frontal headache; in cardiac irritability and palpitation due to tobacco; in aortic stenosis, double aortic lesions, or anemia of the chlorotic type accompanied by thoracic pains; in cardiac asthma in general in doses as small as 0.001 grain (Parker); in Raynaud's disease, erythromelalgia, and incipient senile gangrene, and in the reflex vasomotor disturbances of the menopause and the menstrual periods. In many instances of these conditions sodium nitrite would doubtless act as well as nitroglycerin; but in any case, the difference in cost between these two agents is slight. Where the inorganic salt is used, the fact should be remembered that its activity is soon weakened upon exposure to the air, the salt becoming oxidized to sodium nitrate.

(*To be concluded.*)

Rapid Reduction of Intraocular Tension in Glaucoma.—W. D. Sansum (*Journal A. M. A.*, June 23, 1917) points out that any desired degree of dehydration of the body tissues can be secured rapidly by the timed intravenous injection of glucose solutions. Glaucoma, being ascribed to ocular edema, can be reduced by such dehydration as demonstrated in two cases which are reported in detail. In the first the ocular tension was reduced from sixty mm. Hg to twenty-six mm. Hg by the intravenous injection of 11.2 mils per kilogram per hour of a 41.2 per cent. glucose solution, continued for sixty-nine minutes. The tension subsequently returned to a high level and the dehydration was twice repeated, using somewhat more dilute solutions of glucose over longer periods of time. After the third dehydration iridectomy was performed. In the second case the tension was too high to permit iridectomy with safety, and was therefore reduced from sixty to twenty mm. Hg by dehydration and the operation done at once with ease and success.

Development of the Paraffin Treatment of Burns and Open Wounds.—Torald Sollmann (*Journal A. M. A.*, June 16, 1917) expresses the belief that simple paraffin will accomplish all that the various paraffin mixtures will and that the most promising field for further improvement lies in the direction of the selection of the paraffin itself. The most suitable form for use should be more ductile and pliable than the official preparation, and there are on the market several commercial paraffins which are superior to the official substance in these respects. The paraffin should be liquid at a temperature of 50° C. or below and a thin film should be pliable at 28° C. and ductile at 31° C. Antiseptics and epithelial stimulants such as resorcin, betanaphthol, volatile oils, and sudan red, are of no value as additions to the paraffin since they are so firmly bound up in it when it cools as not to dissolve out and come into contact with the denuded surface. The application of the molten solid paraffin to raw surfaces is often somewhat painful, but this can be entirely overcome and equally good results secured by applying liquid paraffin as the first coat, over which cotton is spread and the solid paraffin painted on in the usual manner. This use of liquid petrolatum for the layer in immediate contact with the raw surface also opens up the possibility of applying local anesthetics, antiseptics, or epithelial stimulants. Where these are not soluble in the petrolatum, they may be dissolved in some olive oil. For this purpose such substances should be tested as the following: chloretone, 1:200 to 1:1,000; orthoform-new, one per cent.; camphor, from one to five per cent.; menthol, ten per cent.; oil of eucalyptus, resorcin, betanaphthol, gentian violet, and scarlet red. It may be advantageous in some cases to color the paraffin a flesh tint for cosmetic reasons. This can be readily accomplished by the addition of a trace of either scarlet red or sudan. J. R. Beiter in the same issue reports his extensive experience with the paraffin treatment, according to the usual method as well as with Sollmann's liquid petrolatum paraffin sequence. He finds that the latter method is far preferable to the direct application to the wound surface of molten paraffin, and that both paraffin methods are far superior to any other method of treatment. It is inexpensive, comfortable, and clean; it splints the wound and is easily changed and the dressing does not adhere to the granulations so that its removal does not interfere with healing and epithelization. The paraffin treatment does not, however, yield softer scars than other methods where there has been exensive destruction of the deeper skin layers. The technic for the application of the paraffin dressing is to clean carefully the burned area, open all blebs, cut away loose skin, thoroughly dry the burned surface with ether or by exposure to the air, and then to apply a thin film of the melted paraffin or of the liquid petrolatum. Over this a thin sheet of cotton is laid and painted with petrolatum, the edges being sealed to the skin.

Amputations Considered from the Artificial Limb Point of View.—Thomas Openshaw (*Lancet*, June 16, 1917) says that an artificial member can be fitted to any portion of the upper extremity, but that if even a single finger or the thumb can be preserved on the hand this is vastly preferable to its loss. No amputation through the wrist joint should be done if it is possible to leave any portion of the hand. The most satisfactory site for amputation through the forearm is at the junction of the lower and middle thirds. At least two inches of the ulna, below the tip of the olecranon, must be left or the amputation should be done above the humeral condyles. Amputation through the elbow joint is never one of election, but if it must be done the condyles should be removed from the humerus to permit the fitting of a proper socket. The site of choice for amputation through the arm lies in the zone between one and one half inches above the elbow and three below the fold of the axilla. In the shoulder it is better to remove the head of the humerus than to leave it, but an artificial limb can be fitted to the shoulder under any circumstances by means of a moulded leather cap. Such a member can be moved fairly freely by means of attachments which are pulled upon by movements of the opposite arm. In amputations of the toes specially made boots give good function. The most satisfactory amputation about the ankle joint is the Syme and it is ultimately required in almost every case where other forms of amputation have been done previously. The best amputation through the leg is one four or five inches below the upper border of the tibia, the fibula being cut about half an inch shorter. In such amputations it is absolutely necessary to keep the knee joint straight or a further amputation may be required. If as little as one inch of the tibia can be saved it gives a better result than amputations through or above the knee joint. Transcondylar amputation gives a good result if the bone is well covered and its edges rounded off. At least two inches of the femur should be left below the small trochanter or it is almost impossible to fit any form of artificial extremity. If as much as this cannot be left the amputation should be made through one or the other trochanter, or the bone should be exarticulated, the latter being the preferable procedure.

Treatment of Trench Foot.—B. Sherwood-Dunn (*Medical Record,* June 30, 1917) divides the treatment into five categories according to the stage of the disease. In the first, or simple edematous, form washing with warm water and a borated camphor soap is followed by the application of moist dressings of a solution of camphor 1.1, sodium borate 15, in boiled water 1,000. This is followed by the application of camphorated oil without rubbing. The vesicular form in which the vesicles are large is treated by denudation and removal of the gelatinous base with sterile gauze and the application of compresses of camphor, 30, in ether, 1,000, covered in turn by compresses of the borated camphor solution. The denuded surfaces may finally be dressed when improving by dusting with powdered camphor or boric acid. When crusts form they must be softened and gradually removed without causing bleeding, using camphorated ether, colloidal silver, or camphorated oil and borated vaseline. If a stage of extensive invasion arises then free incision should be made with a bistoury. The thermocautery which has given bad results should be avoided. Surgical operation proper should be avoided and bone left to be eliminated by the progress of the disease. In the stage of reparation the best dressing is a paraffin petrolatum combination applied hot and allowed to harden; this is changed daily and comes off readily without pain.

An Ideal Intracapsular Cataract Extraction.—Lloyd Mills (*Archives of Ophthalmology,* July, 1917) arrives at the following conclusions: Intracapsular extraction of cataract by any method yet devised should be performed only by men of large and constant surgical experience and possessed of keen surgical intuition. It is not reasonable to declare that intracapsular extraction is the only satisfactory method of removing cataract. While in selected cases the final visual results of the Smith intracapsular extraction are ideal, the cosmetic results are often less pleasing, and the routine application of any intracapsular method yet devised to unselected cases will bring sure disaster. In selected cases the extraction of the encapsulated lens through the intact pupil is a simple procedure in skilled hands, but the pupil is often drawn strongly upward as a final result, though this seldom interferes with the final vision. Prolapse of the iris, bulging of the wound, pupillary dislocation, and loss of vitreous are the direct results of dislocation of the vitreous, due partly to the pressure and more to a relative lateral flattening of the globe by the actions of the lateral recti. Vitreous dislocation can be prevented by enlarging the corneal incision so that the lateral recti are for the time as mechanically ineffective as the vertical recti, by a peripheral iridectomy, or by both procedures combined. In selected cases ideal cosmetic and visual results follow the extraction of the encapsulated lens through an intact pupil when combined with a peripheral iridectomy; the eye is protected from excessive flood with light by a mobile iris with a small, central pupil, and often the eye operated upon cannot be told from the other save by a deliberate examination.

Deep Röntgen Ray Treatment of Malignant Tumors.—Arthur Fenwick Holding (*American Journal of the Medical Sciences,* July, 1917) has studied the action of Röntgen rays with and without other adjuvant methods in 658 cases of malignant tumors during the past four years. From these he selected 258 cases as a basis for his paper in which the microscopical and clinical data were established beyond question. The cases eliminated were all those in which the diagnosis was not verified by competent microscopical examination, all in which the clinical data and subsequent histories were incomplete, cases in which treatment was discontinued, and cases of uterine carcinoma. Except in old advanced cases the results in cases of basal cell epithelioma were uniformly good, and with proper microscopical diagnosis, other more painful methods of treatment are unnecessary. The bad results in cases of squamous cell epithelioma are in marked contrast to the good ones obtained in the basal cell variety. A majority of the cases of carcinoma of the breast show a primary improvement by diminution in the size of the tumors, both primary and metastatic, with frequent disappearance of the latter. Metastases are more amenable than primary growths, and the earlier they are treated the more is this evident. He believes that the greatest emphasis should be laid on the value of the preoperative and postoperative raying in all cases in which surgical removal is contemplated, because the surgeon can never feel assured that he has not left behind isolated cells. These cells are best attacked when they are not connected organically with the circulation of the host. Cases of lymphosarcoma give the most brilliant primary results, but they relapse and the process proceeds despite all treatment. In pseudoleucemia, chronic lymphatic leucemia, and splenomyelogenous leucemia the lymphoma disappear as a rule, but relapse occurs and the patients die. All cases of carcinoma of the viscera failed to show noteworthy improvement except carcinoma of the thyroid and adenocarcinoma of the ovary. Only two cases of embryonal carcinoma appeared in the series; both showed marked initial improvement, but one relapsed, and the other is still in the initial improvement stage. The conclusions drawn from the study of these cases are: Röntgen rays give excellent results in basal cell epithelioma. They ameliorate cases of carcinoma of the breast, ovary and testis, tumors of lymphatic structures especially when these tumors are made up of cells of an embryonal type. Until an effectual constitutional treatment is discovered, efforts should be made to increase the ameliorating effects of radioactive methods, and the benefits obtained, particularly in postoperative raying and treatment against metastases, should not be ignored. Most of the improved cases eventually relapsed, and while their lives were prolonged and made more comfortable by the Röntgen ray treatment, the patients eventually died of the disease. In some instances the ameliorating effects were very striking and deserve particular attention in the hope that we may discover means of making these ameliorations more lasting and even permanent.

Treatment of Vomiting of Pregnancy.—C. R. Hannah (*Texas Medical Journal,* June, 1917) insists upon the patient taking her breakfast in bed and remaining there for one or two hours. The patient is allowed to eat whatever she wants at any time of the day and immediately after vomiting. Nothing should be done if the vaginal examination proves to be normal. Sodium bicarbonate should be given in large doses, one dram to eight ounces of water six times daily. Horse serum has been injected into the lumbar region as follows: one c. c. of normal horse serum is injected and then the patient is watched for three or four hours for the development of an anaphylactic reaction. If this does not occur, the remaining nine c. c. are injected. If it does take place nothing further is done. In desperate cases the serum is given with a quart of five per cent. glucose solution intravenously.

Carrel Method of Wound Sterilization.—William O'Neill Sherman (*Pennsylvania Medical Journal,* June, 1917), after a study of this subject abroad, reaches the following conclusions: The solution should never be heated; it should never be applied to or used in the eye or intravenously because of its hemolytic action; it should be kept in a cool place away from exposure to light; it should never come in contact with alcohol. Infection can be aborted if the treatment is begun within the first twenty-four hours. If suppuration is established, it can be controlled if the focus is reached. The success of the treatment depends upon the perfection of the Carrel technic and the acceptance of all the details. The effect of Dakin's solution is entirely local. There is no danger of toxemia from absorption, no matter how large a quantity is used. Carrel's technic, using Dakin's solution, may be regarded as a specific against infection.

Action of Oxide of Tin and of Metallic Tin in Staphylococcic Infections.—R. Grégoire and A. Frouin (*Bulletin de l'Académie de médicine,* May 29, 1917) call attention to the observation that among French tin workers furuncular disorders are unknown. Powdered tin has even become a popular remedy for boils. The authors have shown experimentally that metallic tin and the oxide of tin are actually absorbed from the digestive tract, and are innocuous. In experimental staphylococcic septicemia, salts of tin proved therapeutically active, and *in vitro* tin compounds markedly reduced the virulence of staphylococci under certain cultural conditions. Clinically, tin treatment gave prompt and identical results in fifty cases of furunculosis. The boils disappear usually within five to eight days upon ingestion of a mixture of metallic tin and oxide of tin in 0.5 gram doses. An opportunity to test the treatment in acute staphylococcic osteomyelitis has not been obtained, but in two cases of long standing bone suppuration following wounds the administration of one gram of the mixture daily resulted in arrest of the suppuration on the twelfth and the sixteenth days, respectively, and recurrence did not follow. Recent tests of the direct introduction of tin in colloidal suspension or in the form of solutions of chloride of tin into wounds infected with staphylococci gave encouraging results.

Treatment of Fracture of the Femur.—H. Judet (*Presse médicale,* June 21, 1917) asserts that in most cases of infratrochanteric fracture of the upper third of the femur in soldiers he has had occasion to see bone union had occurred in a very faulty position, the two fragments sometimes forming an angle of ninety degrees, with marked shortening of the limb and great difficulty in locomotion. To avoid such unfortunate results, which necessitate a secondary osteotomy, it is absolutely essential that the limb be kept in abduction during repair. Abduction with an extension apparatus is unsatisfactory, as the patient is apt to move in bed and the redressings are painful. A large plaster spica should therefore be applied, the degree of abduction of the upper fragment being ascertained at the time of the initial operation on the wound and the lower fragment then immobilized in a corresponding direction. Aluminum or wooden splints should be incorporated in the cast in order to permit of making a large lateral opening in the plaster for dressing the wound. In fractures of the femur in general Judet has noted a tendency to relaxation of the knee, with subsequent difficulty in walking, requiring for proper correction a hinged knee apparatus. This difficulty is due to excessive traction on the leg by an extension apparatus, with too little traction on the lower portion of the thigh. Where extension is used, this must be carefully guarded against, even at the expense of diminishing traction, as a slightly shortened limb is preferable to a loose knee joint.

Surgical Pneumothorax.—René Le Fort (*Bulletin de l'Académie de médecine,* June 12, 1917) asserts that war surgery has conclusively shown the harmlessness of surgically produced pneumothorax, unless there is severe myocardial disease. If a large opening into the pleura is quickly made, the operation becomes as simple as laparotomy, while if only a small opening is made, difficulties are experienced. With a small opening during the vigorous inspirations, air enters freely into the pleural cavity; the expirations being, on the contrary, performed easily, they are only of short duration and do not give time for all the air to leave the pleura. Hence a relative excess of pressure on that side compresses the lung and impels the mediastinal partition to the sound side. During expiration, moreover, some air from the sound lung enters its fellow, and may force a lobe of the latter against the chest opening, occluding it and instituting a valvular pneumothorax. Conditions are very unfavorable to the early establishment of a respiratory equilibrium, and there is much dyspnea. Where, on the other hand, a large opening is made, the lung on the side opened at once develops free movements during respiration. Such movements may even be so marked as to project the lung out of the chest. This lung therefore takes in air, and the greater the dyspnea the more air taken in, with a resulting favorable effect on oxygenation. Even at the worst, one lung is amply sufficient for this process in subjects with an empty stomach and with muscles relaxed. In none of forty operations thus conducted were there unfavorable effects on the heart or lungs during the operation.

Exophthalmic Goitre.—J. H. Means and J. C. Aub (*Journal A. M. A.*, July 7, 1917) made studies of the basal metabolism of a large number of cases of exophthalmic goitre in various stages of intoxication. They found that the basal metabolism provided a very accurate measure of the degree of toxicity in these cases, being on the average within the normal limits of variation in the nontoxic cases, forty-three per cent. above normal in the mildly, fifty-three per cent. above in the moderately, and seventy-six per cent. above in the severely toxic cases. It also gave a close measure of the response to therapeutic measures and it was found that rest in bed produced a marked fall in the metabolism and an improvement in the other signs of toxicity, and that the addition of sedatives or of quinine hydrobromide to the rest treatment did not hasten or increase the fall in metabolism. Intensive x ray treatment produced a similar marked fall in metabolism in a number of cases, while in others it was without effect. Surgical measures usually produced an immediate marked decrease in toxicity, but there was a definite tendency toward recurrence. The authors believe that the treatment of these cases should be by complete rest and intensive irradiation until the metabolism has reached a level; that if they fail to reduce the metabolism to within twenty per cent. of the normal resort should be had to surgery; and that further active treatment should be undertaken if there is a rise in metabolism after surgical treatment. The presence of a rising metabolism in spite of rest and irradiation seems to contraindicate surgical intervention.

Administration of Anesthetics at the Front.—Geoffrey Marshall (*British Medical Journal*, June 2, 1917) says that with lightly wounded men the chief considerations are safety, speed, and convenience, and that these are all best met by gas and oxygen anesthesia. When not available it may be substituted by warm ether given with a Shipway apparatus. In the seriously wounded cases stovaine spinal anesthesia was tried but found to be far too dangerous from fall in blood pressure and cerebral anemia, which resulted fatally in some cases. These symptoms did not respond to either pituitrin or strychnine, and lowering of the head was found to be the best restorative measure. In wounds of the extremities requiring amputation the operation should be postponed if possible until the shock has been somewhat relieved by putting the patient to bed and applying heat. Morphine should not be given before the operation and gas oxygen should be the anesthetic of choice. In the treatment of shock, in addition to bed and external heat, fluids should be given by mouth or rectum, as they are not absorbed from the subcutaneous tissues in such cases. Intravenous injections raise the blood pressure only temporarily and, if used, should be given at the end of the operation rather than before it, and then in the form of a hypertonic saline solution. Chloroform, ether, and large doses of morphine increase the dangers of shock and should be withheld from cases in which it is threatening. Most wounds of the head may be operated upon under local anesthesia, though in some cases light general anesthesia will be needed to allay the physical suffering. For this purpose warm ether and oxygen are best given through a catheter passed down one nostril. Ether should not be used in wounds of the chest, which should be treated under local anesthesia by nerve blocking, or under warm chloroform vapor plus oxygen, given after a preliminary administration of morphine, hyoscine, and atropine. Warmed ether and oxygen is by far the best in cases with abdominal wounds. Exposure of the intestines outside of the abdomen, even if minimized by wrapping in hot, moist cloths, is the greatest cause of rapid fall of blood pressure. The next most potent cause is the turning of the patient on to one side after the anesthesia has been maintained for over half an hour.

Carcinoma of the Uterus Treated by Radium and Röntgen Rays.—Russell H. Boggs (*American Journal of Röntgenology*, May, 1917) states that radium does not affect the tissues at a greater distance than two to three centimetres from the tube. Preceding and following operation, it is of unquestionable value. Cases without recurrence for a period of eight years have been recorded. In advanced cases the relief of the symptoms is so marked that every practising physician should be familiar with this fact. Discharge and hemorrhage usually disappear under its use sometimes within two or three weeks.

Treatment of Asthma.—Albert C. Geyser (*American Medicine, April,* 1917) examines the spine with a faradic current. Certain areas will be found to be hypersensitive to the current. A red spot usually appears in these areas. One pole of the faradic current is applied over this area and the other, a larger pad electrode, over the entire lung area anteriorly. The interruptions of the vibrator point must be at least 5,000 or more per second. After applying this current for from fifteen to twenty minutes the spasm will be relieved and remain so for several days. If this treatment is continued daily or on alternate days for two weeks the patient will be free for months.

Surgical Treatment of Neurotic Conditions.—John W. Kenney (*Texas Medical Journal,* June, 1917) reports the result of fifty operations performed on thieves, forgers, idiots, insane, and drunkards. Decompression was performed on the idiots, thieves, and forgers. As far as benefiting the patients was concerned the results were failures. The cases of insanity and drunkenness were distinctly improved. In these cases castrations, trephinings, panhysterectomies, and oophorectomies were performed.

Treatment of Ivy Poisoning.—W. H. Dieffenbach (*Southern California Practitioner,* June, 1917), following out "autolactotherapy," fed a cow with a mixture of grass and poison ivy plant. The milk of this cow was imbibed the next day. The test was made in August and there was immunity for the rest of the summer. About one pint of milk was taken for two days and no other treatment was instituted. The following summer the patient had three slight attacks. In these attacks sal ammoniac solution, one tablespoonful to a pint of water, was applied by means of compresses for several hours, and then hot antiphlogistine poultices.

Miscellany from Home and Foreign Journals

Early Diagnosis of Diabetes.—Thomas Addis (*Journal A. M. A.*, July 14, 1917) outlines a simple procedure for the early diagnosis of diabetes before the occurrence of suggestive symptoms. The method has been used as a routine in all cases in which sugar was found in the urine in the course of the general examination, and has given most satisfactory results in a large number of patients. It depends upon the fact that in diabetes there is a diminished capacity to utilize sugar, while in the other forms of glycosuria this capacity remains about normal. In brief the method is to have the patient empty his bladder on arising, then drink one pint of water and take no breakfast. Exactly two hours after emptying the bladder and taking the water he is to empty his bladder and save the entire amount of urine passed which is to be labeled "First day, Specimen 1." Immediately after this he is to take another pint of water and eat two boiled or poached eggs without salt. Precisely two hours after the water a second specimen of urine, consisting of all the bladder contents is to be collected and labeled "Specimen 2." For the next three days this is repeated, except that twenty-five, fifty, and 100 grams of glucose, respectively, are to be taken with the first pint of water on each of these days. If the case is one of true diabetes there will be a steep rise in the sugar output with the increasing intake. If there is only some form of alimentary, renal, or other type of glycosuria, such a rise will not be observed. In renal diabetes there may be some slight rise in the output, but this is not marked and can be readily distinguished from true diabetes. The method has not failed to give trustworthy evidence in a large experience.

Neurasthenia in Soldiers of Home Forces.—F. W. Burton Fanning (*Lancet*, June 16, 1917) draws attention to the predominance of neurasthenia among newly recruited soldiers reporting sick, using the term in its widest sense—that of a disorder of the nervous system without apparent organic basis. Five hundred and nine men out of 1,600 reported sick were suffering from this condition in one or other of its varied forms. A large proportion of the neurasthenics realized that they were of a nervous temperament and that this was the cause of their disability. There were very few exceptions to the fact that the men of this class were certain of their inability to stand military service and resented being called to the colors. Some of the men were of average physical development, but the majority were of notably poor physique, not a few were actual degenerates, and very few were of a physical development beyond the average. An important diagnostic point is that the neurasthenic man never limits his complaints to any one organ or any single organic disease. There are several almost universal symptoms among these cases such as, prostration, general weakness, sense of exhaustion, and sudden collapse. The men all lack energy, are unable to concentrate or interest themselves, and are mentally preoccupied. Other symptoms common to almost all are tremors of various types, such as slight quivering of the upper lip in speaking, rapid vibratory movements of the upper eyelids when closed, or fine tremors of the extended fingers. These signs at once put the examiner on his guard and suggest neurasthenia. Cold extremities, hot and cold flashes, feeling of something creeping beneath the skin, giddiness, and profuse sweating, especially the condition of moist palms, are almost characteristic among the vasomotor phenomena. A flush across the forehead is very common, loss of weight, exaggerated knee jerks and a dry, sanded tongue are also all very common. The patients' chief complaints, in the order of their frequency, are rheumatism or rheumatic pains variously located, not necessarily in the joints; symptoms called neuritis; backache; gastritis; cardiac pains, dyspnea; pulmonary trouble, often regarded as tuberculosis; disturbances of micturition; distressing throat symptoms; and much less commonly symptoms referred to the sexual organs. In all of these conditions the characteristic evidences of the real disease are wanting, and in the cases of disordered action of the heart there is no evidence of any true affection of this organ and none to implicate the thyroid gland. Although proper treatment may serve to relieve the patient of all or most of his symptoms, these men never can be made fit for military duties, and it is best to have them undertake some useful form of occupation at home.

Diagnostic and Therapeutic Lumbar Puncture in Spinal Injuries.—Harold Neuhof (*Archives of Diagnosis*, April, 1917) asserts that in the Bellevue Hospital lumbar puncture has proved of signal aid in cases of suspected or evident spinal injury and is now performed as a routine measure. The finding of a large quantity of blood and evidence, on repeated puncture, of continuation of the bleeding constitutes one of the exceedingly few indications for operation in recent spinal traumatism. In some instances, the blood found in the spinal canal afforded the only evidence that vaguely suspected spinal injuries were actually vertebral traumas with compression of the cord. The finding of blood is of unusually great value in the presence of acute or subacute alcoholism, of coma or mental confusion, or of hysteria. In cases of skull injury blood in the spinal canal is of less value in the diagnosis of associated spinal injury, unless large amounts of fresh blood are noted. To eliminate the needle as the cause of bleeding the spinal fluid should always be collected in two or three test tubes. That lumbar puncture may obviate operative intervention in suspected cord injury was illustrated in the case of a woman in whom, after a street car accident, complete motor and sensory paralysis in the legs developed progressively. Puncture revealing clear fluid, operation was withheld, and soon after the reflexes began to reappear. As a therapeutic measure, lumbar puncture is of value to relieve compression or irritation of the cord by fresh blood, and to minimize the aftereffects.

Loss of Sight from Posterior Accessory Sinus Disease.—Leon E. White (*Boston Medical and Surgical Journal,* June 28, 1917) reviews the literature on this subject and adds three cases of his own. The results in twenty-seven cases were: Complete recovery in fourteen; improvement in seven; total blindness in one or both eyes in five; one death; four recoveries without operation. In three the sphenoid alone was opened; in ten the ethmoid alone; in seven both. In fifteen the onset was sudden, with a history of coryza in twelve and severe pain in thirteen. Pus was found in twenty-two, a thickened mucosa in five. Scotomas and fundus changes were noted in fourteen. The x ray findings were helpful in four. He divides the cases into three classes: 1, the acute ones which usually follow grippe or a coryza and are accompanied by severe pain; 2, the chronic ones where there is less pain, if any, and an empyema of one or more sinuses is causing a pressure on, or a toxemia of, the optic nerve; 3, those cases where on opening the sinuses only a thickened mucosa is found. Here hyperplastic changes are taking place and a periostitis in the sinuses by extension through the optic canal becomes a perineuritis. The treatment is drainage of the posterior ethmoidal cells and of the sphenoidal sinus.

Pressure Signs of Certain Intracranial Conditions Observable in the Fundus of the Eye.—William Sharpe (*Archives of Ophthalmology,* July, 1917) discusses the pressure signs met with in brain tumor, brain abscess, intracranial hemorrhage, and edema following fractures of the skull, selected cases of cerebral spastic paralysis due to an intracranial hemorrhage at birth, and hydrocephalus. He believes that it is rare in cases of brain tumor for a choked disc to result unless the tumor has become very large, or has caused a blockage of the ventricles and thus produced an internal hydrocephalus. It is comparatively easy to make a diagnosis of brain tumor at the stage of papilledema, the commencing stage of choked disc, and he feels that early ophthalmoscopic examination which reveals this milder pressure sign would result in the location and removal of a smaller tumor mass, as only too frequently the surgically successful removal of a brain tumor is possible and yet the patient has been damaged irreparably by the failure to recognize the pressure signs. In brain abscess there is a replacement and substitution of brain tissue by purulent detritus, so it is rare for definite signs of intracranial pressure to be observed in these cases, unless the ventricles are blocked or a toxic and infective meningitis occurs. Intracranial hemorrhage and edema following fractures of the skull rarely induce a choked disc because the intracranial pressure rises too rapidly for such a condition to be produced, but when a large hemorrhage develops slowly after such an injury a choked disc may be formed. It is most rare in cases of brain injury with or without skull fracture for an edema of the optic discs to appear within six hours. The development of a well marked choked disc should not be awaited in such cases; a blurring of the discs, twice the normal pressure of the cerebrospinal fluid, and a lowered pulse rate are indications sufficient for a decompression operation. In cerebral spastic paralysis the finding of dilated retinal veins and a blurring of the discs may indicate the cause of the condition. In hydrocephalus the ophthalmoscopic findings depend on whether it is internal, with a resulting high intracranial pressure, or external; the latter rarely causes a measurable papilledema, while the former can produce choked discs of extreme degree. Finally he emphasizes the fact that careful ophthalmoscopic examinations of the fundus are of the greatest importance in differentiating many intracranial lesions.

Primrose Dermatitis.—C. Augustus Simpson (*Journal A. M. A.,* July 14, 1917) reports the results of his observations and experiments on the etiology of primrose dermatitis, which is increasing in the frequency of its occurrence on account of the popularity of the flower. There are probably two active poisonous constituents, the one of a glucosidal nature, the other an acid constituent of the resin contained in the plant. Primrose poisoning, like many other types of dermatitis venenata, has been ascribed to anaphylaxis, but there is no evidence in support of this view and much against it. The poisons are not of a protein nature; animals cannot be sensitized to the poisons of the plant, either actively or passively; no specific amboceptors can be found in the blood of susceptible patients, and the protein bodies of the plant have no relation to the poisoning. The dermatitis belongs typically to the class of hypersensitive reactions to drugs and chemicals and has no relation to anaphylaxis. There is probably some cellular or epithelial irritability present in persons who are sensitive to this or other chemical poison, and this irritability is spontaneous and not the result of exposure.

Method of Spread of Gas Gangrene into Living Muscle.—J. W. McNee and J. Shaw Dunn (*British Medical Journal,* June 2, 1917) made extensive examinations of freshly amputated extremities and of cadavers within one or two hours after death to determine the mode of spread of gas gangrene into healthy muscle. They also conducted a series of animal experiments with results which confirmed their findings in man. They point out that gas gangrene is a disease of dead muscle, in which the bacilli live a saprophytic life with the rapid destruction of the dead tissue, producing gas and highly toxic fluid. The rapid spread of the disease from the originally infected devitalized muscle is found to be due to the anatomical structure of the muscles. These consist of long individual fibres surrounded by sheaths which are very readily detached with the formation of potential spaces into which the toxic material from the infected region passes. This detachment damages the blood supply and the toxic fluids complete the destruction of the vitality of the muscle. With this the organisms find fresh devitalized muscle and the process progresses until the whole muscle originally affected is destroyed, or until all are destroyed when more than one is infected. In the case of gas bacillus infection below the site of a complete lesion of one of the main bloodvessels all of the muscles are devitalized together and the disease spreads generally throughout the part.

Trench Fever.—H. Moreland McCrea (*Lancet*, May 26, 1917) says that a number ot articles from various countries has appeared in which some evidence is adduced to show that this disease is a spirochetosis. The spirochetal nature of the disease has, however, not yet been proved. Further evidence in its favor is produced by the author. The clinical condition closely resembles a syphilitic periostitis; in the vast majority of cases the Wassermann reaction is positive, as is the case in spirochetal infections in general; and, finally, some cases respond well to intravenous injections of galyl and intramuscular injections of gray oil.

Pupillary Inequality in the Normal Subject.—A. Tournay (*Bulletin de l'Académie de médecine*, May 22, 1917) points out that while anisocoria has hitherto been held to occur, with rare exceptions, only in the presence of some local or general pathological state, this rule in reality applies only where the subject's gaze is directed straight forward. Whenever the normal subject turns the eyes strongly to one side, the pupil of that side becomes larger than its fellow. The same phenomenon can be noted, moreover, when convergence and accommodation are brought into play, the visual axes being directed at a close, laterally situated point. The pupil of the corresponding side dilates, not at once, but after an interval of a few seconds. A similar reaction, apparently, can be observed where abnormal anisocoria already exists, the difference between the two pupils being either accentuated or lessened according to the side to which the eyes are turned.

Diagnosis of Pellagra.—Edward J. Wood (*Archives of Diagnosis*, April, 1917) states that in no other diseases are the symptoms as definite as in pellagra, yet mistakes in diagnosis are numerous. In his own doubtful cases the condition later invariably proved to be another disease, such as sprue. For diagnostic purposes he divides the disease picture into the skin group, the intestinal group, and the mouth group, least in importance, but often present early. At least two of these groups almost invariably occur, except in children, in whom skin lesions may alone be present. A diagnosis is never justified in the absence of skin symptoms or a very definite history of such symptoms. Among 100 private cases seventy-seven had diarrhea, in most cases severe and resistant to all treatments except high vitamine feeding. Subsidence of diarrhea is of great prognostic import. Lately pellagra in the South has lost much of its original virulence. Mouth symptoms were present in seventy-three cases. Their duration may be so short that failure to record them must be frequent. Close definition of these symptoms is inadvisable; it is enough to say that there is an acute stomatitis and frequently an esophagitis. The mouth symptoms of sprue cause the greatest confusion with pellagra, but the former shows a marked secondary anemia and no skin lesions. The backs of the hand and lower posterior surfaces of the forearms are almost constantly the site of pellagrous skin lesions—ninety-seven cases. No skin lesion should be counted pellagrous if symmetry is wanting. The hyperkeratotic border of Merk and the concentric layers are also significant. The psychosis of pellagra is too indefinite to be of diagnostic value.

Isolated Nasal Diphtheria.—J. D. Rolleston (*British Journal of Children's Diseases*, March, 1917) gives the percentage of isolated cases of nasal diphtheria, originating in and confined to the nose, as 1.5 per cent. It is most frequently seen in young children and is more prevalent in the cold months of the year. Congenital syphilis is a predisposing cause. The great majority of the cases run a mild course, but rare examples of toxemic diphtheria confined to the nose do occur. The mild course has been proved to be due to autoimmunization. Chronicity is a characteristic feature of isolated nasal diphtheria, the presence of the bacilli being explained on anatomical grounds. Sequelæ are occasionally seen, but are rare. Local treatment should be avoided, but antitoxin is indicated. The term "fibrinous rhinitis" should be reserved for comparatively rare cases in which this form of rhinitis is due to other causes than the diphtheria bacillus. The practical significance of isolated nasal diphtheria consists in its epidemiological importance.

Decalcification of the Bones in War Traumatisms.—E. Delorme (*Bulletin de l'Académie de médicine*, May 8, 1917) in examining 1,350 bone radiograms accumulated at the Grand Palais, Paris, found more or less extensive osseous decalcification in one half of all injuries of the metacarpus, radius, humerus, tibia, and both bones of the leg, in a little over one third of the injuries of the femur, and in one fourth of the injuries of the ulna. These do not, of course, comprise recent cases in which the bone disturbance has not as yet had time to become established. The importance of nerve injury as a factor in the decalcification is illustrated in that among fifty-four cases of old nerve injuries in the upper extremity, forty-one showed bone decalcification. Again, among thirty-seven cases of injury of the sciatic nerve or its branches, twenty-three showed decalcification. While injuries of large nerve trunks seemed especially potent as a factor in this condition, several plates showed marked trophic bone disturbance where very small nerves could alone have been injured. Of seven cases of ligation of a large arterial trunk, only one showed a slight decalcification. As a rule, the decalcification is of such a type as to render the affected bone more transparent to the x rays, the outer layer of the bone, however, standing out more prominently—though narrower—than usual. In some instances, however, especially in the short bones, the change consists merely in the assumption of a dark, soiled appearance throughout the bone, with the cortex less clearly defined and the bone as a whole streaked with linear, longitudinal dark spots, alternating with paler intervals or blotches. Careful comparison of plates seemed to show that this condition represents a preliminary stage of the bone disorder, passing later into the more definite decalcification already referred to. In the treatment of bone decalcification, to which as yet little attention has been paid, electrical procedures seem to have proven inefficient. Administration of phosphates, lime, magnesia, iron, silica in the form of mineral waters, and appropriate foods, together with arsenic in small doses and cod-liver oil in moderate doses, as recommended by Robin, is expected to give better results.

Proceedings of National and Local Societies

THE MEDICAL SOCIETY OF THE STATE OF NEW YORK.

One Hundred and Eleventh Annual Meeting, Held at Utica, April 24, 25, and 26, 1917.

The President, Dr. MARTIN B. TINKER, of Ithaca, in the Chair.

(Concluded from page 195.)

Differential Diagnosis of Enlargements of the Cervical Lymph Nodes.—Dr. ROYAL S. HAYNES, of New York, said that enlargements of the cervical lymph nodes fell into the following classes: 1, inflammations, simple or tuberculous; 2, hyperplasias, and 3, neoplasms. These pathological processes were not confined strictly to particular disease entities. Lymphadenoma, lymphosarcoma as primary diseases, and carcinoma as a secondary process represented least common types of the neoplasms. The commonest forms of enlargement of the cervical lymph nodes were the infections or enlargements secondary to bacterial invasion of structures of the head and throat whose lymphatic drainage terminated in one or other of the group of lymph nodes situated in the superficial and deep structures of the neck. They were of the greatest etiological, diagnostic, and therapeutic importance. When enlargements of the cervical lymph nodes, excepting those due to infections, could not be differentiated the signs of disease elsewhere which ordinarily accompanied them helped to establish a diagnosis. In enlargement of the lymph nodes of the neck, the location of the group first enlarged would go far to indicate the primary focus and would give some information as to the type of infection. Later there was no such definiteness. An adenitis in a child under two years of age was probably simple rather than tuberculous; in persons over two years of age it was likely to be tuberculous rather than simple. A valuable point in diagnosis was whether or not raw milk or milk from tuberculous cows had been given the child. Personal and social hygiene and contact with tuberculous individuals were important matters. Tuberculous adenitis was rarely acute in its onset. An abrupt onset, fever, rapid swelling of the lymph nodes, tenderness, edema, and matting together indicated pyogenic infection. A slow increase of the swelling with gradual involvement of more than one node, delayed cellular tissue infiltration, and delayed amalgamation of the skin, and deeper structures spoke for tuberculosis. In tuberculous cervical adenitis of early infancy, however, the picture at the onset described for acute pyogenic infection was likely to be present. Enlargement of cervical lymph nodes of over three months' duration was presumptively tuberculous. Recurrent mild infections from adenoids might leave the lymph nodes enlarged without the ability to resume their original size. The location of the nodes might be the same in both varieties of infection. Inflammation of the structures in the mouth, throat or nasopharynx was probable when enlargement of the lymph nodes was due to pyogenic infection. The absence of such inflammation in the presence of cervical swelling was significant of tuberculosis. An infectious pyogenic process in addition to the tuberculosis would give a leucocytosis with polymorphonuclear increase in this type also. The anemia of the tuberculous type would probably be more profound. In the tuberculous enlargement the tuberculosis complement fixation test should be positive and negative in simple adenitis. In simple adenitis, however, it might be positive when there were foci of infection elsewhere. A negative von Pirquet reaction was valuable evidence of pyogenic infection. Röntgen ray examination of the head disclosing tooth abscesses, for instance, would indicate pyogenic infection. Röntgen ray examination of the thorax showing extensive tuberculous involvement would indicate the same. The evidence from excised tonsils or adenoids might often be inconclusive. Tubercle bacilli might be obtained from aspirated softened areas of the enlarged mass, or pyogenic organisms or the pus might be sterile, an indication that the process was tuberculous. With all these aids, a positive diagnosis could not be made until the gland itself was excised and examined.

Hodgkin's disease might present a confusing picture, but here the progressive enlargement without coalescence and suppuration, the involvement of other groups of nodes, particularly within the thorax and abdomen, the splenic enlargement, the progressive anemia, and the finding of characteristic Hodgkin's hyperplasia on section of a removed gland would serve to differentiate. Enlargements in lymphosarcoma bore a certain resemblance to those of Hodgkin's disease, but the capsule of the node had a tendency to rupture and the nodes became adherent to each other and to the surrounding tissue. The course was rapid. Acute lymphatic leucemia only needed differentiation from cervical enlargement. In its early stage it presented enlargements of nodes up to the walnut size, with little or no redness or tenderness. Later when hemorrhagic changes in the mouth and throat took place, infection was often added to the picture. The diagnosis would be made by examination of the blood. Anemia with one to three million red blood corpuscles, hemoglobin twenty to thirty per cent.; leucocytes 60,000 to 150,000 of which ninety to ninety-eight per cent. were lymphocytes most of the large variety, were the expected findings.

Relation of the Nose and Throat to Cervical Adenitis.—Dr. GEORGE BACON WOOD, of Philadelphia, said that there were no statistics or other absolute data concerning the relative importance of the nose, throat and mouth as the starting place for cervical adenitis. He believed that ninety per cent. or more of the cases of cervical adenopathic infection had their original focus within these organs. He would place the faucial tonsil first in the order of importance; the pharyngeal tonsil and other lymphatic structures of the pharynx came next, including the lingual tonsil, gums, alveolar processes; last the nasal cavities and accessory sinuses. The point of infection in all of these structures might be hidden. Occasionally lesions of other parts of the mucous membrane gave rise to adenitis. The method of bacterial invasion of the tonsillar parenchyma in ordinary cases of acute tonsillitis was studied and showed vulnerability of the cryptal epithelium. As far as chronic adenopathy was concerned the most important glands of the neck were the terminal or deep glands. These formed a perpendicular chain beneath the sternocleidomastoid muscle into which all the afferent collectors of the more superficial glands emptied. These glands emptied into each other and terminated usually in a single large trunk called the jugular lymph trunk. The anatomy of these chains of glands explained the mode of infection. Most cases of chronic cervical adenopathy were of the descending type and usually began with enlargement of the tonsillar lymph node. The next most important group started in the upper glands of the external group of the deep cervical chain just behind the posterior border of the sternomastoid. Primary enlargement of the superficial chain rarely initiated the chronic form of adenitis. The importance of the mouth, nose, and throat in the etiology of the cervical adenopathy is evident when it is remembered that practically the only afferent vessels running to the deep cervical chain came from some part of the upper digestive and respiratory apparatus. If the glands involved began with those under the posterior portion of the sternomastoid muscle the tonsils and mouth could be ruled out. In the large majority of cases infection came through the pharyngeal tonsil. The posterior gland of the submaxillary group was involved primarily in alveolar infection. Where the tonsillar lymph node was the first to be enlarged the infection must surely come through the faucial tonsil, the lingual tonsil, or possibly the lateral folds of the pharynx.

Relation of Teeth to Enlarged Glands.—Dr. THOMAS B. HARTZELL, of Minneapolis, said that during the last five years research had not thrown any additional light on tuberculous, syphilitic and carcinomatous lymphatic invasion. He believed that mouth infections should be regarded as a result of the organisms which were habitually found in the mouth and which had the power to invade the tissues. This reduced the field of intensive study to a comparatively small number—the fusiform bacillus, the mouth spirochete, Leptothrix buccalis, and the streptococcus. Research showed that of these the streptococcus was the primary cause of the various dental infections. The staphylococcus was one of the active factors in acute alveolar abscess, but was regarded as unimportant in the chronic alveolar abscess. Staphylococcus was not an important factor in cervical lymph adenitis. Streptococcus salivarius was absolutely constant in the mouth. Streptococcus viridans was found to have the power of penetrating tissues and of causing metastatic lesions in all parts of the body. Unquestionably it produced a toxin, and the speaker believed that it was the organism mainly responsible for most of the important dental lesions, including inflammation of the dental pulp. It was certainly the chief cause of pyorrhea. It could and did invade the lymphatics, and swollen lymph nodes were often observed in direct continuity with the lymphatic drainage from the gums and peridental tissues which had receded rapidly due to stamping out of the growth of this organism in the tissues contiguous to the teeth. This organism gave rise to a nonsuppurative lesion in the beginning, which might become suppurative as the destruction of the peridental tissues progressed. The suppurative character of the pyorrheal process, however, was grafted upon the initial lesion produced by the streptococcus and was secondary to the streptococcal invasion. The chronic dental abscess, or so called granuloma, was more important than the pyorrheal pocket as a focus of infection to the lymphatics and blood stream. Clinically, the invasion of the cervical lymphatics by Streptococcus viridans presented a fairly constant picture of low grade infection involving swelling of the lymph nodes and slight tenderness to pressure with or without slight variations of temperature. On account of the narrow range of temperature Streptococcus viridans lymphadenitis was often mistaken for incipient tuberculosis. A careful examination of the mouth and jaws was of greatest value in children. A decided increase in weight and vigor was often observed to follow the removal of dead pulps of teeth and the curettement of abscesses. In these cases the extraction of the deciduous teeth was safer than attempted sterilization. Sublingual gland infections from pyorrhea pockets and deep gingival crevices which were exceedingly common and frequently pass unrecognized might give rise to metastatic infections of heart, kidney, and joints. Patients should be taught to report such conditions, thereby enabling the physician to eradicate these foci of infection. Heart disease, according to the statistics of the United States Government from the registration area, was a greater menace to life than tuberculosis. Heart disease, which was ninety per cent. streptococcal in its origin, was to a large extent preventable. When teeth had to be extracted they should be taken at intervals of five to seven days; the speaker had seen in the last two years four deaths resulting from wholesale extraction of teeth. These deaths were due to the circulation reaching a point of saturation with the toxins of the infecting organism; the granulating walls around the areas of inflammation were broken down and the patient was overwhelmed by a mass of living organisms thrown into the circulation at one time. The same was true of pyorrheal infection. He advocated the same caution in the removal of the tonsils. It was vastly better to remove one at a time if the patient was near the point of saturation with streptococcal toxins.

X Ray Treatment of Enlarged Cervical Glands.—Dr. GEORGE E. PFAHLER, of Philadelphia, said that if there was suspicion of disease in the tonsils, lymphatics, or teeth when a case was presented for treatment we should first search for the source of infection and remove it. Glands which were soft, fluctuating, or tender should be incised and drained. If the glands were not soft and the case was of recent origin, less than six months, they could usually be made to disappear by the Röntgen rays properly administered. An operation upon a child for cervical adenitis should be followed by at least one or two full courses of postoperative treatment. A gland which was tender at the beginning of the x ray treatment would almost certainly become softened and red on the surface and finally show signs of pointing. It should then be incised and treated as an abscess and the x ray treatment should be continued. A complete dissection of the glands of the neck would not be necessary in such instances, and there would only be a small, scarcely visible scar at the site of the incision. The hygienic conditions of the patient should be improved and the sources of infection, such as the milk of a tuberculous person, should be removed. In general the technic of deep röntgenotherapy should be applied in cervical adenitis. The speaker's technic at present consisted in the employment of hard rays thoroughly filtered, i. e., rays from a tube which would back up a nine inch parallel spark gap, equivalent to approximately nine on the Benoist scale. These rays were filtered through six millimetres of aluminum and applied for forty milliampère minutes through each portal of entry. The hair and face must be thoroughly protected by sheets of lead. The focal distance from the target to the skin was eight inches. In general the application to two portals of entry for one side of the neck would be sufficient; in severe cases four or more portals of entry might be necessary. Doctor Pfahler drew lines downward along the anterior border of the sternocleidomastoid muscles and then directed rays anteriorly through the neck and then posterior to this line toward the deeper portions of these glands. After a month, during which the treatment was not repeated, there was usually a decided reduction in the size of the glands. Cumulative effects and dermatitis, or even a redness of the skin, should be avoided in treating these cases. A severe dermatitis threatened subsequent development of a telangiectasis. Röntgen therapy should be employed in these cases only by a skilled röntgenologist and never by an orderly or a nurse. Today thousands of x ray machines were employed by men who might be competent in other lines of medicine, but who were quite incompetent in röntgenology.

Indications for Removal of Enlarged Cervical Lymph Glands.—Dr. Charles N. Dowd, of New York, said that tuberculous infection here gave the main indication for surgery. Hodgkin's disease and lymphosarcoma occasionally called for surgical interference. Hyperplastic inflammation seldom called for surgery. Progressive tuberculosis of the cervical lymph nodes manifested itself in two main forms, caseation and abscess formation which constituted about eighty per cent. of cases. When this stage was reached diagnosis was simple. Before the abscess was formed the enlarged lymph node just below the angle of the jaw was characteristically much larger than the surrounding nodes, was fairly soft, and was more or less attached under the anterior border of the sternomastoid muscle. In the remaining twenty per cent. the lymph nodes enlarged without abscess formation, and might extend throughout the neck from the mastoid to the clavicle, and from the internal jugular vein backward under the trapezius, and forward under the jaw. They were rather hard, not easily movable and matted together. They were not as distinctly shown as localized as the caseating variety; they tended to progress intermittently. Enlarged upper cervical nodes of this variety in childhood might be massed throughout the neck in adolescence or in early adult life. Hyperplastic nodes showed a tendency to subside. If these factors were fully considered, the clinical differentiation between tuberculosis and hyperplastic cervical lymph nodes could usually be made. In a series of 726 cases the earlier cases gave wonderfully good results and it was clear that childhood was the best time for operation. If neglected, they might develop into the undesirable types of cases. It was very important that there should be more adequate understanding of the real surgical problem. The practical considerations were: 1, uncertainties in diagnosis; 2, technicalities in operation; 3, recurrences in late and unfavorable cases. Uncertainties caused two types of error: When tuberculosis was present and was unrecognized, the patients drifted past the most favorable time for successful operation, and when simple hyperplastic glands were mistaken for tuberculous glands the treatment resulted in confusion. The simple incising of an abscess without discovering and removing the glands that lay back of it was particularly unfortunate and should not be called an operation. The term operation here meant the removal of the infected glands and the tuberculous detritus which came from them. The technicalities of the operation should not be neglected. The speaker had seen cases in which important nerves had been severed, as the facial and the spinal accessory, before its entrance into the trapezius muscle. After an extensive study of all forms of treatment and visits to institutions where they were used, he did not advocate long periods of treatment which gave uncertain results when there was a simple short treatment which gave such good results, except in cases of diffuse tuberculosis in which radical removal was impossible or very difficult.

Dr. Thomas S. Southworth, of New York, stated that in these cases there was nearly always a history of nasopharyngeal involvement, or common cold, as the source of the lesion. If the fever persisted, suppuration took place within a week or two. As a pediatrist he had been at variance with the general surgeon in the treatment of this acute abscess. The general surgeons opened freely such a lesion and packed it with gauze. The gland must be broken down before incision should be made. If there was fluctuation, pointing, and redness, the abscess could be incised for three eighths of an inch, the skin stretched, and the pus removed by gentle pressure and a small drainage tube put in. The contraction of these abscesses was rapid and left a minimal scarring. These cases could be aborted by special attention to the nasopharynx to prevent further absorption. The older the child, the more favorable the prognosis. The subsidence was slow; if it did not take place, a mixed tuberculous infection should be suspected.

Dr. DeWitt H. Sherman, of Buffalo, said that a large number of the cases of adenitis that came to the surgeon were tuberculous. The acute nontuberculous types were very often preceded by a rapid rise and fall of temperature, lasting from one to four days, with recovery. Many of this sort of cases which he had seen, had been caused by infection of the pharyngeal tonsil. The temperature variation might be as large as six degrees. Many of these patients had had a severe adenitis, and unless damage to the gland was great, they got well, provided they did not fall into the hands of the surgeon.

Dr. H. W. FRAUENTHAL, of New York, said the discussion seemed to be confined so far to the seven per cent. admittedly tuberculous cases of the cervical glands. Of other cases, seventy-five per cent. were stated to be staphylococcus infections and about twenty-five per cent. streptococcus. He had seen many cases which were straight syphilitic with secondary infection. Many children, apparently well, had syphilis, many of whom had general gland involvement and secondary infections. They could be helped by drainage, but they could also be treated by antisyphilitic treatment. Twenty per cent. of the children seen had had congenital syphilis.

Dr. HARRY R. TRICK, of Buffalo, said that cases where the nodes indicated a series of enlargements with retrogression were general tuberculosis. In the sanitarium in Buffalo the Rollier treatment was used and its results were most satisfactory. He was impressed with the careless nomenclature in these cases; the involvement of nodes or glands was spoken of indiscriminately. Would it not be well worth while to correct this carelessness?

Doctor BARNES, of Herkimer, said an important point in the prevention of some of these infections was filling the mouth full of water after meals and washing it around, exerting suction on all parts of the mouth, including the tonsillar crypts and pockets.

Dr. THOMAS B. HARTZELL, of Minneapolis, stated that the teeth had an important bearing on these cases. They were undoubtedly the source in the milder streptococcic type. He would like to ask if it was wise to operate on glands without having the tuberculin test. Some of these cases might not have been tuberculosis.

Dr. GEORGE E. PFAHLER, of Philadelphia, said that his experience coincided with that of Doctor Wood and Doctor Dowd, but the forty-two per cent. recurrences which were quoted could be eliminated if treated postoperatively. Another point was that it was very inadvisable to cut into Hodgkin's cases. He had seen many horrible developments of Hodgkin's disease caused by taking away a gland for investigation. The glands rapidly enlarged, and the patient became much worse. This was unjustifiable unless in exceedingly doubtful cases.

Dr. C. N. DOWD, of New York, endorsed the remarks of Doctor Southworth about opening abscesses in children. The day for large incisions had gone by. A little nick could be made and there would be practically no scar. As regards syphilitic cases, he had seen many combination cases, syphilis and tuberculosis. In these the glands should be removed and antisyphilitic treatment should be instituted. If the operation was omitted, they would have to come later anyway. As to the Rollier treatment, he had seen patients take treatment for one year that he felt sure could have been cured in half an hour surgically. The treatment was all very well after the operation, but did not take the place of operation. He was glad to hear the matter of nomenclature mentioned. He had worked on nomenclature and always spoke of the lymph nodes, but he found an increasing tendency to speak of lymph glands, although there was no analogy between the salivary glands and the lymph nodes. The tuberculin test made many mistakes, and he would rather rely on the appearance of the gland. There was no question as to the good results of postoperative x ray treatment.

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Book Reviews

[*We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.*]

Impotency, Sterility, and Artificial Impregnation. By FRANK P. DAVIS, Ph. B., M. D., Fellow American Medical Association; ex-Secretary Oklahoma State Board of Medical Examiners; Former Superintendent Oklahoma State Institution for the Feebleminded, etc. St. Louis: C. V. Mosby Company, 1917. Pp. 138.

This small volume covers the entire field in a very concise and practical way. Beginning with a chapter on sexual instinct, it is shown how sexual desire is affected by the different senses. Impotency is discussed at length and it is pointed out that the mind is a large factor in bringing about this condition. The effect of impotency may be so far reaching that it changes a man's life, interfering especially with his ability to carry on his business affairs. The treatment of this condition is discussed under the divisions of local, internal, and surgical treatment. An interesting study of the results of asexualization operations performed in the Kansas School for the Feebleminded is given in the chapter on Emissions and Masturbation. The author shows that there is a steady decrease in the birthrate of all Christian countries, France being the greatest sufferer. Considering the subject of sterility the various causes which act in both male and female are enumerated and the conclusion that the percentage due to male causes is about fifteen per cent. is reached. The technic and a list of the instruments required for artificial impregnation constitute a chapter and the one devoted to therapeutics includes a list of the drugs used in the treatment of these three conditions, together with dose and method of administration. The book is of exceptional merit, as it deals with the subject in a thoroughly practical manner, omitting lengthy descriptions of theories as to the causation of the conditions under consideration.

Some Personal Recollections of Dr. Janeway. By JAMES BAYARD CLARK. New York and London: G. P. Putnam's Sons. 1917. vii-36. (Price $1.00.)

Six years ago a great physician rounded out his three score years and ten and passed on to the great beyond. Modest, unassuming, hating notoriety, in spite of himself his name became one to conjure with, and the fame of his achievements was spread abroad. In the present little volume Doctor Clark, who had the good fortune to be a friend of Doctor Janeway, has drawn with a few strokes a sympathetic picture of the great man. It is a book for every physician to own. When the public shows a tendency to follow false gods, when notoriety seekers usurp all the places in the sun, and when the doctor is weary of routine and monotony and ingratitude, let him turn to this little book and call to mind the great healer who was, and take heart from the story of his life. Doctor Clark is to be envied in having been close to such a man, and he is to be congratulated on having produced a perfect tribute to his memory.

After Office Hours

A real doctor, a neurotic woman who puts pet dogs above human life, and their love affair which goes on to its logical termination, may be found in the story, Little Dogs, by Wallace Irwin, in *Harper's Bazaar* for August.

* * *

The campaign against alcohol is still being waged by that female crusader, Elizabeth Tilton, who in The Wets—and the West, in the *Survey* for July 21st, deplores the political blunder—or stratagem, depending on your point of view—of tacking on prohibition as a rider to the food bill.

* * *

The logic of the advertiser, particularly a certain sort of advertiser, is indeed weird. In an advertisement of a health(?) food in the *American Review of Reviews* for August we find a testimonial from Arnold Bennett, as follows, "The tonic effect of ——— is simply *wonderful!*" The advertiser then goes on coolly to say, "In the face of such unparalleled proof, etc."

* * *

A doctor with a sneaking soul, the kind that makes quacks, is admirably depicted by Sinclair Lewis in the *Saturday Evening Post* for August 11th, in a story called The Whisperer. This particular skunk's sphere of activity is a drug company; he manages to worm himself nearly to the top of it, undermining many better men than he by the way before the crash comes. Sinclair Lewis knows the business world thoroughly, as witness his book, The Job, which tells the life history of a stenographer with marvelous verisimilitude.

* * *

After reading the book reviews in the New York *Times* it is refreshing to turn to those in the *Survey* which deal with books on science, sociology, economics, psychology, religion, and industry with as much earnestness as if they were best sellers. Ample space is given to these reviews, they are appreciative and, for the most part, intelligent and just. The July 28th number, for example, is given up to "Notable Books by Women" and discusses many interesting volumes, the one which attracted us the most being "The Mentality of the Criminal Woman," by Jean Weidensall. Doctor Weidensall has had five years' experience at the Laboratory of Social Hygiene at the Bedford Hills Reformatory for Women.

* * *

When the sun sinks to rest in the Sunny South and shadows creep over the land, sleep comes with its dreams—and now and then a nightmare. This is the race question. Much paper has been discolored in duscussing it, yet we doubt if much more of value has been said than is contained in two recent books. His Own Country, by Paul Kester, tells of a Virginia quadroon who, having made a fortune in Canada, returns to his native State and tries to make its people accept him at the valuation at which he has been held in the North. The result is, of course, cataclysmic. The other book, The Autobiography of an Ex-Colored Man, gives an extremely accurate picture of the social life of the negro, North and South. The author, who is white in appearance, instincts, and aspirations, but has a spoonful of negro blood somewhere in his veins, finally manages to pass the line and is accepted by the dominant race.

* * *

In the *Current Opinion* for August, neatly trimmed to fit exactly one page, is an article called Is the Psycho-Analyzed Self a Libel on the Human Race? The title sounds promising, but when we come to examine the text we find the usual thing, extracts from another article, interlarded with a thin cement of trite comment. The other article is by Dr. Joseph Jastrow. It will perhaps be sufficient to quote one sentence: "One may wish that the Freudian psychology had been built up by men more alive to the varied springs of action in refined persons, more sympathetic with the delicate products of intellectual insight, less absorbed in the revolting aspects of a degenerate humanity." Heaven save the mark! It is as if one turned with an esthetic shudder from the spectacle of a surgeon extirpating a cancer and said: "How disgusting! Why doesn't he interest himself in the beautiful bodies of the ancient Greeks, or in rhythmic dancing, instead of groveling about in fetid flesh?"

Official News

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending August 8, 1917:

Bahrenburg, L. P. H., Surgeon. Relieved from duty at Little Rock, Ark., and will return to status of sick leave.

Faris, James B., Assistant Surgeon. Relieved from duty at Ellis Island, N. Y., and ordered to proceed to Cape Charles Quarantine Station for duty.

Foard, F. T., Scientific Assistant. Ordered to proceed to Petersburg and other places in the State of Virginia for investigation of the milk problem.

Grubbs, S. B., Surgeon. Relieved from duty at Boston Quarantine Station and ordered to proceed to Virginia, between York and James Rivers, for special temporary duty.

Lumsden, L. L., Surgeon. Ordered to report at the Bureau of Medicine and Surgery, Washington, D. C., for conference regarding studies of rural sanitation.

McMullen, John, Surgeon. Ordered to report at the Bureau, Washington, D. C., for conference regarding trachoma work.

Mustard, H. S., Assistant Surgeon. Ordered to proceed to Des Moines, Ia., on special temporary duty.

Oakley, J. H., Surgeon. Granted three days' leave of absence from August 7, 1917.

O'Brien, H. R., Scientific Assistant. Ordered to proceed to Des Moines, Ia., for special temporary duty.

Quinn, M. J., Scientific Assistant. Ordered to proceed to Des Moines, Ia., for special temporary duty.

Schereschewsky, J. W., Surgeon. Ordered to proceed to Barksdale, Wis., to continue investigations of industrial sanitation.

Sprague, E. K., Surgeon. Relieved from duty at Little Rock, Ark., and ordered to proceed to Des Moines, Ia., for special temporary duty.

Stevenson, A. F., Sanitary Chemist. Ordered to proceed to Petersburg and other points in the State of Virginia for investigation of the milk problem.

Sydenstricker, Edgar, Statistician. Ordered to proceed to Bolivar and neighboring counties in Mississippi for studies of food availability in connection with the incidence of pellagra.

Wayson, N. E., Assistant Surgeon. Ordered to proceed to Elkton, Va., on special temporary duty.

Wilson, J. G., Assistant Surgeon. Relieved from duty at Little Rock, Ark., and ordered to proceed to Chillicothe, Ohio, on special temporary duty.

Wrightson, W. D., Sanitary Engineer. Ordered to proceed to Annapolis Junction, Md., on special temporary duty.

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Births, Marriages, and Deaths

Married.

Holt-Hyatt.—In Cincinnati, Ohio, on Tuesday, July 31st, Dr. Earl E. Holt, of Cincinnati, and Dr. Evelyn P. Hyatt, of Cincinnati.

Harvey-Johnson.—In Freeport, Ill., on Saturday, July 31st, Dr. Harold Harvey, of Rockford, Ill., and Miss Elvira Marie Johnson.

Died.

Carter.—In Lynnville, Tenn., on Monday, July 30th, Dr. Robert H. Carter, aged seventy years.

Donnelly.—In Gardner, Mass., on Thursday, August 2d, Dr. John B. Donnelly.

Laden.—In Hartford, Conn., on Thursday, August 2d, Dr. Michael R. Laden, aged forty-three years.

Maxfield.—In Hudsonville, Mich., on Wednesday, August 1st, Dr. Warren A. Maxfield, aged forty-six years.

Page.—In Lewiston, Me., on Thursday, July 26th, Dr. Leslie T. Page, aged fifty-one years.

Russell.—In Springfield, Ohio, on Friday, August 3d, Dr. Linus E. Russell, aged sixty-eight years.

Smith.—In Syracuse, N. Y., on Tuesday, July 31st, Dr. Frederick W. Smith, aged fifty-nine years.

New York Medical Journal

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Original Communications

VALUE OF RÖNTGEN RAYS IN DIAGNOSIS OF CARCINOMA OF THE STOMACH.*

BY RUSSELL H. BOGGS, M. D.,
Pittsburgh, Pa.,

Röntgenologist, Allegheny General Hospital; Dermatologist and Röntgenologist, Pittsburgh, Columbia, and St. Francis Hospitals.

Röntgen rays have proved a valuable aid in the diagnosis of carcinoma of the stomach, and should always be employed when the clinical examination warrants a reasonable suspicion of malignancy. By their proper use, carcinoma of the stomach can be recognized earlier than by clinical methods with other laboratory findings. Often the clinical evidence of gastric carcinoma is so superficial and inaccurate that it is of little value until the disease is well advanced. Smithies states that there is no one dependable clinical sign on which to base a diagnosis of carcinoma of the stomach. The Röntgen method is of distinct value in detecting early carcinoma. It must be understood that the Röntgen examination is not easy or absolutely positive, but that a diagnosis can be made earlier than by any other method employed at present. The Röntgen method is useful not only in aiding in the diagnosis, but also in determining the location and extent of the process. Therefore, a careful examination by the Röntgen rays insures a more accurate prognosis. Before attempting to make a diagnosis röntgenologically, the operator must be familiar with the typical pictures of the normal stomach as well as its pathological lesions. He must have made a careful study of the different types of carcinoma and the varied and confusing Röntgen observations. This can be learned only by following the case to operation and autopsy, and by watching the unmistakable clinical course. The röntgenologist must be more than a technician in order to practise this branch of röntgenology. Careful consideration should be given to every clinical symptom and all laboratory findings. No diagnosis should ever be made until all the clinical data are carefully considered. The final diagnosis should be compatible with all the findings, if possible, and occasionally their correlation will make a diagnosis.

From a röntgenological viewpoint, gastric carcinoma may be classified under three heads: 1, early carcinoma in which it is difficult to diagnose by the Röntgen rays and clinical and laboratory findings; 2, latent cancer which is usually advanced without any typical symptoms and can be diagnosed by the Röntgen ray readily; and 3, cases in which there is very little doubt about the diagnosis from a clinical standpoint. In early carcinoma the symptoms are obscure and there are usually few gastric symptoms. As a rule there is no obstruction, the acidity may be unchanged, there is no lactic acid, and there may be no blood in the gastric contents or stools. There is insufficient data to justify an exploratory operation. This class of cases must be examined very carefully by the Röntgen rays, and very often repeated exminations are necessary if the diagnosis is to be made in time to be of real value to patient and surgeon. In latent cancer the disease is far advanced with only one or more symptoms, and can usually be diagnosed by the Röntgen rays. Often these cases are referred with the history of partial pyloric obstruction, and as there are no other symptoms, we are greatly surprised when the Röntgen examination reveals an advanced carcinoma which is inoperable.

A question frequently asked is: How early can gastric carcinoma be diagnosed by the Röntgen rays, or how early does gastric carcinoma reveal röntgenological signs sufficient to justify an exploratory operation? Carman, who has had a large experience at the Mayo Clinic, answers this question as follows: "Admitting that the only cure for cancer is early operation, early diagnosis is a matter of prime importance. Admitting also that there are no definite clinical findings in early cancer, the statement is warranted that next to the exploring finger of a trained surgeon, Röntgen rays will reveal more cancers in the early stages than any other diagnostic means. Hence, every patient of cancer age with indefinite gastric symptoms should be subjected to a Röntgen examination. But how early can cancer of the stomach be detected? That depends upon, 1, the character of the cancer, whether a frank tumor, an insidious infiltration, or a cancerous ulcer; 2, its situation; 3, the examiner's familiarity with the work, and, 4, the amount of röntgenological evidence, together with the extent of clinical corroboration."

Too little emphasis has been placed upon the points that Carman brings out. The character of the carcinoma and its situation produces such variations both on the röntgenograms and on the screen

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*Read before the Röntgen Ray Society of Central Pennsylvania, May 26, 1917.

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as to make it impossible for a nonmedical technician to make an accurate diagnosis alone or even in conjunction with the internist or surgeon. Both the internist and surgeon and the nonmedical or unqualified röntgenologist usually fail to realize the most important point in the early diagnosis of carcinoma of the stomach; that is, that the diagnosis must be made from a study of a number of serial röntgenograms and by the physiological action of the stomach on the screen; instead, they are looking or attempting to make their diagnosis from the single röntgenogram as in fractures, diseases of the bone, renal calculi, etc. By so doing a diagnosis of advanced carcinoma can be made, but not in early cases.

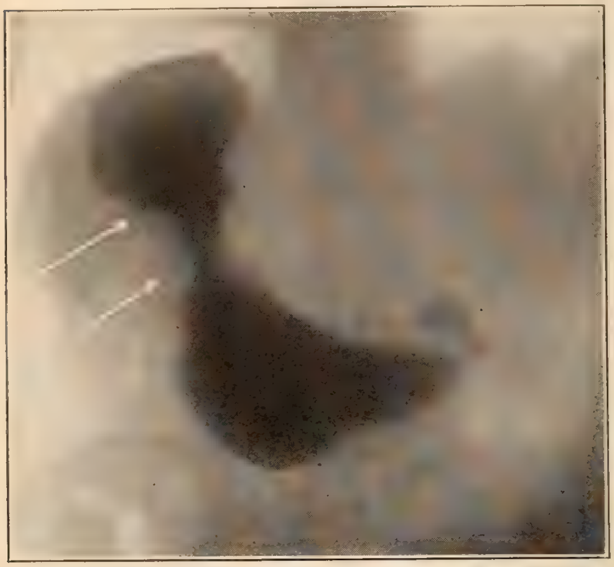

Fig. 1.—Carcinoma of the stomach. Death occurred four months later.

The röntgenologist is here in the same position as the internist is in drawing conclusions from the various symptoms. The technician should work under a trained medical röntgenologist and not attempt to make diagnoses any more than the technician in a pathological laboratory. It is most important for the röntgenologist, before making a diagnosis of carcinoma of the stomach, to be familiar with the various defects as well as the physiology of the stomach, both in normal and abnormal conditions; this means that he must be a physician who has studied röntgenology, pathology, and physiology, and has followed a number of cases to the operating room and autopsy, or watched the progress of the disease from incipiency to the unmistakable clinical stage.

It is unnecessary to state that this cannot be accomplished by a technician alone, or by a physician who only occasionally attempts to combine röntgenology with his clinical findings. I am sorry to say that in many of the large institutions such a method is the custom, which accounts for many mistakes and brings much discredit not only to many a good internist and surgeon, but to the institution as well. Every röntgenologist could forcibly illustrate this statement; in fact the institutions are dishonest with their patients without realizing it, because patients go there for the best diagnosis and often, instead of the Röntgen examination being a benefit, it is a detriment. It is time for the medical profession to realize that in making a diagnosis of early carcinoma of the stomach, they are up against an entirely different proposition from that of most other branches of röntgenology. Röntgen diagnoses are made from organic deformity of the stomach, also from the physiological action or behavior of the organ after a barium or bismuth meal is taken. Therefore, there are two methods, the direct and the indirect. By the former the deformity produced by the lesion is shown on the röntgenogram or fluoroscope, and by the latter the diagnosis is made by the so called symptom complex such as peristalsis, antiperistalsis, hyperperistalsis, emptying time of the stomach, various spasms, and six hour residue, together with the clinical history. Both methods are valuable and should be used, but when the diagnosis can be made by the direct, it should always be done because it is more positive. Many more cases could be diagnosed by the direct method if serial radiography was employed as a routine method. Most röntgenologists use the serial method too little and depend too much on the indirect. Since the early diagnosis of carcinoma is so important to the life of the patient, a negative diagnosis should never be made until serial radiography is employed.

George compares the methods of examinations in these words: "The method to be considered in the Röntgen examination of these cases is extremely important. The röntgenoscope, while of some value in this connection, should by no means be depended upon exclusively. These lesions are so small that their direct detection upon the röntgenoscopic screen is, in the majority of cases, almost impossible. The screen study of the indirect manifestations, such as hypermotility, lack of peristalsis, antiperistalsis, etc.,

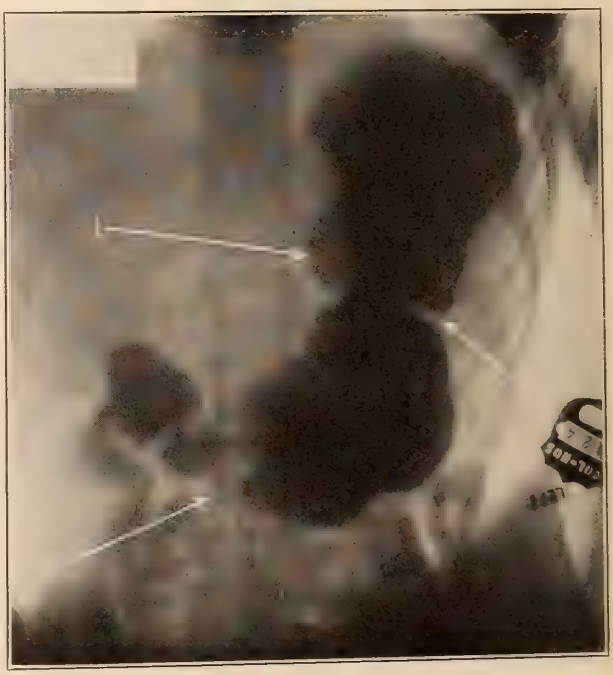

Fig. 2.—(1) Perforating ulcer on lesser curvature. (2) Incisura on greater curvature. (3) Pyloric spasticity verified by operation.

while important, certainly does not warrant any positive diagnosis, and is apt to lead to many errors. In other words, a diagnosis of carcinoma of the stomach made by the fluorescent screen is usually only inferential and is dangerous. The chief danger is the chance of missing lesions that could be detected by other methods of Röntgen examination. The only safe and exact method of diagnosis is by the direct demonstration of the lesion upon plates."

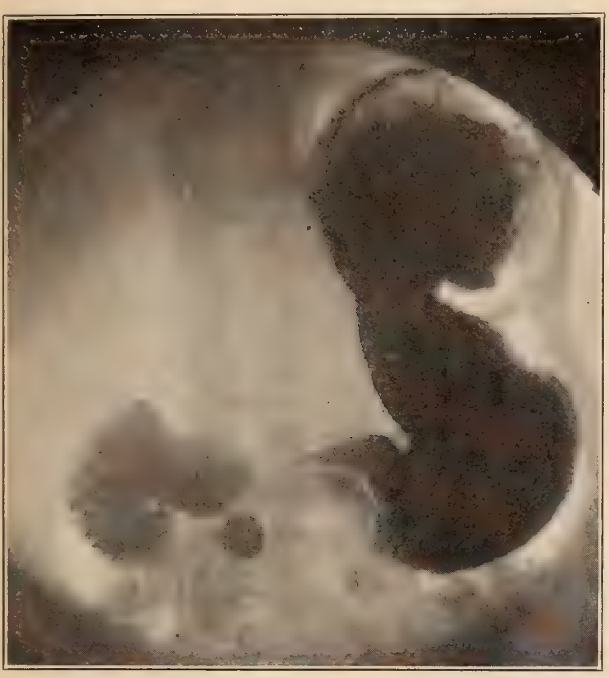

FIG. 3.—Spasticity of the stomach due to appendicitis verified by operation.

It has been that said errors in diagnosis were not so much errors of commission as of omission. In many large clinics where expense is the chief consideration, the fluoroscope has been used almost to the exclusion of the röntgenographic method, and of course these results would be inferior to those in clinics where both were employed. Everything except movement, which is seen by the fluoroscope, should be verified by a röntgenogram; otherwise the best and most accurate work cannot be accomplished. Again, no one is competent to use a fluoroscope before he has studied a large number of plates because he never sees as plainly on the screen. Many times one will make a diagnosis on the screen and find he is mistaken when the röntgenograms are taken. Therefore, everything seen on the screen should be checked up by röntgenograms because it is safer.

The diagnosis of carcinoma of the stomach by the direct method is made by the filling defect, obstruction, and certain amount of dilatation. When a barium meal is given, the outline of the normal stomach presents a characteristic picture with normal indentations. The normal indentations are a splenic notch due to pressure of the spleen against the greater curvature. The pyloric indentation or sulcus is a break between the shadow of the stomach and the first portion of the duodenum or duodenal cap, and changes in shape of the organ are produced by peristaltic waves. Many other conditions may cause a change in the contour of the stomach and cause a filling defect, among which are spasms produced by irritation, inside or outside of the stomach, adhesions and pressure upon the wall of the stomach by an extra gastric tumor in the liver, spleen, pancreas, or by pressure of gas within the colon. Filling defects caused by carcinoma, after a careful study, can usually be differentiated from those produced by adhesions or extragastric pressure. Any defects in the gastric shadow at the cancer age must be looked upon as suspicious of malignancy. Carcinoma of the stomach at different stages and in different locations produces a somewhat different filling defect, and while we are not attempting to make a diagnosis of the variety, it is very important for the röntgenologist to keep this in mind, as it will assist him in making a differential diagnosis.

In the medullary or fungus type of cancer, the gastric dimensions of the stomach are not affected, but the lumen of the organ is encroached upon by a mass giving an irregularity in outline. If the pyloric end is not involved, there is no obstruction. In scirrhous carcinoma of the stomach, the organ presents the appearance of being contracted with a loss of expansibility if the infiltration is widespread. Sometimes a scirrhous growth involves the pyloric end, and the shadow of the stomach resembles a curved funnel. The filling defects of scirrhous carcinoma, as a rule, are less irregular than those of the fungus type. Carcinoma of the middle part of the stomach may give an hourglass deformity, while high up in the cardiac the usual magenblasia is not observed. If the growth is situated on the anterior or posterior walls the shadow of the greater and lesser curvatures may not be interfered with, while centrally there is less dense area within the barium shadow. Filling defects then are not so marked as

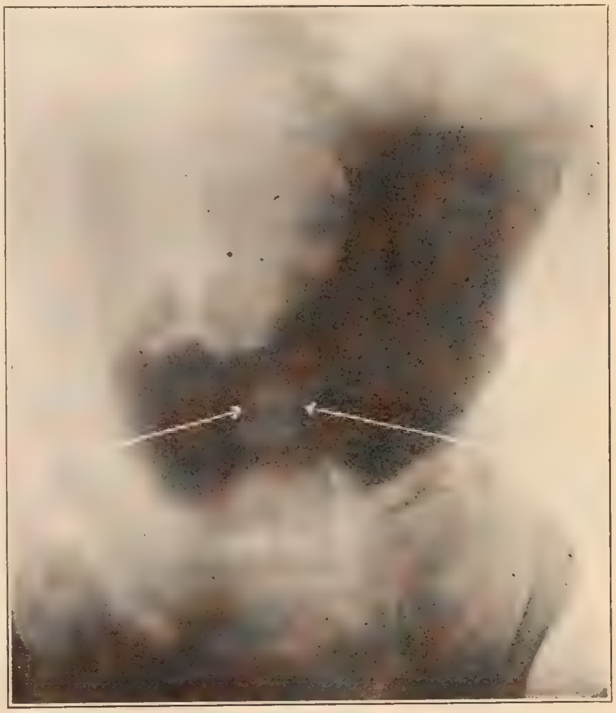

FIG. 4.—Carcinoma of the posterior wall of the stomach.

when the growth affects the greater and lesser curvatures, and are more likely to be overlooked and require a more careful examination. If the contour of the greater and lesser curvatures is abnormal, the filling defect must be permanent and not change in location after palpation, administration of antispasmodics or repeated examinations.

A large majority of carcinomas are at or near the pylorus, a small percentage occur at the cardiac end, and primary carcinoma in the pars media is comparatively rare. It has been pointed out that early carcinoma at the pylorus is annular, giving an elongation of the pyloric gap. The annular appearance is considered diagnostic between ulcer and carcinoma. Annular defect, together with a bitten out appearance, is, according to George, pathognomonic of carcinoma and should be searched for even with the smallest lesion. This must be observed on more than one röntgenogram, although not necessarily on a larger number. Today many consider that a normal stomach röntgenologically rules out carcinoma. This may be a very strong statement, but should be very carefully considered. Carcinoma situated at the pyloric end of the stomach is difficult to detect, particularly in the very early cases, as a slight filling defect is not easily observed; often this is better seen when the stomach is only partially filled. No diagnosis should ever be made of a growth in this situation without making röntgenograms at various angles and in different positions, and not upon the screen alone. It is often necessary to place a pillow or a sandbag underneath the chest and one under the pelvis so there is no pressure on the stomach.

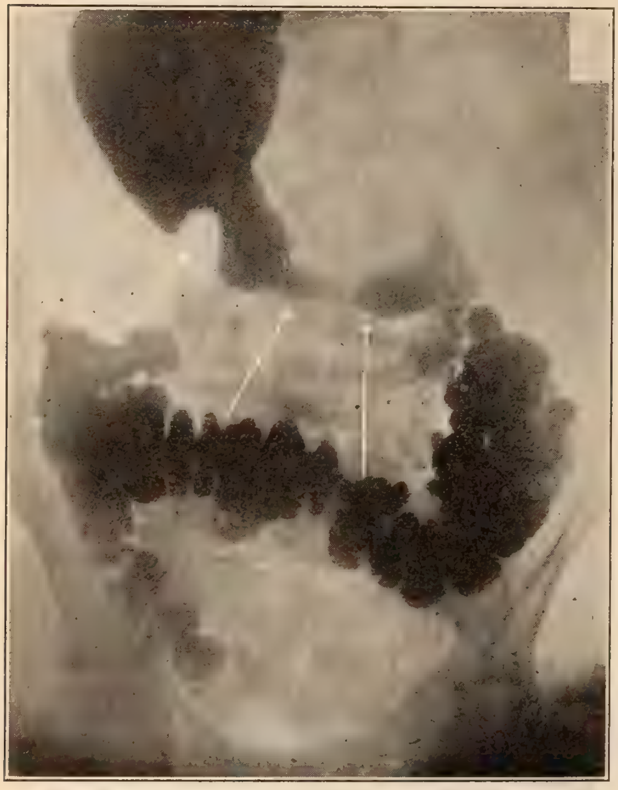

Fig. 5.—Syphilis of the stomach proved by Wassermann and therapeutically.

In regard to the character of the deformity, there are a few points worthy of consideration in differentiating between hourglass contraction due to carcinoma and that due to ulcer. The connecting isthmus between the two sacs is usually shorter in ulcer and is nearer the lesser curvature, and the outline is smoother and more regular; while in carcinoma the growth usually starts on the lesser curvature, projects into the barium shadow and the connecting canal between the two sacs, and is more central or is located nearer the greater curvature, and the outline is much more irregular and indistinct. Another point which has been observed is that in carcinoma the lower sac, unless there is obstruction at the pylorus, is smaller in size in comparison with the upper sac than when the hourglass contraction is due to ulcer. This has been explained in the following manner: In carcinoma there is usually achylia with resulting relaxation of the pylorus, while in ulcer there is hyperchlorhydria with pyloric spasm and vigorous peristaltic action which causes delay by producing obstruction followed by dilatation of the sac.

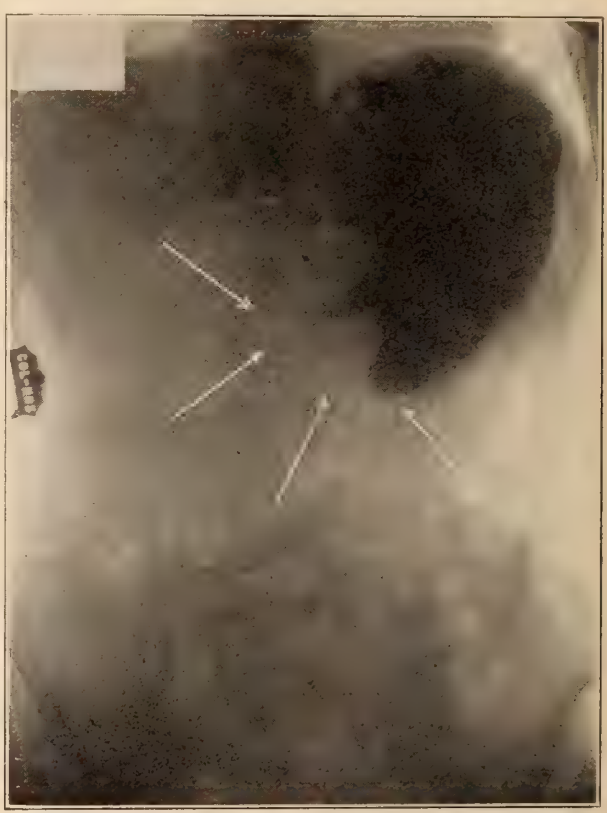

Fig. 6.—Carcinoma of the pyloric end of the stomach verified by operation.

Spasm of the stomach produces a deformity in the contour which is often difficult to differentiate from carcinoma, and in the past, before the various spasms had been studied röntgenologically, many cases had been operated in for carcinoma. Spastic deformity of the stomach may be produced by a lesion in the stomach, as ulcer or carcinoma, or may occur from extrinsic causes such as gallbladder disease, appendicitis, renal calculus, or other abdominal pathology. Therefore, it is necessary to differentiate between deformity of the stomach due not only to intrinsic but also to extrinsic causes. There is a difference between intrinsic and extrinsic spasm. Intrinsic spasm is more persistent and does not disappear with the administration of antispasmodics. Extrinsic spasm is more migratory and may be absent at the second examination; it usually disappears when the patient is thoroughly under the antispasmodic influence of belladonna. Both intrinsic and extrinsic spasm disappear under profound anesthesia and are not seen by the surgeon. This is the reason why surgeons in the past often did not look for any pathology when no deformity was found at operation, and considered the Röntgen diagnosis incorrect. In the stomach, spasm is more often produced by ulcer than carcinoma. Spasm affecting the pyloric end of the stomach is the most confusing, particularly so when due to ulcer situated in this location or even higher up. The cardiac end may be normal in contour and spasm changes the density of the pyloric end so that it shades off into a vague outline which simulates the filling defect of carcinoma. Spasm due to irritation from extrinsic lesions produces a deformity more regular in outline, and not the ragged or punched out appearance as in malignancy. The deformity of the stomach may be produced not only by the cancerous growth but by spasm as well from the carcinoma. It is important to remember that the filling defect from a cancerous growth shades off gradually and irregularly, while that due to spasm is more sharply defined; but when we are positive the deformity is due to spasm we are not sure whether the spasm is due to carcinoma or not. Then we must continue röntgenological study after antispasmodics are given and not stop and make a hasty diagnosis or throw up our hands and say we cannot give any further assistance. The deformity produced by an organic lesion is persistent in the same location, and does not disappear or change with repeated examinations even after the patient has taken antispasmodics.

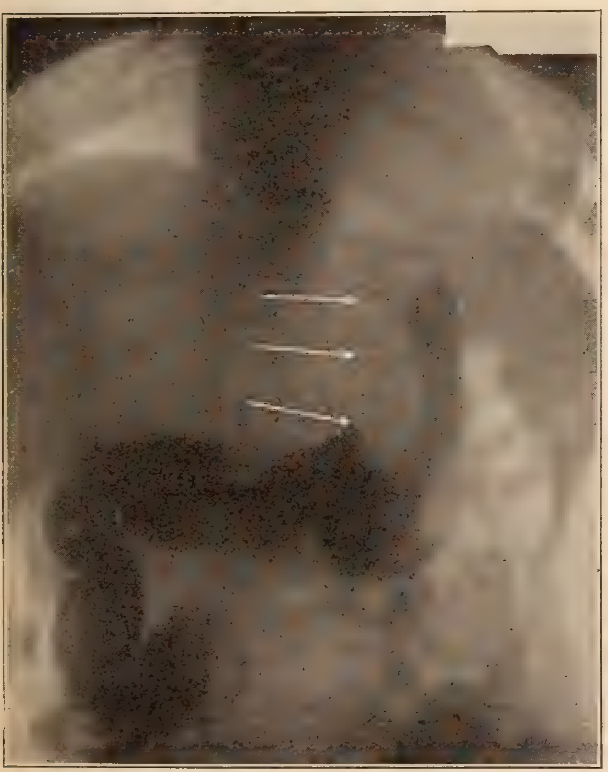

FIG. 7.—Carcinoma of the cardiac end of the stomach verified by operation.

Irregularity of the contour of the stomach may be due to adhesions, and at the pyloric end of the stomach is often confusing, but can usually be determined by palpation and a comparison of the stomach and duodenum and the hepatic flexure. Changes in the size and position of the stomach and rigidity of the gastric walls are evidences of carcinoma. Carcinoma of the stomach shows the lumen contracting and as it contracts rising higher up. This is more pronounced in the scirrhous form, in which the elasticity of the walls is interfered with, but is seldom mistaken for gastric spasm. Pressure of a growth on the stomach walls is usually not difficult to differentiate from carcinoma unless the patient is very heavy. It is often important to have the stomach and colon filled with barium in order to compare the relative positions of the stomach with other organs. Pressure of gas in the splenic flexure upon the greater curvature may give an irregular or ragged appearance and be mistaken for carcinoma.

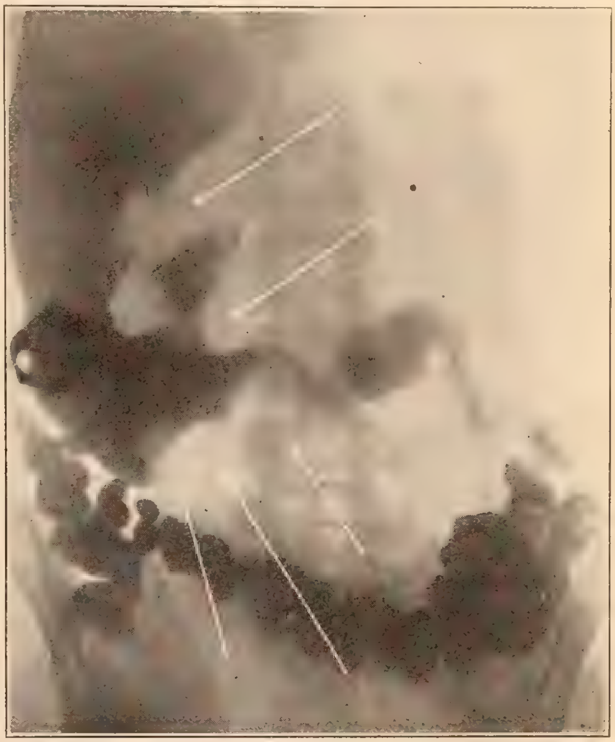

FIG. 8.—Carcinoma involving a greater portion of the stomach.

Motility or emptying time of the stomach depends upon the changes which have taken place. If there is achylia and no pyloric obstruction, there is usually an early clearance of the stomach, while in ulcer, where there is usually hyperchlorhydria, the emptying time is normal or delayed. It has been noted that in carcinoma of the stomach there is often a gaping pylorus with rapid emptying of the barium meal. Another diagnostic sign of cancer is the rapid passage of the barium through the colon. At six hours the head of the column may have reached the splenic flexure or even the rectum. On the other hand, there may be pyloric obstruction if the growth is at or near the pylorus. Obstruction produces dilatation of the stomach, and the degree of dilatation may be of value in determining the nature of the obstruction. Case has pointed this out as follows: "Unless the pyloric carcinoma has supervened upon an old stenosing ulcer, it is likely that the stomach will not be greatly dilated in pyloric cancer, for the reason that the malignant process has advanced too rapidly to permit extensive dilatation. In benign ulcerous stenosis, on the other hand, including those cases where the ulcer has later degenerated into malignancy, the long duration of the process permits enormous increase in the size of the stomach."

Alterations in peristalsis have a diagnostic bearing on carcinoma of the stomach. Fluoroscopic examinations, as well as serial radiographic examinations, show that the peristalic waves fade out as they reach the area where the filling defect is observed, and if the growth is not too near the pylorus, the waves may reappear and proceed. An ulcer associated with an inflammatory process may produce the same changes in peristalsis. It has been observed that when the carcinoma is situated near the pylorus, antiperistaltic waves may take place.

Syphilis of the stomach may cause a filling defect practically identical with gastric carcinoma, and the röntgenologist must consider this in making a differential diagnosis. Until the gastrointestinal tract had been examined by the Röntgen rays few cases were diagnosed. At present it is generally known that syphilis attacks the stomach more frequently than was formerly realized. The deformity in the stomach varies from an irregularity of the curvatures to an hourglass. The characteristic deformity is often spoken of as a dumbbell shape, but the final diagnosis must be made by a Wassermann, clinical history, and a therapeutic test.

215 Empire Building.

A CASE OF HEREDOCEREBELLAR ATAXIA(?) PRESENTING UNIQUE FEATURES.

Reversed Argyll-Robertson Pupil.

By Francis X. Dercum, M. D.,
Philadelphia.

The following case which is in some respects unique should, the writer believes, be placed on record:

Case.—A. L., male, white, aged twenty-eight years, single, a farmer by occupation and a native of Pennsylvania, was admitted to the nervous ward of the Jefferson Hospital on February 23, 1917. His chief complaint was an inability to talk, swallow, and walk properly. His personal history was briefly as follows: He was apparently normal as a young child; had no children's diseases other than measles and chickenpox. His general health has been good most of his life. When six years of age, however, it was noted that he had difficulty in speaking and swallowing. This very slowly and very gradually became more marked. He went to school for thirteen years. His mental development appears to have been entirely normal. His progress at school was in every way that of the other pupils. After leaving school he began to work on the farm and was able to work "as well as any one." About one year ago he began to have difficulty in walking and he could no longer work as he should. He became awkward in walking and in using his arms. He felt, too, that his arms were no longer as strong as they had been.

When admitted to the hospital it was noted that he was pale and apparently poorly nourished. He sat in his chair with his head bowed over the chest and his arms semiflexed. When tested for station, he kept his eyes upon the floor and when the eyes were closed, tended to fall. He walked with his head bowed forward and with an irregular, ataxic gait. The gait was not, however, staggering or titubating. He walked with marked difficulty with his eyes closed or in the dark. At times his attitude suggested paralysis agitans but there was no tendency to festination or propulsion. When seated and asked to cross his legs, he betrayed marked incoordination of movement. Ataxia was also revealed in his arms and hands in attempts to button his clothing and in the finger to nose test. A dysmetria, such as is seen typically in cerebellar cases, was not present. There was slowness in supination and pronation of the forearms in keeping with the ataxia already noted, but not a true adiadochokinesis. Athetoid movements were presented by both hands; they were more pronounced during and immediately after voluntary movements. Both knee jerks were somewhat exaggerated, more especially the left. There was no ankle clonus and no Babinski sign. The reflexes of the upper extremities were not changed. The tongue was protruded in the median line, but rather slowly. It revealed no atrophy. The lips were protruded slowly and apparently awkwardly and the angles of the mouth were retracted equally but with some tendency to grimacing. There were no sensory losses. The speech was slow, drawling, and very indistinct. The patient had apparently great difficulty in forming consonants. He could only with difficulty be understood. He suffered from a marked dysarthria. The examination of the throat revealed nothing abnormal. He swallowed slowly and with apparent effort and difficulty. Coughing, strangling, or regurgitation through the nose did not occur. An examination of the larynx, however, by Dr. Chevalier Jackson revealed a palsy of the tensors of the vocal cords. It should be added that there was no automatic laughter or weeping. The patient had no respiratory difficulty. He could blow and could coordinate his lips sufficiently to produce an indistinct whistle. The pupils were of medium size, were equal, and reacted to light. No reaction to accommodation could be obtained. This result was the same whether the eyes were tested singly or during efforts at convergence. Dr. William M. Sweet reported that the patient appeared to converge with difficulty and that he probably did not have good near vision. Both discs were normal. There was present also a distinct ptosis more pronounced at times. There was no nystagmus. Hearing, taste, and smell were normal. The serological examinations of the blood and cerebrospinal fluid were entirely negative. This was also the result of the general visceral examination.

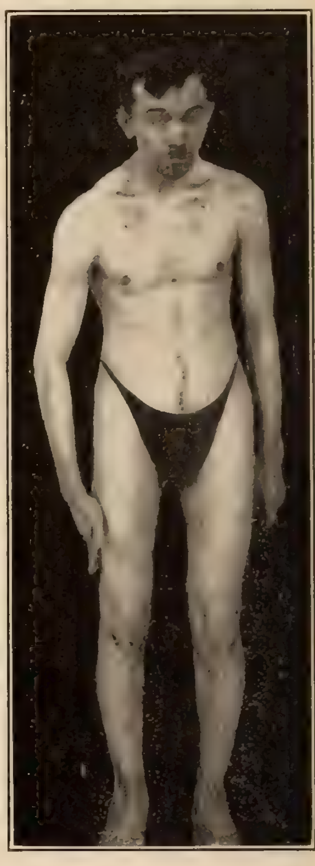

Fig. — The attitude and the ptosis, not always present, are well shown in the figure. The bizarre positions of the fingers are due to the athetosis.

This interesting case suggests at first sight a form of pseudobulbar palsy, or possibly some cerebellar affection, or even an anomalous Friedreich's ataxia. The chief interest of the case, however, does not centre in the patient himself but in his family history. To this I am indebted to his family physician, Dr. George H. Tibbins.

First, according to the statements of the patient's father and paternal uncle, the paternal grandmother of the patient was affected just as the patient and other members of the family were. Second, the paternal uncle, who was seventy-five years old, suffered from extreme nervousness for over twenty years. For twenty years past he walked with a shuffling, shifting gait. If he attempted to stand with his eyes closed, he tended to fall. His knee jerks were unequal, the right being more pronounced than the left. His articulation was very indistinct. His tongue lolled and protruded irregularly. He had difficulty in swallowing, eating, and drinking. He grinned and grimaced very much as do patients with chorea. He was obliged to spend much of his time in bed. Third, the father of the patient, aged sixty-five, was then in a hospital and presented the same symptoms as the uncle only in a less marked degree. He was slowly growing worse. Finally, a brother and sister of the patient likewise presented symptoms similar to those of the patient though they were less pronounced. While it would have been very desirable to have had these patients under hospital observation, the significance of the facts stated by the family physician must be assigned a definite value.

The marked difficulty in articulation and swallowing, together with the absence of muscular atrophy, the exaggeration of the knee jerks, and the athetoid movements of the fingers suggest a pseudobulbar palsy. However, it cannot be said that the picture is typically that seen in this affection. That a marked variation in the clinical picture obtains in pseudobulbar palsy is of course well known, and this arises necessarily from the great diversity of lesions found in this affection. Any bilateral lesions, symmetrical or otherwise, involving the cortex, the motor pathways or basal ganglia, in short any bilateral lesions above the pons and medulla, may be met with. However, in the present instance a history of apoplectiform or hemiplegic attacks, so common in pseudobulbar palsy, are conspicuous by their absence. Finally, a familial history is absolutely unknown in pseudobulbar palsy. The question arises, have we here perhaps to do with a familial form of lenticular or other degeneration as yet undescribed, or is the affection really one of the cerebellum, and is it to be grouped with the heredocerebellar ataxia of Marie?

In the latter affection, according to Marie, the motor disturbances of both the arms and legs suggest those of Friedreich's ataxia; the tendon reflexes, however, are preserved and may even be exaggerated. There is also frequently a difficulty of convergence of the eyes. The pupils are usually equal and of medium size. The light reflex is slow and may even be abolished. This is also sometimes true of the reflex to accommodation. Heredocerebellar ataxia again develops late, e. g., after the twentieth year, sometimes after the thirtieth, or even much later, say at forty-five.

On the whole, it would seem that the case here described conforms in its symptomatology more closely to that of heredocerebellar ataxia than to a pseudobulbar palsy. Into the weight of the scales, also, must be thrown the remarkable familial history. The difficult drawling speech is not unlike that met with in many cases of cerebellar disease. However, the fact that a similar speech is met with in pseudobulbar palsy and that, in the present instance, there is a marked difficulty in swallowing adds to the simulation of pseudobulbar palsy. One inference, however, undoubtedly correct, is that the patient presents a morphological symptom group dependent upon an abiogenetic degeneration, and, further, it is not at all impossible that the changes may not be limited to the cerebellum but may involve other structures as well, thus accounting for the rather remarkable symptomatology.

Finally, the case is especially interesting because of the condition of the pupils, the light reflex being preserved while the reflex to accommodation and convergence is lost, exactly the reverse of that which obtains in the Argyll-Robertson pupil. This combination of symptoms is in the writer's experience unique.

1719 Walnut Street.

A NEW COMBINATION OBSERVATION, CATHETERIZING, AND OPERATING CYSTOSCOPE.*

By Leo Buerger, M. D.,
New York.

In previous communications (1) I described two types of cystoscopes, one for the purpose of examining the bladder and catheterizing the ureters, and the other for the execution of special operative manoeuvres, included under the caption Operative Cystoscopy. Both of these instruments have been widely accepted as offering distinct advantages over most of the other cystoscopes previously in use, and have been used by me exclusively in my routine work for over eight years. Because of differences in the shape of the sheaths, however, that of the catheterizing instrument being circular in cross section and that of the operating cystoscope being elliptical, it was found impossible to introduce the operating telescope into the catheterizing sheath so that two distinct instruments were found necessary. Thus, when the catheterizing instrument is applied in practice, and a small calculus or a tumor discovered, it becomes necessary to resort to the operating cystoscope, either for removing the calculus or for removing portions of a new growth for microscopical examination. When a large catheter is deemed useful a change of instruments becomes necessary, with the attendant discomfort and annoyance to the patient.

About a year and a half ago, after some experimentation, I was able to develop a new type of sheath which permits of the passage, not only of the observation and catheterizing telescopes, but also of an operating telescope and its instrumental accessories. The advantages of such an instrument are apparent to anyone who has had experience in cystoscopic work. Figs. 1 and 2 illustrate the concave and convex sheaths of this instrument, their cross sections being oval, and but slightly larger than that of the catheterizing instrument. They are easily introduced and easily borne by the patient. In Fig. 1 the catheterizing telescope is shown. This allows of the introduction of two No. 7 French ureteral catheters and varies in no way from the usual catheterizing telescope, except for the size of the lid or deflector.

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*Read before the Section in Genitourinary Surgery, New York Academy of Medicine, April 18, 1917.

As pointed out by me in previous publications, the combining of various types of cystoscopes into one instrument, carries with it certain drawbacks, which are also in a small measure represented in this instrument, although they are of very minor importance. Thus, the size of the deflector had to be diminished in this instrument, because of the narrowness or oval nature of the sheath, a somewhat narrower deflector being necessary to fit into the narrower sheath. The manipulation of the catheters, therefore, becomes slightly more difficult; but, to the experienced cystoscopist, this feature offers no insurmountable obstacle to the easy catheterization of practically all cases.

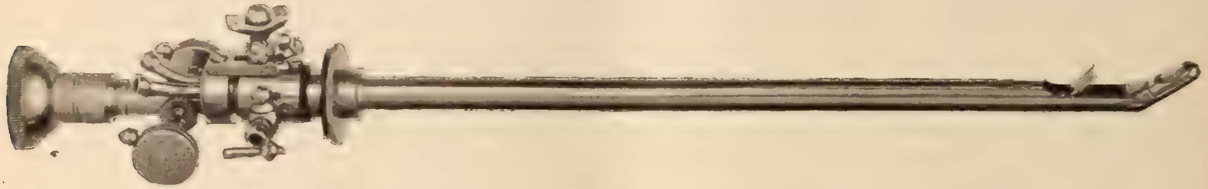

FIG. 1.—Concave sheath with catheterizing telescope introduced.

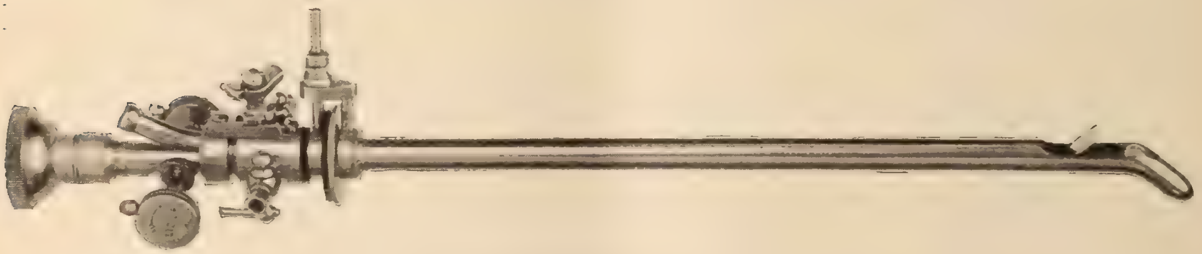

FIG. 2.—Convex sheath with operating telescope introduced.

As for the operating telescope, shown in Fig. 2, the lid has been made stronger than in the operating cystoscope, although the space for operating instruments is somewhat diminished. All in all, however, the instrument offers so many decided advantages, that I regard it as the most useful cystoscope in my armamentarium.

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1000 PARK AVENUE.

Treatment of Disturbances of Locomotion in Paralysis of the External Popliteal Nerve.—J. Privat and J. Belot (*Presse médicale*, May 24, 1917) warn against the performance of arthrodesis as a remedy for this condition, and describe a simple, inexpensive device which meets the demands of locomotion in these cases more completely than previously used forms of apparatus. It consists of a rod fastened above to a band around the leg and below to the shoe at a point just anterior to the heel. The rod operates in such a manner as to keep the toe of the foot slightly raised, permitting locomotion without fatigue or risk of sustaining a sprain.

CELLULAR AND HUMORAL FACTORS IN ANAPHYLAXIS AND IMMUNITY.*

An Analysis of the Anaphylactic and Immune Reactions by Means of the Isolated Mammalian Heart and the Isolated Mammalian Lungs.

BY WILFRED H. MANWARING,
ARTHUR R. MEINHARD,
AND YOSHIO KUSAMA,
Stanford University, Cal.,
(*From the Department of Bacteriology and Experimental Pathology, Leland Stanford Jr. University.*)

Serum therapy has been so successful in a number of infectious processes that one wonders at its failure in other infectious diseases. In no disease is this failure more to be regretted than in tuberculosis. In spite of repeated false hopes, serum treatment of tuberculosis is without practical results. This failure is not due to an impossibility of actively immunizing animals against tubercle bacilli. An animal made locally tuberculous by inoculation with living, virulent tubercle bacilli, becomes resistant, not only to extraneously introduced tubercle bacilli, but to the constant metastases that take place from the initial focus (1).

The mechanism of this artificial tuberculous immunity is understood. A tuberculous guineapig, tested by intraperitoneal injection with tubercle bacilli, rapidly destroys the injected microorganisms. Within from one to two hours the peritoneal cavity becomes relatively free from intact bacilli (2). Artificial tuberculous immunity, therefore, is due to tuberculolytic powers in the immunized animal. If the blood of this immunized guineapig is passed by a process of transfusion into the circulatory system of a normal guineapig in sufficient quantities practically to replace the entire blood volume of the normal animal, and if this transfused animal is tested from one to two days later after recovery from operative shock by an intraperitoneal injection of tubercle bacilli, no lysis of the injected bacilli is observed (3). The transfused guineapig acts identically the same as a normal guineapig, except for occasional agglutination of the injected bacilli.

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*Presented before the California State Medical Society, San Diego, Cal., April 9, 1917.

The tuberculolytic power of the immune animal is, therefore, not due to serum or blood changes. Important serum factors, of course, may be present; but they are evidently subordinate or accessory factors in the process. The essential factor in tuberculosis immunity is evidently an acquired change in the fixed tissue cells.

Contrasted with our wealth of knowledge concerning immune serums, one is struck with the poverty of immunological data concerning the fixed tissues. True, the Ehrlich school of serology sought to account for the origin of circulating antibodies by assuming them to be protoplasmic side chains or receptors, liberated from the fixed cells. But this conception of the Ehrlich school rests on incomplete experimental evidence.

During the last three years we have therefore directed our efforts toward gathering data concerning the immunological reactions of fixed tissues. The fixed tissues most readily studied are those whose functional activities can be recorded by physiological methods. Our work thus far has been confined to the contractile tissues, particularly the isolated heart and isolated lungs. These tissues can be readily perfused free from circulating blood, and tested under controllable serological conditions. These perfusion experiments have shown that in anaphylactic and immune animals there are four essential factors: 1, cellular anaphylaxis, or the hypersensitive condition of the fixed tissue cells; 2, cellular immunity, or the increased resistance of the fixed tissues; 3, humoral anaphylaxis, or the toxin producing power of certain normal and anaphylactic blood elements; and 4, humoral immunity, or the antitoxic power of certain immune blood elements.

The analyses have further shown that these factors may coexist in the bodies of anaphylactic and immune animals in the following combinations: 1. Cellular anaphylaxis and apparently normal blood condition. This is illustrated by the four week anaphylactic guineapig. The lungs tested in the presence of normal blood are thrown into a typical anaphylactic response. The blood perfused through normal lungs produces no immediately recognizable reaction (4). 2. Cellular anaphylaxis and humoral anaphylaxis. This is illustrated by the fourteen day anaphylactic guineapig. The lungs, freed from anaphylactic blood, are markedly hypersensitive. The blood perfused through normal lungs produces an immediate typical reaction. 3. Cellular anaphylaxis and humoral immunity. This seeming paradox is illustrated by the lungs of immunized guineapigs. Freed from immune blood, the lungs are markedly hypersensitive. The blood, perfused through anaphylactic lungs, prevents a reaction. 4. Cellular immunity and humoral anaphylaxis. This second seeming paradox is illustrated by the heart of the anaphylactic rabbit (5). This heart, freed from anaphylactic blood, is distinctly resistant to a primary toxic protein (active foreign serum). The blood, perfused through a normal heart, produces a typical anaphylactic reaction. 5. Cellular immunity and humoral immunity. This is illustrated by the heart of the immune rabbit. The heart is distinctly resistant. The blood prevents a reaction in the normal heart. 6. Humoral anaphylaxis and humoral immunity. This third seeming paradox is illustrated by the blood of partially immunized rabbits, which contains a thermolabile anaphylactic element, partially neutralized or held in check by a thermostable immune element. 7. Cellular anaphylaxis and cellular immunity. A fourth seeming paradox is illustrated by the heart of a sensitized rabbit. Tested in a blood free condition, this heart usually shows an increased resistance to a primarily toxic protein (active foreign serum) and at the same time an acquired susceptibility to a nontoxic protein (inactive foreign serum).

These observations would be difficult to harmonize with the current theories of immunity. This difficulty may be due in part to lack of sharp differentiation between anaphylaxis and immunity. A reaction in one tissue will be classed as anaphylactic, if it tends to injure the organism as a whole. Identically the same response in a second tissue may tend to prolong life, and will be classed as immune. This is illustrated in the anaphylactic guineapig. The contraction of the bronchial musculature leads to death and is anaphylactic, while the violent tachycardia occasionally observed, which is presumably physiologically an identical phenomenon, tends to prolong life, and is immune. It will, therefore, probably be necessary to reduce anaphylactic and immune reactions to lower physiological terms than those at present employed, before seeking to apply current immunological theories.

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THE DIAGNOSIS OF GASTRIC ULCER, DUODENAL ULCER, AND GASTRIC CANCER.*

By Albert Woldert, M. D.,
Tyler, Texas.

During many years past, while making a diagnosis of gastric ulcer, duodenal ulcer, and gastric cancer, I have often wished for a concise summary or working formula of the most important data, clinical signs, and symptoms of these conditions. It requires too much time to consult the textbooks to arrive at a diagnosis, especially in their early stages. In order to aid the physician in charge to make a correct diagnosis I have prepared this contribution. To help in the diagnosis of these conditions we should resort to four different methods as follows: Obtaining a very careful history of the case; examination of the macroscopical appearance of specimens derived from the gastric contents and intestines; microscopical examination, and the x ray findings.

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*Read by invitation before Central Texas Medical Association, July 11, 1916; and before Dallas County Medical Society, December 14, 1916.

DIAGNOSIS OF GASTRIC ULCER.

Ulcer of the stomach occurs most frequently in women between twenty-five and forty years of age, and in males from forty to fifty years of age. It apparently occurs about twice as frequently in women than men. Welch gives the ratio at sixty per cent. for women and forty per cent. for men. The reverse of this is true in gastric cancer, in which condition cancer occurs more frequently among men than women. As a rule the symptoms come on very slowly, and exist during a period of weeks, months, or years, and may end in cancer, this change occurring in about one in twenty, according to Rosenheim and Einhorn. Usually there is a history of gastric pain with spells of "acute indigestion," or the first sign and symptom noted may be evidences of perforation or severe hemorrhage from the stomach or bowel.

Pain and tenderness.—The pain, according to Osler, is the most distinctive feature of gastric ulcer; it is of a gnawing or burning character and is generally felt a few minutes after eating, coming on in paroxysms, or the pain may recur regularly within a few minutes to an hour after eating, and sometimes be accompanied by nausea, regurgitation of food, or vomiting. Graham, of the Mayo Clinic, says that pain is the one constant diagnostic factor in peptic ulcer, and that less than one per cent. of patients are recorded free from pain. In fifty per cent. of the cases Graham found that the pain occurred in one half to two hours after eating; while in the other fifty per cent. pain occurred two to five hours after food had been taken. Nineteen per cent. of the patients had pain recurring within one half to one hour after eating. Pain during the night hours occurred in ten per cent. of the cases, while in duodenal ulcer, pain at night occurred in fourteen per cent. Mayo states that pain in gastric ulcer radiates from the epigastric midline to the left; while in duodenal ulcer it radiates to the right.

It is frequently, though not always, confined to a circular area having a diameter of one to two inches. Graham found tenderness on pressure in forty per cent. of cases of gastric ulcer, and in forty-one per cent. in duodenal ulcer. In fifty-two per cent. of the cases the pain was well confined to the epigastrium, while in duodenal ulcer pain was confined to the epigastrium in forty-nine per cent. A tender spot on pressure or a gnawing sensation may be present in the back at about the level of the eighth to twelfth dorsal vertebra in gastric ulcer.

Hyperchlorhydria.—All authorities state that an increase in the hydrochloric acid (hyperchlorhydria) is one of the most important signs of gastric ulcer; it is present in ninety-five per cent. of the cases according to Kemp. However, hyperchlorhydria in gastric ulcer is not a constant sign, and for this reason frequent examinations of the gastric contents should be made.

Vomiting.—Einhorn (1) dwells upon the importance of vomiting as a symptom, and says that vomiting in gastric ulcer occurs in nearly the same proportion of cases as does pain. The occurrence of vomiting is explained on the ground that the presence of the ulcer makes the stomach intolerant of food, and vomiting may occur within a few minutes after food has been taken, the vomitus showing little or no change in the ingested foods.

Hemorrhage.—Osler says that hemorrhage is present in at least fifty per cent. of all cases of gastric ulcer. Friedenwald and Smithies state that hemorrhage occurs in from twenty-two to forty per cent., while Graham, of the Mayo Clinic, found it present in only twenty-five per cent. of the cases. The hemorrhage from the stomach or bowel may be profuse, or it may be entirely latent (occult hemorrhage). Smithies believes that intermittent hemorrhage (melena), or hematemesis, is almost conclusive evidence of the existence of peptic ulcer. He also says: "Until gastric lesions have a certain time factor connected with them—a certain periodicity—or unless they have been associated with definite gross hemorrhage and not hemorrhage revealed by chemical tests, we cannot say absolutely that we are dealing with gastric ulcer." It has been stated that sixteen to eighteen per cent. of fatalities in gastric ulcer are due to hemorrhage. In several cases that I have treated there has been no hematemesis.

Anemia and loss of weight.—In gastric ulcer, on account of the loss of blood and lack of nutrition, profound anemia slowly sets in. The skin of one patient I treated had a whitish cast, and was not the waxy yellow that I have seen in gastric cancer. Of forty-four cases observed by Osler the lowest blood count shown was 1,902,000 red cells per cubic millimetre.

Perforation.—Perforation of the stomach, according to Osler, occurs in six and a half per cent. of the cases. The acute perforating form is said to be more frequent in women than men.

Pus and blood in gastric contents and feces.—Kemp says that the presence of pus and blood, visible or occult, in the gastric contents is diagnostic of gastric ulcer. In gastric ulcer he states that pus is always present, and when pus is found in the gastric contents alone, or with the occurrence of occult blood it points to the stomach; while the absence of pus in the gastric contents, and the presence of blood or occult blood in the stool and sometimes in the stomach in addition points to the duodenum. Occult blood in the stomach and stools should be looked for after the patient has been put upon a meat free diet for a period of two or three days previous to such examination. Rodman was of the opinion that if looked for macroscopically, microscopically, and chemically it was probable that blood would be found in practically all cases of gastric ulcer. Boas states that in gastric ulcer, occult blood tends to disappear with appropriate treatment in ten to fourteen days, whereas in malignant disease the occult blood shows a constant and gradual increase; also, that if occult blood disappears and again returns and shows a persistent and progressive course, the ulcer will be found to have assumed a malignant character.

X ray signs of gastric disorders including gastric ulcer.—To determine the radiological findings in gastric troubles, Carman, of the Mayo Clinic, gives one ounce of castor oil the evening previous to the examination, and has the patient report the following morning without breakfast. At this time he is given an ordinary portion of wheat meal porridge, into which two ounces of barium sulphate have been mixed, together with a little sugar and cream. The patient is directed to abstain from further food, and to return six hours later. The patient now drinks rapidly six or eight ounces of water containing one and a half to two ounces of bismuth subcarbonate, well stirred. The patient then stands in front of the screen and the observer palpates towards the pylorus, and by this manipulation is often able to drive a quantity of the mixture through into the duodenum. He then presses the bismuth in the stomach upwards, watching the outline of the greater and lesser curvatures. Sixteen ounces of potato starch pap containing two ounces of bismuth subcarbonate and flavored with syrup of raspberry are then drunk by the patient. Usually this fills the stomach, thus outlining it clearly, and the mobility and peristalsis are now also determined.

Carman (2) summarizes the radiological signs of gastric ulcer as follows: 1, the diverticulum of perforating ulcer is shown on the radiogram; 2, visualization of the bismuth filled crater of a callous ulcer; 3, the incisura, or transverse contracture indenting the greater curvature; 4, localized point tender on pressure on the lesser curvature; 5, residue after six hours; 6, acute fishhook form of the stomach, with displacement to the left and down; 7, delayed opening of the pylorus; 8, settling of the bismuth to the lower pole of the stomach, such as seen in hypotonicity or atony. In gastric ulcer George and Gerber also state that the bismuth outline will show the presence of excrescences, outpocketings, niches, and hourglass contractions.

DIAGNOSIS OF DUODENAL ULCER.

Frequency.—Deaver maintains that duodenal ulcer occurs more frequently than gastric ulcer, in the proportion of two to one, and probably more. Carman places the ratio as three or even four of duodenal to one of gastric ulcer. In a series of cases Mayo reports having found seventy-three duodenal to twenty-seven stomach ulcers, and Kummell found eleven gastric to thirty duodenal ulcers. Of 2,723 patients examined at the Mayo Clinic for lesions of the digestive tract, 718 later were operated upon, and of this number 198, or twenty-seven per cent., had duodenal ulcer. It may occur at any age, but seldom before the tenth year. In Moynihan's cases, duodenal ulcer was found most frequently between twenty and fifty years of age. Mayo reports sixty-one per cent. of duodenal ulcer in males. In 186 cases Moynihan reports its occurrence in 73.6 per cent, of males, and 26.4 per cent. of females.

Pain and tenderness.—One of the chief characteristic symptoms of duodenal ulcer is pain, which comes on with great regularity three, four, or five hours after a meal. This pain is of a boring, gnawing, or burning character. If the food taken is liquid the pain comes on earlier than if solid food is taken. Sometimes the pain comes on during the night hours, causing the patient to awake, and after long suffering he learns that some relief is obtained by taking a small amount of food; hence this pain is known as "hunger pain." Graham, of the Mayo Clinic, reports having found pain coming on from one half to two hours in twenty-three per cent., and in two to five hours in seventy-seven per cent. of the cases of duodenal ulcer. Mayo says that the pain in duodenal ulcer may radiate from the epigastric midline towards the right, while in gastric ulcer the pain is said to radiate from the epigastrium toward the left. Pressure, as by hugging a pillow, is said to give relief.

Hyperchlorhydria.—As in gastric ulcer the occurrence of persistent hyperchlorhydria is more or less characteristic of duodenal ulcer, and should be determined at once in all suspected cases. To determine this objective symptom frequent examinations of the stomach contents are imperative. Of 520 cases of duodenal ulcer Friedenwald found an average normal acidity in forty-eight per cent.; hyperacidity in thirty-five per cent.; and subacidity in two per cent.

Hemorrhage.—Osler says that the occurrence of severe intestinal hemorrhage with gastralgic attacks is extremely suggestive of duodenal ulcer. If the blood should be passed by the bowel rather than vomited, this would be evidence of duodenal rather than gastric ulcer. Moynihan found visible hemorrhage present in 37.6 per cent. of the cases. Of seventy patients, seven had hematemesis alone, and thirty had both hematemesis and melena. Hemorrhage occurring in duodenal ulcer may come on suddenly; it is more serious than in gastric ulcer and may end fatally. Coming on suddenly, the hemorrhage in this condition may cause the patient to feel faint, turn pale and become covered with sweat, and within a few hours black or tar colored blood may be passed from the bowel. In duodenal ulcer Kemp says that a patient may actually bleed to death without the occurrence of visible blood, but that occult blood can always be found in the stool. For this reason in suspected cases of duodenal ulcer occult blood should be repeatedly looked for, after putting the patient on a meat free diet for a period of two or three days previous to such examinations. Mayo does not seem to attach much importance to the finding of occult blood in the feces as throwing light on the diagnosis of duodenal ulcer, though he says a history of black stools may be given in as high as seventy per cent. of the cases.

Emaciation and anemia.—In duodenal ulcer, emaciation may come on rather slowly, with marked pallor of the skin; this whiteness of the skin was marked in one case that I have seen.

Vomiting.—Vomiting is said to be infrequent in duodenal ulcer unless there is stenosis of the pylorus followed by dilatation of the stomach, and motor insufficiency. Constipation is believed to be the rule in duodenal ulcer. Jaundice is absent in duodenal ulcer, and this distinguishes it from gallstone.

Perforation.—In duodenal ulcer, perforation is the most serious complication; it may come on quickly and is manifested by a feeling of faintness and signs of collapse. Distention (3) of the abdomen appears later, with abdominal tenderness and marked rigidity to the right of the median line and above umbilicus.

Absence of pus and blood in the gastric contents.—Kemp says that if the examination of the gastric contents shows an absence of pus, occult blood, present or absent, and occult blood in the stool, the case is one of duodenal ulcer.

Mayo sums up the symptoms and clinical signs of duodenal ulcer as follows: Hyperacidity; hypersecretion; hunger pain; food relief, and in the later stages the phenomena which accompany obstruction. He is of the opinion that a careful clinical history associated with the x ray findings will give a correct diagnosis in approximately ninety-five per cent. of the cases of duodenal ulcer.

X ray signs of duodenal ulcer.—Carman (4) enumerates the x ray signs of duodenal ulcer as follows: 1, gastric hyperperistalsis; 2, a residue in the stomach, sometimes in the duodenum, after six hours if there is obstruction from scar contraction; 3, a diverticulum of perforating ulcer. The minor signs include: 1, gastric hypermotility with early free opening of the pylorus and speedy clearance of the stomach; 2, gastric hypertonus; 3, irregularities in the outline of the cap or bulb or of the duodenum; 4, lagging of bismuth in the duodenum; 5, pressure tender point over duodenum; 6, spasms of the stomach, such as hourglass or slowly traveling incisura.

Mayo believes that the typical signs are hyperperistalsis of the stomach, deformities of the cap, and if obstruction exists, retention of the bismuth. Carman considers the Röntgen ray findings of secondary importance to the evidences furnished by a careful history, and physical examination. George and Gerber (5) state that the most easily diagnosed condition of the gastrointestinal tract is duodenal ulcer. They say that the normal condition after the bismuth meal shows the first portion of the duodenum as a smooth regular bismuth shadow producing the characteristic "bishop's cap." If the normal duodenal cap can be demonstrated in every normal person, then the presence on plates of a constant defect in the cap means a real pathological condition. Operation should not be performed unless the bismuth examination shows a definite, constant deformity of the bishop's cap. Further, every patient in whom a normal duodenal cap can be demonstrated has no indurated or surgical ulcer of the first portion of the duodenum.

DIAGNOSIS OF GASTRIC CANCER.

Mayo says that if an early diagnosis of gastric cancer has been made and the patient is in good condition, the mortality from operation will be less than five per cent.; further, that in such cases there is a prospect of a five year cure in about twenty-five per cent., and of a three year cure in thirty-eight per cent., in the case of those who recover from the operation.

Occurrence.—Of 150 cases of cancer of the stomach seen by Osler, fifty-eight per cent. occurred in persons between the ages of forty and sixty years. The youngest patient was twenty-two years old. Of 10,414 cases of gastric disturbances Friedenwald reports cancer in 1,000, and in sixty-five per cent. the patients were from forty to sixty years of age. Gastric cancer occurs more frequently in men than women. In 150 cases Osler found gastric cancer in 126 males and twenty-four females. Welch reports gastric cancer in 1,233 males, and 981 females.

Mode of onset.—Graham (6), of the Mayo Clinic, having the great advantage of following up the cases after operation, gives it as his opinion that gastric ulcer furnishes the soil of choice for the development of gastric cancer in fifty to seventy per cent. of the cases. In ten to fourteen per cent. of his cases there was a history of mild beginnings with usual history of indigestion; forty to forty-two per cent. gave a history of previous gastric ulcer; while in those whose troubles came on as a thief in the night, or who have seemed to leap from health to grave disease in less than two years, the group constituted fifty-eight per cent. of the total number of cases.

Anemia and rapid emaciation.—In those instances of gastric cancer resulting from ulcer, the course taken may be that of gastric ulcer with only slight anemia. In 712 cases Smithies reports bleeding (hematemesis or melena) in forty-nine per cent. during the previous two years, and in this group anemia was rarely marked, the average hemoglobin being about eighty per cent. Of fifty-nine cases reported by Osler the red cells averaged 3,712,186 per cubic millimetre, and the average hemoglobin 44.9 per cent. Cabot is of the opinion that leucocytosis is relatively infrequent in cancer of the stomach, occurring in only about one third of the early cases. Kemp says that eosinophilia is usually present and suggestive. In the advanced cases of gastric cancer the patient may have a sallow complexion and lose flesh rapidly, the blood showing a few nucleated red cells, usually of the normoblast type, or a few megaloblasts, but fewer in number than the normoblasts. Cabot calls attention to this fact as being a point of distinction between pernicious anemia and the anemia resulting from malignant disease.

Pain.—By nearly all writers pain is said to be a more or less constant symptom of gastric cancer. Graham says that about eighty-six per cent. of the cases complain of severe pain, while fourteen per cent. only have mild distress. The pain is generally constant and comes on without reference to the time of taking food, while in thirty-five per cent. of the cases observed by Graham the pain was worse after taking food. In twenty-six per cent. of the cases taking food slightly relieved the pain. The pain, according to Graham, is not localized even on pressure, but is diffused over the entire epigastrium, and is of a burning or gnawing character, not relieved by vomiting, and made worse on pressure.

Vomiting.—Vomiting may be absent in the early stages, but in the later stages it is said to occur in sixty to seventy per cent. of the cases, becomes more copious, and has a rancid odor and coffee ground color.

Blood pressure.—In 132 cases of gastric cancer, Friedenwald found the blood pressure was over 170 millimetre Hg or more; albumin was present in fifty-fie per cent., and both albumin and tube casts in forty-six per cent. of the cases.

Gaseous distention.—Distention of the stomach by gas is common and due to frequent obstruction of the pylorus, the food not being allowed to escape into the intestines, and thus undergoing fermentation and putrefactive changes, causing large quantities of gas to form.

Food remnants.—W. J. Mayo after his study of 1,000 cases of gastric cancer says: "The early diagnosis does not depend on any sign or symptom due to cancer itself, but on the mechanical condition produced by the growth, and that food remnants in definite amounts were found in 53.3 per cent. of the cases, and gross obstruction in twenty per cent." By "food remnants" he means remnants of food found in the stomach on the following morning after the previous evening meal. A combination of tumor and obstruction, in his opinion, is nearly always pathognomonic of cancer.

Absence of free HCl.—In ninety-four cases of gastric cancer seen by Osler free HCl was absent in eighty-four of them. In forty cases observed by Boas it was absent in fifty-six per cent. of the cases. In 1,000 cases reported by Friedenwald free HCl was absent in eighty-nine per cent. of them. In suspected cases of gastric cancer frequent examination of the stomach contents should be made one hour and also five or six hours after a test meal.

Presence of lactic acid.—On account of fermentative and putrefactive changes lactic acid may be found in the gastric contents where there is a deficiency or total absence of free HCl. Of 733 cases of gastric cancer Friedenwald found lactic acid present in 81.9 per cent. of them. To detect lactic acid it seems preferable to examine the stomach contents several hours after a mixed meal, though it may be present, according to Boston, forty-five minutes after a test meal consisting of a roll of bread.

The Abderhalden and glycyltryptophan tests.—Neither of these tests are in much favor, and it might be said that the glycyltryptophan test has probably been proved to be of no value.

Occult and visible blood in the gastric contents and stools.—Graham reports having found blood in the gastric contents in seventy-five per cent., and refers to other writers who found occult blood in the stools in seventy to eighty per cent. of the cases. In 1,000 cases of gastric cancer reported by Friedenwald visible blood was found in 7.5 per cent. and occult blood in the stools in 92.5 per cent. In suspected cases the gastric contents and stools should be frequently tested for occult blood, putting the patient on a meat free diet for two or three days previous to the examination.

The potassium iodide test.—Several years ago, in treating a case of gastric cancer, proved by operation, after giving potassium iodide by the mouth in capsule, and testing the saliva, I found (7) that no trace of iodine could be detected until after sixty-two minutes. In another case of gastric cancer, proved by operation, I could find no trace of iodine until the lapse of forty-five minutes. Whether this delayed appearance of the iodine was due to partial loss of motor power of the stomach, or to thickened gastric walls, I do not know. However, I again offer it as a simple test to be employed together with other tests to confirm the diagnosis of gastric cancer. In the normal stomach iodine should be detected in the saliva within fifteen to twenty minutes after five grains of potassium iodide has been given in capsule.

The Wolff-Junghann test for gastric cancer.—In a personal communication received from Dr. L. W. Kohn, of Philadelphia, he gives his method of making the Wolff-Junghann test and further describes it as follows: "When a dilution of the gastric contents at one in 200 or beyond, shows evidence of immediate albuminous precipitate, after the Wolff reagent has been added, it is regarded as significant of cancer. A requisite for this test is that no free HCl be present in the gastric contents. This reagent precipitates the soluble albuminous products of digestion. The technic is as follows: Reagents: Phosphotungstic acid 0.3 c. c.; HCl (concentrated), 1.0 c. c.; alcohol (ninety-six per cent.), 20.0 c. c.; and distilled water q. s. for 200 c. c. Test: Take six narrow test tubes which have been thoroughly cleansed with soap and water, alcohol, and ether, and then dried. To the respective tubes add filtered gastric contents in the following proportions: 1 c. c., 0.5 c. c., 0.2 c. c., 0.1 c. c., 0.05 c. c., 0.025 c. c. Tube No. 1 (1-10), contents 1 c. c.; water 9 c. c.; tube No. 2 (1-20), contents 0.5 c. c., water 9.5 c. c.; tube No. 3 (1-50), contents 0.2 c. c., water 9.8 c. c.; tube No. 4 (1-100), contents 0.1 c. c., water 9.9 c. c.; tube No. 5 (1-200), contents 0.05 c. c., water 9.95 c. c.; tube No. 6 (1-400), contents 0.025 c. c., water 9.75 c. c. To obtain these dilutions use a one c. c. pipette graduated into tenths and hundredths. To each test tube add sufficient water to make ten c. c. The dilutions are then 1-10, 1-20, 1-50, 1-100, 1-200, 1-400.

Reverse position of these tubes once or twice—better to use a rubber stopper than the thumb because perspiration from the latter may interfere with the test—and then very gently float one c. c. of the reagent on the fluid in each test tube. Examine within a minute or two. The presence of a white ring up to and including tube No. 3 (1-50) is negative for carcinoma. A ring at 1-100 speaks neither for nor against carcinoma (neutral). A ring at 1-200 or 1-400 speaks for carcinoma and is considered a positive test. Precautions: In making this test we should exclude anything left over from a meal eaten six hours previously, and the stomach before making the test should be clean before giving the test meal. We should also exclude swallowed material such as blood, material from decayed teeth, excessive bleeding, etc. As stated, when a dilution of the stomach contents at one to 200 or beyond shows evidence of immediate albuminous precipitation after the Wolff reagent has been added, it is regarded as significant of cancer.

Presence of a tumor.—In gastric cancer Mayo reports having found a tumor in sixty-seven per cent. in a series of 1,000 cases, some of which could be palpated. In 1,000 cases Friedenwald stated that the presence of a tumor could be detected in sixty per cent. of them the first six months from the first appearance of the symptoms. Of these sixty per cent. were found at the pylorus, seven per cent. at the cardia, and in thirty per cent. there was general involvement.

Pus and blood in the gastric contents.—On account of the ulcerative process present, both pus and blood may be found in the gastric contents and should be looked for with the microscope.

Presence of sarcinæ and Oppler-Boas bacilli in gastric contents.—In gastric cancer, sarcinæ may be found, but are said to be not so frequently met with in advanced cases. Morris describes two different sizes of sarcinæ, being of a slightly brownish color and found more easily with a low power lens. Sarcinæ are fungi packed together in bundles like bales of hay. The Oppler-Boas bacilli are quite constantly found in gastric cancer, and in 733 cases Friedenwald reports their occurrence in 79.3 per cent. They are more frequently found in those cases in which the free HCl diminished or absent, and where lactic acid abounds. By Boston (8) the Boas-Oppler bacillus is described as occurring in long segmenting chains, often assuming a tortuous course, and as stated by Morris are characterized further by their large size and club like appearance, being nonmotile and showing a tendency to grow in chains, which may extend across the microscopic field. They are two to three times the width and two to five or more times the length of the tubercle bacillus. The Boas-Oppler bacillus should be looked for in gastric contents forty-five to sixty minutes after a test meal, and also in the fasting stomach, that is to say, five or six hours after a test meal. There is a tendency at the present time to regard the Boas-Oppler bacillus as belonging to the lactic acid bacillus group—lactobacilli of Bacillus bulgaricus group—and found in milk and milk products, as well as in the gastric contents. It is believed that it gains entrance into the body through such foods as milk and its products. To examine for the Boas-Oppler bacillus stand the specimen aside an hour or two, then skim off the top, spread out the gastric contents on a glass slide, and dry slowly over alcohol lamp. Then stain by the Gram method. By this method the Boas-Oppler bacillus is positive, and if the counter stain is safranine, this bacillus will be of a brown color, best observed with a one twelfth oil immersion lens. These bacilli may also be found in the fresh specimen as suggested by Boston, who prefers to select the fresh unstained specimen by allowing the gastric contents to stand aside several hours, then to lift off a portion of the hazy sediment located near the top when the Boas-Oppler bacillus, if present, will be found in large clumps, and having a club-like appearance. At the present time it is known that the presence of the Boas-Oppler bacillus in the gastric contents is not pathognomonic of cancer, but indicates as a rule that hydrochloric acid is usually absent or diminished, and that lactic acid abounds. Being so frequently present in gastric cancer, the Boas-Oppler bacillus should always be looked for in suspicious cases.

To be of significance the Boas-Oppler bacillus should be present in large numbers. Some writers are inclined to believe that they indicate the presence of lactic acid.

Constant pain, loss of motor power, food remnants, absence of free hydrochloric acid, lactic acid, rapid emaciation, occult blood or visible blood, pus, sarcinæ, and Boas-Oppler bacilli present in large numbers in the gastric contents with occult blood constantly present in the stools form the clinical picture of gastric cancer, and if a tumor can be detected the diagnosis of gastric cancer is almost certain.

The x ray signs of gastric cancer.—These are given by Carman (9) as follows: 1. Filling defects. 2. Diminution in size. 3. Lessened motility. 4. Stiffening and gaping pylorus, as shown by a free continuous outflow of bismuth from the stomach. 5. Absence of peristalsis from affected portion of the wall of stomach. 6. Antiperistalsis. 7. Residue after six hours if the pylorus is obstructed. 8. If the pylorus is unobstructed hypermotility with early clearance of the stomach, and an advanced position of the six hour meal in the intestine.

Haudek (10) enumerates the following differential points between gastric ulcer and gastric cancer: Gastric ulcer is apt to cause pyloric spasm and retard emptying of stomach, and the outline of stomach shadow is smooth; while cancer at an early stage causes gaping of the pylorus, and later may produce stenosis with greatly prolonged retention of the bismuth meal in the stomach. Cancer produces a jagged outline of the stomach.

If the above aids to diagnosis are carefully followed doubtless the majority of cases of gastric ulcer, duodenal ulcer, and gastric cancer will be correctly diagnosed, but there will remain over a limited number of cases in which we should not hesitate to adopt the last resort—laparotomy—in order to settle this very difficult question of diagnosis of these conditions especially in their early stages.

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CLINICAL NEUROOTOLOGICAL EXAMINATIONS.

With Presentation of Two Cases of Intracranial Lesions.

By J. Clarence Keeler, M. D.,
Philadelphia,
Assistant Professor in Otology, Jefferson Medical College and Hospital; Clinical Surgeon in Laryngology and Otology, Germantown Hospital and Dispensary.

The intensive cooperative study by otologist and neurologist of the interrelated otological centres and of the pathways concerned in hearing, equilibration, the muscle sense, and visual fixation, in both their physiological and pathological relations, has given rise to the new science of neurootology.

We owe our knowledge of the movements of the endolymph in the semicircular canals and their bearing on the eye movements to Ewald. Neumann in his surgery of the labyrinth and Ruttin have made material contributions to the science. Bárány has traced the pathways from the end organ to the brain centres, especially those leading from the external and superior semicircular canals through the course of the auditory nerve. In this country, Randall and his associates have developed a refinement in the technic of neurootological examinations, as a result of which certain phases of intracranial localization are rapidly becoming more accurate.

In our clinic, patients presenting any of the hereafter mentioned symptoms have been subjected to neurootological tests: vertigo, tinnitus, deafness, nystagmus, ataxia, incoordination, lack of responsive reflexes, persistent headache—any of them singly or in combination; hysteria, hydrocephalus, brain abscess, cardiovascular, renal, and gastric disturbances, remote infections and tumors. The following tests are employed: functional tests for hearing and the routine otological examinations; examinations for spontaneous nystagmus and spontaneous pastpointing—labyrinth irritation in the absence of artificial stimulation; gait, station, falling reactions; labyrinthine reactions following stimulation, viz.: rotation, caloric, galvanic, and fistula tests. The galvanic test seems to be less universally employed than the rotation and caloric tests. I shall endeavor to describe briefly the rotation and caloric tests.

THE ROTATION TESTS.

The patient, seated erect, in a smoothly revolving chair, with foot rest, head support, and locking device, with head at an angle of 30° forward and the eyes closed, is given ten complete revolutions to the right, occupying about ten seconds. On the completion of the tenth turn the chair is locked. The patient is directed to gaze into the distance. A normal individual will then exhibit left horizontal nystagmus; the slow component—vestibular, stimulatory—being to the right, and the quick component—cerebral, inhibitory—being to the left, the duration of which is twenty to thirty seconds. The duration is noted and compared to the reaction obtained when the patient is rotated to the left. Any inbalance is pathological. When rotation is to the right, the left labyrinth is the one receiving the greater stimulus, because on the left side the endolymph in the external semicircular canal is made to flow toward the ampulla, while in the right external semicircular canal the endolymph movement is away from the ampulla.

The pastpointing reaction (after stimulation).—The patient is rotated to the right as in the manner just described, with the exception that the eyes remain closed throughout the test. At the completion of the tenth revolution, the patient's extended right index finger is placed directly on the examiner's index finger, held stationary. This is done to give him the location of the examiner's finger. The patient is then directed to raise his horizontally extended arm to a vertically extended position and then to return to the examiner's finger. The same is repeated with the left arm. A normal individual will bring his finger down several inches to the right of the examiner's finger, for the reason that when the revolutions cease he experiences vertigo, the subjective sensation being that of rotation in the opposite direction, namely, to the left. For this, he endeavors to compensate and brings his finger down some distance to the right. This reaction depends upon the pathway of the stimulus over the fibres of the eighth nerve being unobstructed from the external canals to the cerebral cortex.

The patient is now rotated as before, but to the left, and again tested for pastpointing with both left and right arms. The pastpointing will be normally to the left. If there is a lesion along the pathway or if the labyrinth is dead, there will be no pastpointing.

The pathway is assumed to be over the vestibular fibres of the eighth nerve from the external semicircular canal to Deiter's nucleus in the upper portion of the medulla, and there divides into two pathways: 1. The vestibuloocular tract concerned in the production of the nystagmus. These fibres go from Deiter's nucleus to the posterior longitudinal bundle through which they pass to the various eye muscle nuclei from which through the third, fourth, and sixth nerves, they are distributed to the eye muscles themselves. 2. The vestibulocerebellocerebral tract, responsible for vertigo. From Deiter's nucleus this path enters the cerebellum through the inferior cerebellar peduncle to the three vestibular cerebellar nuclei of the same side, from which it proceeds upward through the superior cerebellar peduncle and continues to the cerebral cortex on both sides, but more particularly the opposite side through the crura cerebri and the internal capsule. The cortical areas which receive these fibres are in the posterior portion of the second temporal convolution adjacent to the cortical area for hearing (Mills). The pathways for stimuli originating in the vertical semicircular canals are different, and this difference assists us in the differential localization of lesions. The vertical canals also respond to the rotation tests for nystagmus and for pastpointing.

All the rotation tests are the same, with the exception that the head is placed at an angle backward of 60° in order to bring the vertical canals in the plane of rotation. Reactions are normally as follows: After rotation to the right there will occur left rotatory nystagmus, the slow movement being to the right and the quick component being to the left. Pastpointing will be to the right. These reactions are reversed after rotation to the left. If there is a lesion along this pathway or if the labyrinth is dead, there will be no nystagmus or pastpointing. The pathways for the vertical canals are assumed to be over the vestibular fibres of the eighth nerve from the vertical canals to the upper portion of the medulla, ascending thence in the pons to a point opposite the middle cerebellar peduncle, where they divide into two portions similar to the division of the horizontal canal fibres at Deiter's nucleus, viz.: the nystagmic and the vertigenous. 1. In the nystagmic, or the vestibuloocular tract, the fibres enter the posterior longitudinal bundle, through which they pass to the various eye muscle nuclei from which through the third, fourth, and sixth nerves, they are distributed to the eye muscles themselves. 2. The vestibulocerebellocerebral tract reaches the cerebellum through the middle cerebellar peduncle, entering the cerebellar nuclei of the same side, from which it proceeds upward through the superior cerebellar peduncle and continues to the cerebral cortex on both sides, more particularly to the opposite side through the crura cerebri and the internal capsule.

THE CALORIC TEST.

The caloric test is made by irrigating the right external auditory canal with water at 67° F. under the following conditions: The patient is seated erect with the head at an angle of 30° forward. The water is permitted to flow through a tube in a continuous stream without undue pressure from a glass reservoir into the canal until nystagmus is noted—usually within forty seconds, or until the examiner is satisfied that it will not occur. In a normal individual, with this chilling of the right labyrinth wall there is a flow downward of the endolymph in the vertical canals toward the ampulla, producing left rotatory nystagmus, the slow movement to the right, the quick component to the left, and causing pastpointing to the right. One of the advantages of the caloric test is that only one set of canals and their pathways is stimulated at one time. The reactions depend upon the pathway from the vertical canals of the right side to the cerebral cortex being unobstructed. Should there be a lesion along the pathway, nystagmus and pastpointing, one or both, may not occur. If the labyrinth is entirely dead, neither will occur.

To stimulate the external canal, it is only necessary to place the patient's head at an angle backward of 60° because the endolymph is already chilled from the irrigation just performed. The flow of the endolymph is now away from the ampulla, and in a normal individual a left horizontal nystagmus will occur, the slow movement being to the right, the quick component to the left. Pastpointing will be to the right. The pathway of the stimulus is now that from the external canal to the cerebral cortex and the reactions depend upon its being intact.

When the irrigations are performed with hot water at 112° F., the flow of the endolymph is reversed and the reactions are reversed—the right nystagmus with cold water, left nystagmus with hot water, etc. Hot water will correct nausea induced by the cold water irrigation. Except for this purpose it is not extensively used at the present time. Irrigation of the left canal is now performed with cold water and the reactions are then the reverse of those obtained when the right canal was irrigated.

CASE I.—J. W. P., male, aged forty-nine years. There were no significant facts in the personal history except that the patient had dysentery while serving in the Philippine Army. The patient complained of vertigo and tight feeling in the head. The vertigo has been present for the last fifteen years, and was frequently accompanied by vomiting without nausea. The patient staggered on attempting to walk and showed a tendency to fall to the right. Deafness dated back about twelve years. The right ear seemed first to be affected. The hearing gradually became impaired and there was a distressing tinnitus in both ears. Measuring over the forehead, the head was twenty-five inches in circumference; this was an increase of four and one half inches in the last three years. The membrana tympani were intact and cloudy, and there was impaired mobility of the hammer handle. The Rinne test was negative in both ears. Ocular rotations were normal with the exception of a paresis of the left superior rectus. No spontaneous nystagmus. There was no spontaneous pastpointing of the right arm, but the patient did spontaneously pastpoint two inches to the left with the left arm. Turning the head suddenly to the right caused him to fall backward. Turning the head to the left did not increase the swaying or tendency to fall. The pelvic girdle reactions were poor. After rotation to the right, the head at an angle of 30° forward, there was horizontal nystagmus to the left of good amplitude and normal rapidity for twenty-six seconds. The pastpointing of the right arm to the right was of wide excursion—twenty-four inches—but of short duration. He failed to pastpoint to the right with his left arm. After rotation to the left, the head at an agle of 30° forward, there was horizontal nystagmus to the right of good amplitude and normal rapidity for twenty-six seconds, and pastpointing to the left with both arms. The duration of the vertigo was slightly above normal.

Caloric stimulation of the right vertical canals, water at 68° F., the head at an angle of 30° forward, continuously applied for forty-three seconds, produced a rotatory nystagmus to the left of good amplitude; vertigo was induced, but there was a failure to pastpoint to the right with the right arm, while there was pastpointing of six inches to the right with the left arm. The head being then extended backward 60°, stimulating the right external canal, there was a horizontal nystagmus to the left of good amplitude with increased vertigo. He failed to pastpoint to the right with the right arm. With the left arm he pastpointed six inches to the right. Caloric stimulation of the left vertical canals for one minute and twenty seconds, water at 68° F., the head at an angle of 30° forward, produced a rotatory nystagmus to the right of fair amplitude. Vertigo was present. There was impaired pastpointing—two inches—to the left with both the right and left arms. The head being then extended backward 60°, stimulating the left external canal, there was horizontal nystagmus to the right of good amplitude with vertigo. There was impaired pastpointing—four inches—to the left with the right arm. With the left arm he failed to pastpoint.

Twenty-five days later the patient was again examined. The pastpointing reactions after rotation were unimpaired on both sides. After caloric stimulation for one minute and fifteen seconds of the right vertical canals, head at an angle of 30° forward, there was fair rotatory nystagmus to the left, failure to pastpoint to the right with the right arm, and impaired pastpointing to the right with the left arm. Extending the head backward 60°, stimulating the right external canal, there was a horizontal nystagmus to the left of good amplitude and good pastpointing to the right with both arms. After caloric stimulation for one minute and three seconds of the left vertical canals, head at an angle of 30° forward, there was a fair rotatory nystagmus to the right. Pastpointing to the left with the right arm was impaired. The left arm failed to pastpoint to the left. Extending the head backward 60° and stimulating left external canal, there was horizontal nystagmus to the right of fair amplitude, and pastpointing to the left with the right arm of good excursion—ten inches. The left arm failed to pastpoint to the left.

We were able to exclude an end organ lesion by the functional fork tests which indicated normal cochleæ and auditory nerves of both sides. We concluded from the data obtained that the case was of the intracranial type. The semicircular canals of both sides responded to both rotation and caloric stimulation. Because of the perfect reactions from the external canals, namely, nystagmus, vertigo, and pastpointing, we could safely say that the inferior cerebellar peduncle, cerebellar cortex, superior cerebellar peduncles, and the paths leading thence to the centre of the vertigo were intact. When we stimulated the right vertical canals by the caloric method there were normal reactions, except a failure of the right arm to pastpoint to the right. When we stimulated the left vertical canals by the caloric method, there was failure of the left arm to pastpoint to the left. These reactions independently would signify destruction of the semilunar lobes of both cerebellar hemispheres, but this could not be the case because we were able to elicit perfect function of these areas of the cerebellum when we stimulated the external canals. We could exclude an intrinsic lesion, such as cyst, glioma, sarcoma, or hemorrhage involving both semilunar areas and simultaneously leaving all the other portions of the cerebellum intact. We concluded that the disturbance was due to pressure from without, such as can readily be produced by a marked internal hydrocephalus.

Case II.—G. S., aged twenty-six years. Previously in good health. Two weeks prior to examination he received a blow on the head, causing unconsciousness for two days. There was constant headache, vertigo, and staggering. Hearing was greatly impaired with greatly reduced bone conduction. Spontaneous reactions show a persistent pastpointing with the right arm from above down and from below up; very ataxic from side to side. There was no nystagmus but a constant irregular movement of the head. Romberg's sign was pronounced; with eyes closed he fell backward. Adiadokokinesis was present. Upon rotation to the right the horizontal canals produced normal nystagmus, vertigo, and pastpointing. Upon rotation to the left there resulted a conjugate deviation of the eyes to the left, and a persistent pastpointing to the right instead of to the left. Rotatory stimulation to the vertical canals gave the same perverted pastpointing. Caloric stimulation with water of 68° F. to the vertical canals again produced normal rotatory nystagmus and vertigo, with a failure of the right arm to pastpoint to the left and the left arm to pastpoint to the right. The perverted pastpointing continued when the ears were douched with hot water at 112° F. The x ray shows no evidence of fracture.

Pupils of the eyes were equal and somewhat wide. Reaction was sluggish; no ocular muscle palsies; no ptosis, and no spontaneous nystagmus observed. Mentally, the patient showed slight memory disturbance and slight disorientation as to time—mild simple confusion. Gait was ataxic; he walked with feet wide apart; he was unable to stand with his feet together and eyes closed without support. There was apparently some sensory blunting, even loss, over the mid third of the left face. There was slight paresis of left seventh; right seventh was not involved. He had no trouble in swallowing, talking, or breathing and no palsies of extremities; grip was strong with both hands. There were wide incoordination movements of upper extremities. Knee jerks were prompt; no Babinski, no ankle clonus. There were ataxic movements of lower extremities and there was no asteriognosis. Adiadokokinesis was present. There was no general sensory loss of touch, pain, or temperature, except as described in the left side of face. General swaying or titubation of the cerebellar type.

It was evident from examinations of this case that we could eliminate end organs but not the eighth nerve. We could eliminate brain stem and cerebellar peduncles. This case was not cerebellar, because there could hardly be a lesion so large that it would involve the semilunar lobe of the left side and the biventral lobe of the right side; therefore the lesion must be more deeply placed in a position that would not destroy but would interfere with the function of the fifth, seventh, and eighth nerves, at the same time destroying the function of the tracts crossing from the semilunar lobe of the left and the biventral lobe of the right. Therefore the only place this lesion could be is in the left cerebellopontine angle.

The history of the case, showing definite trauma and abrupt onset, could be accounted for by a hemorrhage. From its location it is probably a hemorrhage of the anterior inferior cerebellar artery.

254 South Sixteenth Street.

Radium in Carcinoma of the Upper Air Passages.—D. Bryson Delavan (*Medical Record,* June 30, 1917) summarizes three years' work where of 184 cases of the upper air passages, fifty-five per cent. were improved and of these twelve per cent. retrogressed.

ELEMENTS OF SUCCESS IN THE TREATMENT OF DIABETES.

By Joseph Safian, M. D.,
New York.

It is not intended in this paper to deal exhaustively with this important subject, but to bring out some important facts, which in the light of our present knowledge of the disease will aid materially in the management of these cases.

In an empirical way it has always been recognized that the pancreas was at fault in diabetes, but it is a well established fact that no organ acts for itself independently of any other organ. The decided effects of certain glandular extracts on the entire organism lead us to believe that the ductless glands play an important rôle in the etiology of diabetes. That the pancreas has an external secretion which has proteolytic, amylolytic, and lipolytic properties is well known; also that it has an internal secretion, the failure of which is responsible for the appearance of sugar in the urine. Its exact relationship in the production of this most prominent symptom of diabetes has been made the subject of various theories, but not until we gained a knowledge of the activities of the ductless glands has it been possible to explain most of the facts with any degree of certainty. It has been proved experimentally that the adrenals and thyroid exert a decided influence over carbohydrate metabolism, particularly over the function of the liver, in the mobilization of glycogen and its conversion into sugar.

Diabetes is essentially a disease of hyperacdity and occurs most frequently in persons who consume large quantities of proteins and fats. These persons are subject to acid intoxications, as evidenced by one group of these individuals who are subject to gout. In the others the pancreas suffers as a result of the unequal strain put upon it, and undergoes certain degenerative changes, resulting in a diminution of its internal secretion.

Menyhert, of Budapest, has treated diabetes on the theory that the gastric hyperacidity and hypalkalinity of the succus entericus prevent the proper neutralization of acid peptones and the proper saponification of the fatty acids, permitting them to be absorbed as such. In this manner he explains the accumulation of betaoxybutyric acid in the blood, which, according to Naunyn, is the one constant characteristic of acidosis.

While the definition given by Naunyn as to what constitutes acidosis is most acceptable, it is highly improbable that the conclusions of Menyhert as to the causes leading to acidosis are correct, for in our experience of forced feeding of fats in the various cachectic conditions, acidosis does not appear as a result. The most likely explanation of this phenomenon is that the betaoxybutyric acid is derived from the breaking down and improper burning up of the patient's own fat.

It appears that a degree of acidosis exists even before the appearance of glycosuria, due to faulty metabolism, probably not sufficient to show in the urine, but a hypalkalinity of the blood certainly does exist; and this mild acidosis produces the degenerative changes in the islands of Langerhans. It is agreed by most authorities that the mobilization of glycogen and its conversion into sugar is under the control of the sympathetic nervous system, and that it is influenced by various internal secretions, mainly the adrenals and thyroid. It is thus easily seen that the usual habit of placing all the blame on the carbohydrates is not justified. It is just as important to control the protein and fat metabolism as that of the carbohydrates in the diabetic patient.

Allen has recently pointed out that success in the management of these cases depends upon the proper balancing of the three food elements and not upon the old custom of restricting carbohydrates alone, which only hastens the development of acidosis by prŏmoting the too rapid breaking down of the patient's reserve of fatty tissue and its improper oxidation.

Frugoni's experiments led him to believe that the pancreatic secretion acts as a brake upon the conversion of glycogen into sugar and its liberation by the liver, while the adrenals and thyroid act by stimulating that function of the liver. Thus the pancreas on the one hand and the adrenals on the other antagonize each other in their influence on sugar metabolism. While it has been the general belief that the entire phenomenon of the production of hyperglycemia and the subsequent glycosuria were dependent entirely upon a lack of pancreatic secretion, Blumenthal is of the opinion that the hyperglycemia is dependent upon a lack of reciprocal activity of a specific enzyme of the liver and of the internal secretion of the pancreas; for while a lack of pancreatic secretion may cause an excessive discharge of sugar by the liver, a lack of the specific enzyme of the liver which converts the sugar brought to it by the portal vein into glycogen, and stores it as such, would result in the passage of food sugar through the liver without its conversion into glycogen, which is a necessary step before it can be stored in the liver.

It is estimated that in the normal state, during active carbohydrate digestion, the portal vein contains forty per cent. of sugar which it carries to the liver to be stored as glycogen. The hepatic vein which carries all the blood from the liver does not contain an increased amount of sugar.

But if the specific enzyme of the liver which converts sugar into glycogen should be lacking through pathological changes in the hepatic cells, the sugar would pass through the liver without any change, and the hepatic vein would carry off as much sugar as was brought to the liver by the portal vein. Thus a true hyperglycemia would result with a subsequent glycosuria. With a hyperglycemia produced in this manner, in the presence of a normally functioning pancreas, a large portion of the excess of sugar would be assimilated by the muscular tissue because the assimilation of sugar from the blood stream by muscle tissue is dependent upon an enzyme within the muscle, similar to that in the liver. However, in order that it may act upon the sugar in the blood stream, it must be activated by the internal secretion of the pancreas, which can act only when the blood is a normally alkaline medium.

The author has had under his care during the past six months, seven diabetic patients who were treated along a modified Allen plan. The severity of the cases varied; the mildest showing 2.3 per cent. sugar, and the most severe, that of a woman of forty-six years who was passing nearly five quarts of urine daily with a specific gravity of 1034, showing 8.2 per cent. sugar and decided traces of acetone. When she first appeared for treatment, she complained of an intense vulvar pruritus, which began six months ago and had resisted all local treatment. She had been dieted irregularly, with slight remissions in percentage of sugar, but was not entirely free from it at any time during the past four years.

It was deemed inadvisable to place her on starvation diet at once, as she had been a hearty eater and rebelled at the idea of subsisting on fluids for several days. She was at first allowed a full diet, which was gradually reduced until the fifth day, when she was receiving only vegetables, broth, black coffee, and water. Then followed three days of broth, coffee, and water only, at the end of which time she was sugar free. At this time the pruritus disappeared entirely and has not recurred up to the present time. Acetone increased during the fasting period, but disappeared entirely when feeding was resumed. Her diet at the present time consists of proteins sixty-five grams, fat 180 grams, and carbohydrate ninety-six grams, yielding about 2,400 calories per diem. She feels better than at any time during the past four years.

In connection with this case it may be well to call attention to the fact that this woman was suffering from an enlarged thyroid. Experimentally it has been shown that in cases of excessive activity of the thyroid, sugar often appears in the urine, while in degenerative conditions of the thyroid, it is difficult to produce glycosuria experimentally by the usual methods, except by extirpation of the pancreas.

Case I.—F. B., age forty-one years, married. Family history negative. Present illness dates back three years. First consulted a physician when eye sight began to fail, and when a uranaylsis was made she was told that she was passing two per cent. of sugar. She was on a diet for several months and felt much better, but as soon as she ate some bread or used cream in her coffee, sugar reappeared. In testing her tolerance for proteins and fats, it was found that when the proteins were high, sugar appeared even when she was taking very small quantities of carbohydrates, but by reducing the protein and fats, she was able to tolerate much larger quantities of carbohydrate without the appearance of sugar in the urine. There was no acetone present at any time. She is at present taking a mixed diet with a liberal allowance of bread and baked potato, and states that she never felt so well.

Case II.—C. N., male, age fifty years, a tailor, suffered an attack of furunculosis two years ago which proved to be due to diabetes. Sugar was found in the urine while he was under treatment for the furunculosis. He was then placed on a diet and received some medicine. After a number of weeks the furunculosis cleared up, but he was never free from sugar. He became worried because several fraternal organizations rejected him on account of glycosuria when he applied for membership. Treatment was begun two months ago, starvation diet being prescribed at the outset. Sugar disappeared on the third day, and his diet was gradually built up until he is taking considerable carbohydrate food, including bread and potato. Up to the present time sugar has not reappeared except on one occasion, when he attended a banquet and partook of a generous mixed diet, including two rolls and some cake. He drinks only a small quantity of water daily and is not disturbed by polyuria.

Case III.—Widow, age fifty-eight years, gives a history of passing sugar in the urine for the past fourteen years. Never dieted strictly, and always consumed considerable quantities of ice cream, candy, and cake, although warned of its possible results. She suffered considerably from varicose ulcers on both legs, and finally gangrene of the right big toe developed, necessitating amputation. Her general condition was poor when treatment was begun. It was impossible to place her on starvation diet as she had a voracious appetite and a great capacity for food. At the beginning of treatment she was passing about four quarts of urine daily with a specific gravity of 1032 and sugar 4.5 per cent., with decided traces of acetone. Weight 170 pounds. Her diet was gradually reduced for one week, at the end of which time she was placed on starvation diet for three days. During the first week she lost eight pounds in weight, sugar was reduced to 4.1 per cent. and acetone was still present. At the end of three days of starvation she had lost an additional four pounds in weight, sugar was reduced to 1.2 per cent. and acetone was increased. It was deemed advisable to begin feeding in spite of the fact that she was not entirely sugar free. For the next two weeks her diet was rather rapidly increased, and with it came a slight increase of sugar. Acetone was somewhat reduced. At the end of four weeks she was again placed on starvation diet for three days and sugar disappeared entirely, but it reappeared to the extent of 0.8 per cent., when feeding was resumed. She was allowed a rather liberal diet and continued to show a small quantity of sugar, but felt a great deal improved. She regained two pounds in weight at the end of six weeks. She was then given desiccated extract of pancreas with each meal and her carbohydrate tolerance was considerably increased. At the end of three months she had regained her previous weight and is quite actively engaged in looking after her business interests. Her appetite is normal, she drinks about a quart of water daily, does not have to urinate at night, and feels quite comfortable. She is very much gratified with the results of treatment and obeys instructions strictly.

Case IV.—J. B., married, aged forty-two years. Mother suffered from diabetes for a number of years and died six years ago. Patient has five living children, the youngest two years old. During the last pregnancy her physician discovered traces of sugar in the urine. Little attention was paid to it at the time, and as she had a normal labor and suffered no ill effects, she entirely ignored the matter until one year ago, when she noticed that she was passing large quantities of urine and suffered from incessant thirst, especially when she was in the house. At the first examination the urine showed two per cent. sugar, no acetone, specific gravity 1026. She was at once placed on starvation diet, and sugar disappeared on the third day. The diet was rather rapidly increased and desiccated extract of pancreas was administered three times daily. She showed quite a tolerance for carbohydrates and says the amount of food allowed her is sufficient to satisfy her appetite. She is passing a normal amount of urine, specific gravity 1022, no sugar or acetone.

Case V.—F. B., age forty-one years, married. Family history negative. She was told about three years ago that she was suffering from diabetes and was placed on a diet with considerable improvement. About four months ago she noticed an itching of the vulva which led to severe excoriations by scratching. First urine examination showed a total quantity for twenty-four hours of three litres, specific gravity 1028, sugar 3.6 per cent., with traces of acetone. She was allowed a regular diet for two days and then put on starvation diet. An ointment was used locally to heal the excoriations. On the fourth day the urine was sugar free, but acetone was increased. Feeding was resumed gradually, but the tolerance for carbohydrates was found to be very low. However, she was permitted to take carbohydrates in excess of her tolerance until she was passing two per cent. sugar, when she was again put on starvation diet for two days, with total disappearance of sugar. Thereafter she was given desiccated extract of pancreas, and it was found that her carbohydrate tolerance was somewhat increased, though not so much as in some of the other cases. She was ordered to observe one fast day each week. At the end of two months there was a loss of five pounds in weight. Sugar reappeared occasionally, but only in traces. At the present time her diet consists of protein sixty grams, fat 160 grams, carbohydrate seventy-five grams. She does not tire as easily as formerly and does all her own housework.

Case VI.—S. R., age forty-eight years, female, married. Family history negative. First consulted a physician about two years ago for general weakness, and on examination 1.5 per cent. sugar was found. She had been taking some pills for about a year and restricted her diet. She ate only gluten bread, no potatoes or sweets of any kind, and subsisted mainly on meats, eggs, and fruits. About six months ago she again noticed that her knees felt weak, and she was unable to do much walking. First urine examination showed a specific gravity of 1024, sugar 1.8 per cent., decided traces of albumin, a few hyaline casts, but no acetone.

She was at once placed on starvation diet and sugar disappeared on the third day. Albumin and casts were still present, but no acetone. Systolic blood pressure was 160 mm. Hg. Here we have a case of chronic nephritis complicated by a mild degree of diabetes. Her diet was restricted for a considerable period, with a continuous loss of weight, until she had reduced fourteen pounds from her original weight of 178 pounds. At the end of three months sugar had not reappeared; albumin persisted in small traces, casts were still present, and blood pressure was reduced to 145 mm. Hg. She had suffered greatly with headaches which have been entirely relieved. This patient has been instructed to restrict her diet mainly to the vegetable proteins; fats are allowed in somewhat larger quantities than usual, and she also takes a liberal amount of carbohydrates. Her weight remains stationary and she feels much stronger than formerly.

Cases of renal diabetes have been described by various writers, but it is doubtful if the sugar in these cases is due to the kidney defect alone. Klemperer records a case in which a patient with chronic nephritis excreted 0.35 per cent. of glucose, without an accompanying hyperglycemia. The latter did not occur, even when the individual was fed on large quantities of bread and glucose and excreted as much as 150 grams of sugar daily.

The greatest difficulty encountered in the management of these cases was in controlling the quantity and preparation of the various food elements. Quite frequently it was found that the patient was unable to carry out instructions, and invariably there was a relapse in the patient's condition, but improvement followed as soon as these patients were properly supervised. At present all diabetic patients are being placed for a short period in an institution with proper facilities for dieting and laboratory examination of blood and urine. Before leaving, patients are instructed in the proper weighing of their food and its proper preparation so that they may continue their treatment intelligently in their own homes.

This report is preliminary and the cases above reported together with those that are at present under treatment will be reported in detail as soon as Dr. Herman Bick, who is in charge of the laboratory work, has fully compiled his data, and a sufficient time has elapsed for making a final examination of the blood and urine of these patients to enable one to judge of the permanency of the results obtained.

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4 West 117th Street.

LOCAL ANESTHESIA IN SIXTY OPERATIONS FOR ACUTE AND CHRONIC APPENDICITIS.*

By JOSEPH WIENER, M. D.,
New York,
Associate Surgeon, Mount Sinai Hospital.

In a preliminary paper (1) I reported eighteen cases of appendicitis, most of them chronic, operated on under novocaine. In that paper I said: "I hope in the near future to use this method in more and more acute cases, even in the presence of a peritonitis. In fact, a peritonitis, far from being a contraindication to doing the operation under local anesthesia, will, I hope, soon be an indication for this operation. When we consider that the system is already struggling to throw off a peritoneal infection, and that the organs of excretion are doing a large part of this defensive work, the danger of handicapping these organs still further by giving an anesthetic, is apparent. And if we can remove the offending appendix in the presence of a peritonitis under local anesthesia, we are giving our patient a far better chance for a rapid recovery."

Of the sixty cases which furnish the basis of this communication, forty-one were chronic and nineteen were acute. Of the acute cases seven involved empyema of the appendix; eight, gangrene of the appendix; two, large abscesses, and two well marked peritonitis. Increasing experience has given me more confidence, and most of the acute cases were operated on in recent months. Twelve of the cases were private patients, the remainder were from the First Surgical Service at Mount Sinai Hospital. With increasing experience I have modified the technic in various ways. Several of my private patients, among the most recent ones a physician, have given me valuable information from the standpoint of the patient. In my earlier cases I used the novocaine only in the abdominal wall. After several intelligent patients described to me the sensations they had at the moment I was delivering the appendix and the cecum into the wound, I determined to anesthetize the mesenteriolum before pulling the appendix out of the abdomen. Since doing so my patients no longer complain during any stage of the operation. I have recently heard that other surgeons had had similar experience.

I recently operated on a nervous young woman, who required considerable persuasion to allow me to remove her appendix under novocaine. As I was sewing up the abdominal wound she asked me to repair her lacerated perineum. I offered her ether for this, but she would not hear of it. Whereupon I did a colpoperineorrhaphy under novocaine, and the patient assured me that both operations were quite painless.

We have repeatedly had two and three cases of appendicitis operated on under local anesthesia in the ward at the same time, and the patients who had been through it always encouraged the new ones to have it done. When we consider the character of our ward patients, we can be quite sure that this would not have been the case if the operations had not been free from pain.

Time of operation.—Including both the acute and the chronic cases the average time was twenty-two minutes. Almost half of the time is consumed in waiting for the anesthetic to act on each layer of the abdominal wall and on the mesenteriolum. Furthermore, and this is another advantage of the procedure, as the patients are conscious, all their tissues must be handled much more gently and deliberately. All this is time consuming, but is of great advantage to the patient in the course of the aftertreatment. While it is true that the ordinary operation for appendicitis under ether takes only twelve to fifteen minutes, we must not forget that it takes five to ten minutes to get the patient under ether. After all, in operations under local anesthesia, the element of time is of very little importance.

Pain during operation.—Almost all of the patients who complained of pain during the operation said later that they had had very little pain, but that they had been afraid. Intelligent patients, with few exceptions, were surprised how little discomfort they experienced. One man was reading the paper on the morning after operation. When his wife came into his room she was amazed to find him so comfortable. She had had her appendix removed in the interval stage under ether, and she assured me that the pain during the first two days, due to tympanites and vomiting, had been worse than the pains of childbirth.

Postoperative distention.—This was strikingly absent in almost all of the cases, and I consider this one of the great advantages of local anesthesia. I usually give one c. c. of pituitrin hypodermically on the day after operation, and follow it in half an hour with a rectal irrigation or a high enema. So much of the postoperative pain and discomfort is due to inhibition of peristalsis caused not so much by the operation as by the anesthetic. If local anesthesia did nothing else than eliminate this, it would well be worth while. One of the striking facts in these patients is that they usually pass gas on the day after operation. In one case of empyema of the appendix gas was passed voluntarily twelve hours after operation, and neither enema nor cathartic was given during the entire convalescence.

Nausea and vomiting.—With exception of the peritonitis and abscess cases, nausea and vomiting have been almost uniformly absent in our cases. Only in the most neurotic cases have we seen it.

Opiates after operation.—The average number given was two and a quarter. The largest number given was four and this was only necessary in three cases. Several patients received only one hypodermic during the entire aftertreatment.

Stay in bed.—Including both acute and chronic cases, the average stay in bed was a little less than seven days. For the chronic cases the average stay in bed was less than six days, and these patients usually left the hospital two or three days after they first got out of bed.

Adhesions.—These were present in numerous cases. If they were recent they could be divided without pain. Where the adhesions were dense we injected novocaine into them. After a few minutes wait they could be painlessly divided.

Technic.—During the past two years that I have been doing this work I have from time to time made changes in the method of procedure. The technic which I now employ is as follows: Three quarters of an hour before operation the patient receives a quarter of a grain of morphine hypodermically. Just before operation this dose is usually repeated, unless the patient appears drowsy from the first injection. I use a one per cent. solution of novocaine to an ounce of which twenty drops of 1:1,000 solution of epinephrin have been added. Tablets of novocaine with epinephrin are a great convenience. I usually use five one grain tablets to an ounce of water and this suffices for the complete operation. I regularly use the muscle splitting McBurney incision and it is particularly well adapted to the operation under local anesthesia. The great advantage of this incision is the fact that it comes right down on the cecum. Not only is it rarely necessary to pack away the intestines, but there is very little handling of the intestines. The first injection of novocaine is not under the skin but into the skin along the line of proposed incision. In doing this the skin should be blanched by the solution. As soon as this has been done I pass the needle into the deeper tissues and inject some novocaine. The advantage of this is that while we are waiting for the skin to become anesthetic some of the deeper tissues are being partially anesthetized.

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*Read before the Harlem Medical Association, March 7, 1917.

After waiting two or three minutes the skin and subcutaneous tissues are divided. I always use a sharp scalpel for dividing all layers, as scissors, being blunter, are more apt to cause pain. Novocaine is next injected under the aponeurosis of the external oblique and also into the internal oblique muscle. After two minutes both the external and internal oblique can be painlessly divided. The needle is then passed obliquely under the peritoneum to prevent the possibility of its injuring a coil of intestine and a few drops of novocaine are injected. After two minutes the peritoneum is divided. Done in this way there will be no pain up to this point. Both operator and assistants should handle the tissues with the greatest gentleness. It will rarely be necessary to apply any artery forceps in making this incision; the little oozing can usually be checked by the retractors. This is another advantage of the intermuscular incision, as the crushing of the bloodvessel with the forceps causes some pain, unless novocaine is injected around the vessel.

As soon as the cecum with the appendix is exposed a catgut ligature is passed through the base of the mesentery close to the appendix. This ligature is not tied but is used as a tractor to draw the base of the appendix into the field of operation. As soon as the base of the appendix is exposed novocaine is injected freely into its mesentery. I omitted to do this in my earlier cases and the patients usually complained of cramps referred to the epigastrium or umbilical region. Sometimes I wait a minute after injecting the base of the mesentery and then pull on the ligature and expose the balance of the mesentery which is then anesthetized in its entire length. Sometimes it is possible to inject the novocaine into the entire mesenteriolum as soon as the base of the appendix is exposed. In three minutes after injecting the mesentery, the appendix can be pulled out of the abdomen, the mesentery ligated and divided, and the appendix removed with no pain. If the mesentery is properly anesthetized, it is not necessary to inject novocaine into the base of the appendix. If necessary, the right tube and ovary can be drawn into the wound and resected. The closure of the wound in layers is usually entirely painless. Of late I have been leaving a small drain under the skin to prevent a collection of serum which sometimes occurs with local anesthesia. This little drain is removed with the first dressing.

Postoperative course.—The postoperative course is in striking contrast to what we see in cases that have had ether. A few hours after operation there is a little wound pain which is easily controlled by codeine or a little morphine. The restlessness, nausea, and vomiting, that usually follow the use of ether are entirely absent. The patients greet you with a smile the next morning and usually express their surprise that they have so little discomfort. Peristalsis is usually established early, and the troublesome and painful postoperative distention is entirely absent. A hypodermic injection of one c.c. of pituitrin on the day after operation adds to the comfort of the patient. Almost all of the patients have been able to take and retain fluids within a few hours after the operation. There is an entire absence of the mental depression so common with ether. Many of these patients are reading on the day after operation. The one patient who was a physician was telephoning to some of his patients twelve hours after operation. The patients usually get out of bed on the fourth or fifth day and go home two or three days later. In short, smooth and rapid convalescence, even in the acute cases, is a most gratifying phenomenon. There has been no mortality in the sixty cases. To show the kind of cases that can be operated on under local anesthesia, I append the following histories:

CASE I.—Irving R., twenty-four years old, admitted to Mount Sinai Hospital July 27, 1916. Two days before admission he had been seized with abdominal pain which became localized in the right iliac fossa. The pain gradually increased and vomiting set in. Examination showed a distended abdomen with tenderness and rigidity in the right lower quadrant. Temperature 101.6° F., pulse rate 96.

Immediate operation for gangrenous perforative appendicitis with spreading peritonitis. In spite of the marked tenderness, the abdomen was opened painlessly through an intermuscular incision under one per cent. novocaine with adrenalin. On opening the peritoneum free turbid foul smelling fluid was evacuated. The appendix, which was surrounded by a dense plastic exudate, was completely gangrenous, filled with pus, and contained several coproliths. The adhesions and the plastic exudate were infiltrated with novocaine and the appendix was removed. A drain was introduced and the wound sutured. The operation took twenty-seven minutes and was associated with very little pain. During the aftertreatment a pelvic abscess which developed opened spontaneously into the rectum. The man made a good recovery.

This was certainly a case that tested the method severely. In spite of the pain and tenderness the abdomen was opened painlessly. In spite of the gravity of the lesion and the presence of a peritonitis and of extensive dense adhesions, we were able to do the operation completely under local anesthesia with very little discomfort to the patient. It is just in this class of cases with peritonitis that we believe the greatest field of usefulness for the operation exists. If such a patient is given ether he is exposed to the danger of a nephritis or a pulmonary complication, which may be just enough to turn the scale against him and cause his death. How much better is such a patient able to throw off his infection, if he is saved the all too common postoperative distention, nausea, and vomiting, with its concomitant extra strain on the circulation! I firmly believe that in this class of cases local anesthesia will often be a life saving procedure.

CASE II.—George H., forty-two years old, admitted to Mount Sinai Hospital January 31, 1917. Eleven days before admission he had been suddenly seized with severe pain in the right iliac region, which was not relieved by cathartics. The pain had persisted since the onset. Temperature 100.4° F., pulse 100. There was moderate rigidity over the lower right rectus and tenderness over McBurney's point.

Operation February 1, 1917, for gangrenous perforative appendicitis with abscess. On opening the abdomen through an intermuscular incision a large amount of thick foul pus was evacuated. In the abscess cavity a free sloughing mass the size and shape of the appendix was found and removed. Two large coproliths were also removed from the abscess cavity. The wound was closed with drainage. Time of operation was thirty minutes. Recovery was rapid and the man went home in thirteen days.

At no time during the operation did this man complain of any pain, and he assured me later that he had had no pain to speak of. It was astonishing how free he was from all discomforts during his entire convalescence. He had no nausea, no vomiting, no tympanites, and only twice during his entire convalescence did he require a narcotic. He had less discomfort than the average chronic case done under ether.

CASE III.—Gertrude L., nineteen years old, admitted to Mount Sinai Hospital January 7, 1917. Four days before admission she had been seized with epigastric cramps, which soon settled in the right iliac fossa. She had vomited several times and had repeatedly felt chilly. There was considerable tenderness and rigidity in the right iliac region. Temperature 102° F., pulse 88. Immediate operation for gangrenous appendicitis with diffuse peritonitis. On opening the abdomen free turbid fluid was found. The cecum was mobilized with great difficulty on account of adhesions. The appendix was found retrocecal, adherent, gangrenous, imbedded in an inflammatory mass. Novocaine was injected into the adhesions before dividing them. The appendix was then painlessly removed, and the abdomen closed with drainage. Time of operation was thirty-six minutes. Convalescence was delayed by a femoral phlebitis, but was otherwise uneventful.

In this case, too, the patient was surprisingly comfortable when the severity of the case is considered. The first two days after operation were a great contrast to what we usually see in peritonitis cases operated under ether. There was none of the restlessness, vomiting, tympanites, and severe pain which are so trying to the patients and to the attendants. In fact, the absence of these symptoms in our acute cases is one of the most gratifying features of the procedure.

Our experience thus far encourages us to extend the field of usefulness of the procedure. We hope to use it in an ever increasing number of cases, and we trust it will lead others to give these patients the benefits of local anesthesia. We firmly believe that in not a few cases it will actually be life saving.

REFERENCE.

1. WIENER: Appendectomy under Local Anesthesia, *Journal A. M. A.*, April 8, 1916.

46 EAST SEVENTY-EIGHTH STREET.

A CASE OF ACUTE INFLAMMATORY GLAUCOMA PRODUCED BY INSTILLATION OF ONE DROP OF ONE PER CENT. OF HOMATROPINE.

BY MARCUS J. LEVITT, M. D.,
Brooklyn, N. Y.
Adjunct Attending Ophthalmologist, Jewish Hospital; Attending Ophthalmologist, Jewish Hospital, O. P. D.; Visiting Ophthalmologist, Hebrew Orphan Asylum.

In reporting this case I wish to point out the danger in the use of even mild mydriatics, as homatropine or cocaine, in elderly people. If a mydriatic is used, it should immediately be followed by two per cent. of pilocarpine or 0.5 per cent. of eserine. If an acute glaucoma has unfortunately been set up the treatment described in the following case will give the best results and in many cases will restore the eye to its normal state.

CASE.—Mrs. O., a patient of mine for a number of years, while suffering from an acute attack of heart or kidney trouble, requested me, by the advice of her family physician, to examine her eyes for possible hemorrhages in the retinæ. External examination revealed the following: Pupils three millimetres, equal and reacted well to light and accommodation. Tension: right eye was —1; left eye normal. In order to get a good view of the retinæ, I instilled one drop of one per cent. of homatropine as is customarily done by every ophthalmologist. The medium of the right eye was a little hazy, the bloodvessels much thinner than in the left. There were no hemorrhages in either eye. After the examination, I instilled a drop of two per cent. of pilocarpine in each eye and left the patient. In forty-eight hours the nurse reported to me that the patient's right eye was congested, that she could not sleep well at night, and was complaining of severe pain in the right eye and in the same side of the head. Upon examination of the patient, I found that the cornea was hazy, the pupils were irregularly dilated and immobile; there was ciliary injection, tension was +3. The anterior chamber was very shallow; the patient's eyesight was reduced to distinction of light and darkness. In other words, the patient presented a typical case of acute inflammatory glaucoma.

Energetic treatment was immediately instituted. A subcutaneous injection of a quarter of a grain of morphine was ordered, and a combination of 0.5 per cent. of eserine and two per cent. of pilocarpine was to be instilled every two hours, and ice application to the eye and same side of the head for twenty-four hours. The patient had a restful night. The next day the pupils were greatly contracted, not evenly—rather oval. The patient had no pain and could see fingers with right eye for a distance of ten feet but complained of blurring of vision. Eserine and pilocarpine instillations were continued three times daily for two days. Three days later there was no pain and vision was fully restored. Drops were ordered put in every night for three nights, then every other night for a week.

Fuchs states that not only mydriatics, like atropine, can excite acute glaucoma, but also homatropine or even cocaine in an eye that is predisposed to it. The most interesting feature of this case is that the right eye had tension —1, was myopic and generally considered immune to glaucoma, and in spite of every precaution an acute inflammatory glaucoma set in.

258 VERNON AVENUE.

Prevention of Pediculosis.—J. A. Gunn (*British Medical Journal,* May 5, 1917) advocates the use of very thin, light, and cheap undershirts and drawers, made of butter muslin and impregnated with a solution of one per cent. each of naphthalene and sulphur in benzol or petrol. The use of shirts of this type has already proved their effectiveness.

Medicine and Surgery in the Army and Navy

THE MEDICAL DEPARTMENT OF THE UNITED STATES ARMY.*

Second Communication: General Organization of the Army.

By William W. Reno, A. M., M. D.,
Major, Medical Corps, United States Army.

THE BUREAU CHIEFS.

As already pointed out, the army is controlled and directed by the general staff exercising its authority by direction of the President of the United States through the Secretary of War. The general staff is assisted in this work by the bureau chiefs of the War Department, by department commanders, and by commanders of forces in the theatre of operations. As the general staff, department commanders, and commanders of armies in the field have been succinctly described, a short description will be given of the duties of bureau chiefs of the War Department.

The supply, payment, and recruitment of the army, and the direction of the expenditures of the appropriations for its support, are by law intrusted to the Secretary of War. He exercises control through the chief of staff and the bureaus of the War Department. He determines where and how particular supplies shall be purchased, delivered, inspected, stored, and distributed. The exercise by the President of his power to call the organized militia into the service of the United States or to raise volunteers authorizes the chiefs of the supply departments of the army to equip and supply said forces in the manner authorized by the *Army and Field Service Regulations,* limited only by available appropriations.

The great technical bureaus of the War Department are: 1, The Adjutant General's Department; 2, the Inspector General's Department; 3, the Judge Advocate General's Department—Brigadier General Enoch W. Crowder, who has just completed the management of the draft for the conscripted army, is head of this department; 4, the Quartermaster Corps; 5, the Medical Department—Major General William C. Gorgas, as is very well known, is surgeon general of the army and head of this department; 6, the Corps of Engineers; 7, the Ordnance Department; 8, the Signal Corps. There are other bureaus of the War Department such as the Bureau of Insular Affairs, but as they are not actively concerned in the administration of the army they will not be described.

The Adjutant General's Department.—The Adjutant General's Department is the department of records, orders, and correspondence of the army and the militia. The adjutant general is charged, under the direction of the Secretary of War and subject to the supervision of the chief of staff in all matters pertaining to the command, discipline, or administration of the existing military establishment, with the duty of recording, authenticating, and communicating to troops and individuals in the military service all orders, instructions, and regulations issued by the Secretary of War through the chief of staff; preparing and distributing commissions; compiling and issuing the *Army Register* and the *Army List and Directory;* consolidating the general returns of the army; arranging and preserving the reports of officers detailed to visit encampments of militia; preparing the annual returns of the militia required by law to be submitted to Congress; managing the recruiting service; recording and issuing orders from the War Department; remitting or mitigating sentences of general prisoners who have been discharged from the military service. The adjutant general is vested by law with charge, under the Secretary of War, "of the military and hospital records of the volunteer armies and the pension and other business of the War Department connected therewith"; and of the publication and distribution of the *Official Records of the War of the Rebellion.* He also has charge of the historical records and business of the permanent military establishment, including all pension, pay, bounty, and other business pertaining to or based upon the military or medical histories of former officers or enlisted men.

The Inspector General's Department.—The sphere of inquiry of the Inspector General's Department includes every branch of military affairs except when specially limited in these regulations or in orders. Inspectors general and acting inspectors general exercise a comprehensive and general observation within the command to which they are assigned over all that pertains to the efficiency of the army, the condition and state of arms, and equipments, and supplies of all kinds, the expenditure of public property and moneys; the condition of accounts of all disbursing officers of every branch of the service; the conduct, discipline, and efficiency of officers and troops. They also report with strict impartiality in regard to all irregularities that may be discovered. From time to time they make such suggestions as may appear to them practicable for the correction of any defect that may come under their observation. Inspectors general or acting inspectors general assigned to a military command are under the immediate direction of its commanding general; when not so assigned, they are under the orders of the War Department. They make the garrison and such special inspections as the commanding general may direct within the limits of his command.

The Judge Advocate General's Department.—The judge advocate general is the custodian of the records of all general courts martial, courts of inquiry, and military commissions, and of all papers relating to the title of lands under the control of the War Department, except the Washington Aqueduct and the public buildings and grounds in the District of Columbia. The officers of this department render opinions upon legal questions when called upon by proper authority. The reports which the judge advocate general of the army may render upon cases received by him and which require the action of the President, are transmitted to the adjutant general of the army for record and for submission to the chief of staff for the consideration of the Secretary of War and the President. After final action is had by superior authority in such cases, all the papers are returned to the adjutant general of the army, who, before publishing the action taken, refers the papers to the judge advocate general of the army for further scrutiny.

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In order to show that arrests and confinement in the army are based on common sense and justice, a few regulations will be cited. Only commanding officers ordinarily have power to place officers under arrest. An officer is placed under arrest by his commanding officer in person or through another officer by a verbal or written order or communication, advising him that he is placed in arrest, or will consider himself in arrest, or words to that effect. An officer arrested repairs at once to his tent or quarters, and there remains until more extended limits have been granted by his commanding officer. Close confinement is not enforced except in cases of a serious nature. Officers are not placed in arrest for light offenses. For these the censure of the commanding officer will generally answer the purpose of discipline. Enlisted men against whom charges have been preferred are designated as "awaiting trial"; enlisted men who have been tried are, prior to the promulgation of the result, designated as "awaiting result of trial"; enlisted men serving sentences of confinement not involving dishonorable discharge are designated as "garrison prisoners." Persons sentenced to dismissal or dishonorable discharge and to terms of confinement at military posts or elsewhere are designated as "general prisoners." Noncommissioned officers are not confined in company with privates if it can be avoided. When placed under arrest they are not required to perform any duty in which they may be called upon to exercise authority or control over others, and when placed in confinement they are not sent out to work.

Except as provided in the sixty-eighth article of war or when restraint is necessary, no soldier is confined without the order of an officer who previously inquires into his offense. It is proper, however, for a company commander to delegate to noncommissioned officers of his company the power to place enlisted men in arrest as a means of restraint at the instant when restraint is necessary, but such action must be reported to the company commander at once. The arrest or confinement of an enlisted man is reported as soon as practicable to his company or detachment commander by the officer authorizing the arrest or confinement. Prisoners awaiting trial by, or undergoing sentence of, general court martial and those confined for serious offenses, are kept apart when practicable from those confined by sentence of an inferior court or for minor offenses. General prisoners are not confined with other prisoners except in cases of necessity. Enlisted men in confinement for minor offenses or awaiting trial or the result of trial for the same are ordinarily sent to work under charge of unarmed overseers instead of armed sentinels, and are required to attend drills unless the commanding officer shall direct otherwise. Prisoners are not placed in irons except in the extraordinary case of a prisoner who in the judgment of the commanding officer is a desperate or dangerous character, in which case report of action and the circumstances is immediately made to the department or tactical division commander. When a prisoner is removed from irons a report of that action is made to the department or tactical division commander. A prisoner may be shackled or handcuffed while being transported from one post to another, or from a post to a penitentiary when in the judgment of the officer in charge the escape of the prisoner can not otherwise be prevented.

Special rules and regulations are promulgated by the Secretary of War to govern the enforcement of discipline, the methods of guarding, and the treatment of general prisoners confined at posts; also the measure of labor to be imposed and the character of clothing and diet to be furnished them. General prisoners other than those confined in penitentiaries are allowed in abatement of their terms of confinement when serving sentences of over three months and not over twelve months, five days for each complete period of twenty-five days during the whole of which their conduct has been good; but the abatement of five days so authorized does not have the effect in any case of reducing the confinement below three months. On sentences exceeding one year they are allowed the foregoing abatement for the first year of the sentence including abatement, and thereafter ten days for each complete period of twenty days during the whole of which their conduct has been good. Abatements thus authorized may be forfeited wholly or in part by subsequent misconduct, such forfeiture to be determined by the commanding officer of the post where the prisoner is confined. A general prisoner serving sentence in a penitentiary is allowed the abatement authorized for convicts in that penitentiary. Garrison prisoners are allowed in abatement of their terms of confinement when serving sentences of one month five days for good conduct. On sentences exceeding one month they are allowed the foregoing abatement for the first month of the sentence, and thereafter ten days for each complete period of twenty days during the whole of which their conduct has been good. Abatements thus authorized may be forfeited wholly or in part by subsequent misconduct, such forfeiture to be determined by the commanding officer of the post where the prisoner is confined. After a garrison prisoner has served one half of his sentence he may, if his enlistment has not expired, submit to the commander of the post where the sentence is being executed a request to be put on probation for the remainder of the term of confinement adjudged. If the conduct of the garrison prisoner has been good in all respects, this request is granted by the commander of the post; and if it is granted, the soldier is restored to duty upon condition that if his conduct is not good while on probation he will be required to serve such part of his sentence as remained unexecuted at the time that he was put on probation.

The source of military jurisdiction is the Constitution, the specific provisions relating to it being found in powers granted to Congress, in the authority vested in the President, and in a provision of the fifth amendment. Military jurisdiction is of three kinds: 1, military government, the law of hostile occupation, as in Belgium at the present time; 2, martial law at home—military power exercised in time of war, insurrection, or rebellion in parts of the country retaining allegiance; 3, military law. Military law is the legal system that governs the army. Its sources of power are the Articles of War enacted by Congress August 29, 1916. Military offenses include practically all civil offenses and many others peculiar to military life such as fraudulent enlistment, desertion, disrespect, insubordination, mutiny, misbehavior before the enemy, improper use of the countersign, forcing a safeguard, spying, relieving, and corresponding with or aiding the enemy.

In order to try military offenders, three types of military courts are established: 1, the summary court; 2, the special court; and, 3, the general court. The summary court is a one officer court. The officer designated hears the evidence and awards the penalty if guilt is established. This is an inferior court, however, and can adjudge no greater penalty than three months' confinement or forfeiture of more than three months' pay. The sentence must also be reviewed and approved by the commanding officer before becoming effective. The special court has jurisdiction over all persons subject to military law except commissioned officers and classes of persons excepted by the President. It can try all crimes or offenses not capital which are made punishable by the Articles of War. It consists of three commissioned officers specially appointed. Its limit of punishment is confinement for six months or forfeiture of six months' pay. The general court martial is the great army court. It can try any person subject to military law for any crime or offense made punishable by the Articles of War. From five to thirteen commissioned officers specially appointed form this court. As military law is not surrounded by technical restrictions, minor errors in trial do not annul a conviction. There is no swifter, surer, or fairer method of trial, in my opinion, than that by army courts martial.

The Quartermaster Corps.—The Quartermaster Corps is charged with the duty of providing means of transportation of every character, either under contract or in kind, which may be needed in the movement of troops and material of war. It furnishes all public animals employed in the service of the army, the forage consumed by them, wagons and all articles necessary for their use, and the horse equipments for the Quartermaster Corps. It furnishes clothing, camp, and garrison equipage, barracks, storehouses, and other buildings; constructs and repairs roads, railways, bridges; builds and charters ships, boats, docks, and wharves needed for military purposes; supplies subsistence for enlisted men and others entitled thereto; supplies articles for authorized sales and issues; furnishes lists of articles authorized to be kept for sale; gives instructions for procuring, distributing, issuing, selling, and accounting for all quartermaster and subsistence supplies; has charge of the supply and distribution of and accounting for funds for the payment of the army, and such other financial duties as are specially assigned to it; and attends to all matters connected with military operations which are not expressly assigned to some other bureau of the War Department. The Quartermaster Corps transports to the place of issue and provides storehouses and other means of protection for the preservation of stores supplied for the army by other departments. As will be seen, the Quartermaster Corps is the great general supply department of the army. It furnishes food, clothing, and transportation. It pays the army and also pays for its vast array of quartermaster supplies. In fact, every military duty which is not specifically assigned to some other bureau falls to the Quartermaster Corps.

The Medical Department.—The Medical Department is charged with the following duties: 1, investigating the sanitary condition of the army and making recommendations in reference thereto; 2, advising with reference to the location of permanent camps and posts; 3, adopting systems of water supply and purification and the disposal of wastes; 4, caring for the sick and wounded; 5, making physical examinations of officers and enlisted men; 6, managing and controlling military hospitals; 7, recruiting, instructing, and controlling the enlisted force of the Medical Department and the Nurse Corps, and furnishing all medical and hospital supplies. The surgeon of every post or command, under the direction of the commanding officer, supervises its hygiene and recommends such measures as he may deem necessary to prevent or diminish disease. He examines at least once a month the sanitary condition of the public buildings and grounds; the drainage, the sewerage, the condition of all sanitary appliances, including incinerators, sterilizers, filters, and odorless excavators; the amount and potability of the water supply; the character and cooking of the food, including the quality of the milk and condition of the dairies from which it is obtained; the character and causes of prevailing diseases and measures taken to prevent them. Immediately after such examination he reports thereon in writing to the commanding officer, noting also in the report the dates on which the prescribed physical inspections of the various organizations of the command were made, the number of new cases of venereal disease which appeared in the command, the ratio of the same per 1,000 of strength, and the number of venereal prophylactic treatments given, with such recommendations as he may deem proper. The commanding officer forwards the report through military channels to the adjutant general of the army, noting thereon his views and the action taken by him; and should he have deemed the action recommended by the surgeon impracticable or undesirable, he states fully his objections. The commanding officer furnishes the surgeon with a copy of his indorsement forwarding the report. Special sanitary reports take the same course as the regular monthly sanitary reports. As far as practicable, intermediate commanders correct sanitary defects, noting their action by indorsement.

This sanitary report is the most powerful means a surgeon has of enforcing proper sanitation, as no commanding officer wishes an official report to go forward to superior officers detailing insanitary conditions in his command. Also a surgeon seldom needs to mention on a sanitary report adverse sanitary conditions, as the average commanding officer is very prompt in enforcing sanitary measures. Whenever a commanding officer, however, declines to accept good sanitary advice and the surgeon is convinced that the measures recommended are necessary for proper sanitation, health of the men, or other benefit from a medical standpoint, he should place his recommendation on the monthly sanitary report, or, if urgent and there is not time to send the monthly sanitary report, place it on a special sanitary report and forward it at once. The question will then be decided by authority higher than the commanding officer and the surgeon.

The Medical Department has within its bounds: 1, the Medical Corps; 2, the Medical Officers' Reserve Corps; 3, the Dental Corps; 4, the Veterinary Corps; 5, the Army Nurse Corps (female); and, 6, an enlisted force. The enlisted force was formerly called the Hospital Corps, but its official name now is simply the Enlisted Force, Medical Department. This force supplies noncommissioned officers, male nurses, pharmacists, clerks, cooks, ward masters, surgical and bacteriological assistants, hospital attendants generally, drivers, chauffeurs, blacksmiths, farriers, mechanics, and other men needed to carry on the many activities of the Medical Department.

The Corps of Engineers.—The duties of the Corps of Engineers comprise reconnoitering and surveying for military purposes, including the laying out of camps; the preparation of military maps of the United States and its possessions, including cooperation with other Government and private mapping agencies, and in field operations, of maps of the theatre of operations; selection of sites and formations of plans and estimates for military defenses; construction and repair of fortifications and their accessories; the supervision of the location of all buildings in or within one mile of any fortification; the installation of electric power plants and electric power cable connected with seacoast batteries, and furnishing the necessary electrical supplies connected therewith; planning and superintending of defensive or offensive works of troops in the field; examination of routes of communications for supplies and for military movements; construction and repair of military roads, railroads, and bridges; military demolitions; execution of river and harbor improvements assigned to it; and such other duties as the President or Congress may order. It collects, arranges, and preserves all correspondence, reports, memoirs, estimates, plans, drawings, such deeds and titles as relate to the Washington Aqueduct and public buildings and grounds in the District of Columbia, and models which concern or relate in any wise to the several duties above enumerated. In time of actual or threatened hostilities within the theatre of operations it has charge of the location, design, and construction of wharves, piers, landings, storehouses, hospitals, and other structures of general interest; and of the construction, maintenance, and repair of roads, ferries, bridges, and incidental structures; and of the construction, maintenance, and operation of railroads under military control, including the construction and operation of armored trains. The chief of engineers is charged under the direction of the War Department with the command of the Corps of Engineers, both staff and line, excepting such portions as are specifically detached by order of the War Department, and with the management of the Engineer Department, including the regulation of the duties of all officers, agents, and others who may be employed under his direction.

The Ordnance Department.—The chief of ordnance is charged with the duty of procuring, by purchase or manufacture, and distributing the necessary ordnance and ordnance stores for the army and the organized militia, and establishes and maintains arsenals and depots for their manufacture and safekeeping. All officers or other persons in the military establishment to whom ordnance and ordnance supplies or funds are intrusted, will make accounts and returns thereof to the chief of ordnance at the times and in the manner prescribed. Ordnance and ordnance stores include cannon and artillery vehicles and equipments; apparatus and machines for the service and maneuver of artillery; small arms, ammunition, and accoutrements; horse equipments and harness for the field artillery, and horse equipments for cavalry and for all mounted men except those in the Quartermaster Corps; tools, machinery, and materials for the ordnance service; and all property of whatever nature supplied by it.

The Signal Corps.—The chief signal officer has charge, under the direction of the Secretary of War, of all military signal duties and of books, papers, and devices connected therewith, including telegraph and telephone apparatus and the necessary meteorological instruments for use on target ranges and for other military uses; of the construction, repair, and operation of military telegraph lines and the duty of transmitting messages for the army by telegraph or otherwise, and of all other duties usually pertaining to military signaling and the operations of such corps as shall be confined to strictly military matters; of the direction of the Signal Corps of the army and the control of the officers, enlisted men, and employees attached thereto; of the supply, installation, repair, and operation of military cables, telegraph and telephone lines, and radio apparatus and stations; of the supply, repair, and operation of field telegraph trains and balloon trains; of the preparation and revision of the War Department Telegraph Code; of the supervision of such instruction in military signaling, telephony, and telegraphy as may be prescribed in orders from the War Department, except such as is used by the coast artillery in fire control and fire direction and service of submarine mines; of the procurement, preservation, and distribution of the necessary supplies for the Signal Corps and of the procurement and issue of signal equipment required in coast defense.

The staff corps and departments of the army are the great sources for technical advice and for the supply of everything needed in military operations. As a general understanding of the duties of these corps and departments is desirable to understand some future allusions, this description of them should be preserved. No technical discussion, however, other than medical, will be presented in this series of articles.

SOME MEDICAL ASPECTS OF THE WAR.*

By T. H. Goodwin, C. M. G., D. S. O.,
Colonel, Royal Army Medical Corps; Member of the British Commission to the United States.

In the beginning of August, 1914, I was in Devonshire. We received orders to mobilize; we arrived at Battini (?) at ten o'clock, August 21st, and turned in at about one the next morning. There were no signs of troops and the next morning at daybreak three officers were sent off on bicycles to get in touch with the cavalry division. In the afternoon the officers returned, bringing orders to join the division at once. The people all along the road were most hospitable. We found heavy fighting in front of us and were told to wait for orders. These were received for five o'clock the next morning. It was a pitiable sight to see women and children crying and leaving their homes. We kept in touch with the troops and by the evening we had a large number of wounded under our care. A dressing station was established at a house in the village. The whole country seemed to be one moving mass of troops. We had an average of four hours' rest a day. In the service of the field medical unit one invariable rule is that attention must be given first to patients; second, to horses; third, to men; fourth, to officers. We must always know exactly where the men are. They will lie down in any hole or corner and go to sleep, and unless we keep track of them the company will probably go off with some missing. At one place we had missed our supplies and had used up our reserve. We managed to feed the horses by taking the oats along the way. We had, however, no food for the men, and, furthermore, no prospect of getting our patients back to the rear. Presently we saw a few yards ahead a train, which proved to be one carrying refugees to Paris and the last one going south. It was a matter of minutes to pack in all of our wounded, and by some means they got to England within thirty-six hours. The young officer in charge was quite a youngster, not more than twenty-three or twenty-four years old, and had never seen service before. He certainly did extraordinarily well, proving what a young doctor with common sense, judgment, and decision can do when the occasion arises. We moved on, trying to get supplies. Coming to a station we found some trucks, which we broke into, for under such circumstances one loses all moral sense of ownership. We found a lot of sheep, cheese, oats, and hay. As a matter of fact, the town the next day fell into the hands of the enemy.

September 1, 1914, was a very hard day. At night we had to let the men sleep, and when the troopers rest the doctors must be at work all night. It did one's heart good to see the troops when the fighting commenced. They were cheery and in splendid spirits; they longed to be fighting, and never wanted to stop for rest. One felt proud to be with such men and to be of help to them. From September 6th to 14th the battle of the Marne (?) was raging. One lesson brought home to us from this battle was that the fighting qualities of the men were just as they had always been. I have been for twenty-five years in the army, and I feel that there is no man in the whole world like the British soldier with his indomitable courage, cheerfulness, patience, extraordinarily high sense of honor, loyalty, and absolutely unswerving devotion to his officers. I say the "British soldier," but you and I and the soldier all come from the same stock after all. We have the same ancestors, the same ideas, and the same traditions. The time is coming when the whole English speaking race will be proud of its kinship with the English speaking soldier.

The first gas attack occurred in April, 1915. Chlorine gas was used. We were utterly unprepared for such an onslaught, when one moonlight night a change in the wind enabled the enemy to send over clouds of this gas. Within ten minutes hundreds were dead. At dawn the trees for miles were seen to be leafless. Looking back to that time it would seem impossible that our men could hold against the enemy, yet they did magnificent work.

Of the purpose of war we may well inquire, and the question may be answered in part by the truth that things such as love and strength and the soul of man cannot be bought with a price. The love which has grown up between France and England in this war will not die with the termination of this struggle, but it will last while the memory of this war lives. I also believe that the two great English speaking nations can never, while the English language is spoken, again be separated.

I have been sent over with Mr. Balfour to ask if the United States of America will send England physicians and nurses. The answer to my appeal has been generous and prompt to a degree which I personally never thought possible. I understand that this city has occupied a very prominent position in offering its medical men. I would thank you very much indeed and ask you to believe that every man going into the Medical Reserve Corps is doing his country the greatest service in his power. May I ask that the work begun so very well may be continued without any relaxation of effort? Thousands of medical men will be required to meet the needs of the American army before and after it leaves this country. It is absolutely essential that every doctor bear his share of his country's burden. For the sake of your country, your sons and brothers going to France, see that your army has an ample supply of medical men; if there is any shortage the amount of suffering and loss of life will be appalling.

Much as our women have always merited respect and admiration, never have they been shown to greater advantage than in the last three years. The women of France and England have been simply magnificent. I believe every woman in England has borne sacrifice. I cannot tell you how much the French nation owes to its women; they have lost everything, yet they have borne this loss uncomplainingly. I am afraid that many American women will have to endure loss; perhaps not to the extent of the French and English. Yet they will bear it as have their French and English sisters, and as women have borne loss in all the years. In the lessening of this loss the largest factor will be the sending of your medical men into the army.

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*Abstract of address before a special meeting of the Philadelphia County Medical Society, July 25, 1917.

MEDICAL NOTES FROM THE FRONT.

Hysterical Functional Impotency on the Increase.—Prognosis in Fractures of the Long Bones and Joints in War Surgery.

Geneva, *July 16, 1917.*

A certain number of soldiers present functional impotency of an hysterical nature and with the progress of the war their number would seem to be on the increase. The impotency is frequently the consequence of the severe commotion or confusion from exploding mines and bursting shells in the distance, or being thrown into the air; in these circumstances the phenomena appear directly after the accident. They are not uncommon following upon the wounds of warfare and arise after a variable time of manifest meditation, this varying with the individual. The war does not appear to have greatly changed the physiognomy of the hysterical sensitivomotor phenomena. Pseudoparalyses are encountered; paraplegia, hemiplegia, brachial and aural monoplegia; contractions in the form of claw contraction and plication of the trunk; rhythmic and arrhythmic chorea; hysterical trembling; astasia abasia, etc. However, I would refer to a new phenomenon, namely, the frequent association of hysterical functional impotency and mental disturbances, particularly melancholia. The paralyses and contractions have a special characteristic of extending to a segment of a limb or to all the muscles associated in the execution of a certain movement. Cutaneous and tendinous reflexes are absolutely normal. Electrodiagnosis is invariably negative.

An association of sensory disturbances with those of the motor type is almost always encountered. There is either anesthesia or hypesthesia to both touch and pricking, ceasing distinctly at a circular line forming geometrical figures, such as a glove, sleeve, etc. This anesthesia is not absolute and disappears with a tetanizing faradic current. Deep sensory disturbances are infrequent and doubtful. Trophic disturbances of the muscles, skin, and nails are of exceptional rarity, and one must be most reserved as to their hysterical nature. On the other hand, vasomotor disturbances are very frequent and are probably due to the long immobilization of the limb. It is of utmost importance to make a correct diagnosis at the very commencement of the nervous accident, and in making it the possibility of neuroorganic associations and simulation must never be overlooked. The latter is often difficult to detect. The prognosis is in direct ratio to the accuracy of the diagnosis and the intelligence of the patient. The retraction of the tendons resulting from a long immobilization may darken the prognosis. Psychotherapy is the essential element of all treatment of a pithiatic, and as an adjuvant absolute isolation of the patient is essential. The latter acts not simply by removing the patient from heterosuggestion, but by reeducating his will, which is precisely what he lacks, and thus recovery is obtained more rapidly. The faradic current is useful from the viewpoint of suggestion, but it above all is indicated in paralyses and rather contraindicated in spasmodic states. A current from a fine tetanizing wire is employed more particularly to cause the return of superficial sensibility in hysterical anesthesia. Physical reeducation is extremely important in the treatment of a functional hysteric. It causes the defective movements to disappear and reeducates in normal motility. Such is the general outline of the treatment of sensitivomotor disturbances related to hysterotraumatism as practised in the neurological centres of the French army.

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In a general way the lesions of the soft structures and the intensity of infection in fractures of the long bones by projectiles are *a priori* very serious. The gravity of the prognosis is not the same in each case. It is known that fractures of the long bones by bursting shell are more serious than fractures from shrapnel or bullets, the latter causing the least destruction of all. Of explosive bullets and the dum dum I am unable to speak for want of sufficient data on the question. The gravity of the prognosis in fractures of the femur, tibia, humerus, and bones of the forearm should be considered separately, while joint fractures form a chapter apart and will, therefore, be considered together.

Fracture of the femur is unquestionably the most serious of all, no matter what the site of the lesion may be, and amputation is the outcome in about twenty-five per cent. of the cases, roughly speaking. This is, of course, a rather high percentage when compared to fractures of the humerus, in which the number of amputations can be conservatively placed at from four to five per cent., according to various statistics now at hand. The indications for amputation or disarticulation are derived primarily from the lesions of the soft structures rather than from the fracture *per se.* In the vast muscular mass of the thigh, a bursting shell causes enormous wounds, and as soon as infection becomes established in the large cellular spaces separating the muscles the local phenomena at once assume a special gravity. It is not always a bursting shell, but fractures from bullets may produce sufficient destruction of tissue to require amputation.

From the viewpoint of prognosis a place apart must be given to fractures of the diaphysis of the femur, and immediately after come fractures of the humerus and tibia, fractures of these bones being equally serious. It can be fairly said that, although amputation is less frequently called for, they are often complicated by serious local lesions, necessitating very active surgical treatment. I would also point out that fractures of the forearm are serious and, like the others, are frequently complicated by the inflammatory phenomena of infection. The infection may remain limited in extent. A careful examination of the question indicates that fractures of the fibula are unquestionably the least serious of all excepting when the lesion is close to the knee joint, and this brings me to the subject of joint fractures.

There is an essential difference between wounds of the hip and shoulder joints, of the elbow and knee. Wounds of the hip joint and those of the humeral articulation require immediate resection to avoid serious infection, which would result in disarticulation and even death. Drainage of the shoulder joint is easy to obtain. The elbow joint, even when the seat of suppuration, is not hard to deal with, but arthrotomy should at least be done at once in every case in which the joint is injured. The knee joint lesions, however, certainly present the gravest prognosis. In injuries to this joint there is fracture of the patella, the lower end of the femur, or upper end of the tibia, which will certainly result in a purulent arthritis if not dealt with at once by arthrotomy or subperiosteal resection.

The evolution of these purulent arthritides is somewhat special. They do not assume the clinical picture of an acute infectious arthritis usually met with in civil practice, as they are always accompanied by a general infection which manifests itself soon after the receipt of the injury. I would particularly insist upon the fact that a very free arthrotomy is not always sufficient to arrest the evolution of the infectious process. Much could be written about the bad results obtained by drainage of this joint after arthrotomy by long bilateral vertical incisions. When the joint is drained by tubes introduced into the articular cavity through these incisions, the drainage is defective, but a complete discussion of this question would require too much space. Therefore, suffice it to say that there is a particular gravity in wounds of the knee joint with fracture of the femoral or tibial epiphyses.

The prognosis of fractures of the long bones by projectiles should include the study of the complications. There are cases in which one may, for a certain time, hope to obtain a rapid cure quite like that of a simple closed fracture. The surgeon treats the case with splints or plaster casts, as there is no rise of temperature and the local lesions are not more serious than in a closed compound fracture. The small punctiform openings of entrance and exit of the bullet are not to be looked upon as contraindications to the application of a plaster cast, since they have a tendency to close at once. Nevertheless, after a variable lapse of time, the entire situation changes. More or less serious inflammatory symptoms appear and suppuration supervenes, so that the apparatus must be removed and the fracture treated on the same principles as an open infected one. Such an evolution is due to a mildly septic foreign body having been tolerated by the tissues up to the time that its elimination becomes necessary, or several bone splinters acting like foreign bodies and requiring removal. This is a point in the prognosis of fractures by projectiles which must never be lost sight of.

It is hardly necessary to mention the vascular or nervous complications, whether appearing early or late, as they are much the same as in fractures in civil practice, although much more frequent in fractures from projectiles, because the fracture is composed of multiple fragments and the numerous bone splinters may wound the walls of a vessel or cause confusion of a nerve trunk. During the formation of the callus a nerve trunk is not infrequently enclosed in fibrous tissue which develops in the area of contusion and infection, but this is hardly a complication of fractures properly speaking, but rather a complication of wounds of the soft parts which accompany or complicate a fracture of a long bone.

A really enormous number of articles have appeared on the subject of functional restitution after nerve suture since the outbreak of the war, and both surgeons and neurologists have lent their aid, greatly to the benefit of the wounded. The very nature of the nerve injury is most variable, and in the few remarks I am about to offer, contusion, compression, and partial division of nerves will be excluded, and only complete division of the mixed peripheral nerves will be considered, all of which are to be treated by surgical interference, that is, by suture. The cases which have been best observed are those of complete division of the median, ulnar, radial, and crural nerves and the sciatic and its branches. Complete division of a nerve trunk is made evident clinically by what Doctor Déjerine called the syndrome of complete interruption, which is clinically differentiated from the syndrome of dissociation resulting from incomplete division and from the syndromes of irritation and compression. The ensemble of signs which progressively indicate the return of both sensory and motor functions of a nerve forms the syndrome of restitution. The elements of this syndrome allows the approximate estimation of the extent and rapidity of restitution that may be reasonably expected after nerve suture undertaken under good conditions. This function cannot be reestablished a few days after the suture, but requires always the lapse of several months at least.

The immediate return of function after suture has been proclaimed much too lightly by some surgeons, and these pseudorestitutions are due either to mistakes in interpretation or to an insufficient examination. These errors are to be deplored from a scientific viewpoint, while their danger is at the same time manifest, because they help to explain the readiness with which some surgeons perform more or less extensive nerve resections for the treatment of incomplete nerve division. When an absolutely complete and methodical clinical examination permits of the diagnosis of recent total division of a mixed peripheral nerve trunk, suture should be attempted at the earliest possible moment, but it is hardly necessary to say that if the nerve is at the bottom of a suppurating wound, its surgical repair must be postponed until perfect asepsis of the wound has been obtained. It is always better to inform the patient that the interference is justified but that the ultimate result may be disappointing, because I have good reason to know that in fifty per cent. of cases of nerve suture the result is either nil or very poor, while the remaining fifty per cent. show either marked improvement or recovery in the strict sense of the word. Functional restitution is first made apparent by the appearance of subjective sensory phenomena, such as pain, tingling, and regressive changes in the objective anesthesias. At the same time the tonus returns to the paralyzed muscles, while the vasomotor, thermic, sudoral, and trophic disturbances progressively improve. Next motor restitution takes place; this is most important of all, since it alone affirms the complete success of the nerve suture. In a general way it may be said that the disturbances in electric reaction improve shortly after the return of voluntary motion.

Practical Points in the Examination of Recruits for Mental and Nervous Disease.—The Committee on Clinical Methods and Standardization of Examinations and Reports, a subcommittee of the Mental Hygiene War Work Committee of the National Committee for Mental Hygiene, has submitted the following report to the surgeon general of the army. This committee was authorized to organize and equip neuropsychiatric hospital units to be attached to base and other military hospitals of the government.

In detailing psychiatrists and neurologists to special duty with the armies, the surgeon general has had in mind the proper care and treatment of soldiers who become incapacitated through mental or nervous disease and the special examination of recruits in the training camps in order that those who because of neuropathic or psychopathic conditions are unfit for military duty, may be identified and discharged from service. Until the troops move abroad the chief and most important responsibility of the military psychiatrists and neurologists will be the special examination of recruits. At the request of the surgeon general, the question of those who should be excluded from the military services on account of mental and nervous disease has been carefully studied, and with the approval of the surgeon general we would suggest that the following general outline be followed in determining this matter. It is important that the potential as well as the actual conditions of the recruit be kept in mind. For this reason emphasis has been laid upon the early symptoms of disease. Likewise, attention has been called particularly to those diseases which are most likely to be met and which have not very obvious symptoms, but which, nevertheless, can be diagnosed relatively easily and with considerable certainty. It is not to be assumed that other neuropathic and psychopathic conditions when found are not cause for exclusion. Most of these, however, such as multiple neuritis, various forms of paralysis, hemiplegia, cranial nerve palsies and peripheral neuritis, have such striking symptoms that they are likely to be recognized before they come to the attention of the neurologists and psychiatrists.

Recruits to be excluded include men suffering from the following nervous diseases: On the basis of disease: 1. Tabes. Look for Argyll-Robertson pupils; absent knee and ankle jerks; ataxia of station and gait. 2. Multiple sclerosis. Look for absent abdominal reflexes; nystagmus; intention tremor. 3. Progressive muscular atrophy and syringomyelia. Look for fibrillary tremors; atrophy in the small muscles of the hand and of the muscles of the shoulder girdle; sears on forearm and fingers caused by burning, and deformities of feet. 4. Epilepsy. Look for deep scars on tongue, face, and head. Note voice. Where diagnosis depends only upon a history of epileptic attacks given by the patient, the latter should be asked to give the address of the physician who has treated him. This history must then be verified by a letter from the physician. 5. Hyperthyroidism. Look for persistent tachycardia; exophthalmos ; tremor; enlarged thyroid.

On the basis of symptoms or combination of symptoms or history: 1. Unequal pupils, irregular pupils, Argyll-Robertson pupils. 2. Nystagmus in one not an albino; absent abdominal reflexes; intention tremor. 3. Absent knee jerks associated with some one other organic neurological symptom. 4. Exaggerated tendon jerks; Babinski. 5. Disorders of station or gait. 6. Disorders of speech on test phrases; facial tremor; one other organic neurological symptom. Stammering and stuttering *per se* are not significant of an organic neurological condition. Stammerers and stutterers are rejected by regulations. 7. History of epilepsy. Ask the recruit to give the address of the physician who has attended him; this information to be verified by letter.

Men suffering from mental diseases are rejected as follows: On the basis of disease: 1. General paralysis. Look for Argyll-Robertson pupils; speech defect consisting of distortion of words; writing defect consisting of distortion of words; facial tremor in showing the teeth; euphoria, and marked discrepancies in giving facts of life. 2. Dementia præcox. Look for indifference; ideas of reference; feelings of the mind being tampered with, e. g., ideas of hypnotism; auditory hallucinations; bodily hallucinations such as electrical sensations or sexual sensations; meaningless smiles; in general, inappropriate emotional reaction and lack of connectedness in conversation. 3. Manic depressive insanity. Look for mild depressions with or without feeling of inadequacy or mild manic states with exhilaration, talkativeness, and overactivity. On the basis of symptoms or combination of symptoms or history: History of previous mental illness. Ask the recruit to state when and where he had such illness, in what hospital he was observed or treated or by what physician he was attended; this information to be verified by letter.

Another class of recruits to be excluded are those affected by psychoneuroses and psychopathic characters. Look for phobias; morbid doubts and fears; anxiety attacks; fatigue ability; hypochondriasis; compulsions; homosexuality; grotesque lying; vagabondage. In detecting chronic alcoholism, look for suffused eyes; prominent superficial bloodvessels of the nose and cheek; flabby, bloated, reddened face. Purplish discoloration of the mucous membrane of the pharynx and of the soft palate; ashen complexion and clammy skin; muscular tremor in the protruded tongue and extended fingers, noticeable when the applicant attempts to sign his name; emotionalism, prevarication, suspicion; auditory or visual hallucinations; paranoid ideas. In mental deficiency, look for defect in general information with reference to native environment: ability to learn, to reason; to calculate; to plan; to construct, to compare weights, sizes, etc.; defect in judgment, foresight, language, and output of effort; suggestibility, stigmata of degeneration; muscular incoordination. Consult psychometric findings.

Drug addiction can be detected in palor and dryness of skin; flippancy and mild exhilaration if under the influence; cowardly and cringing attitude, restlessness and anxiety if without the drug; distortion of the alæ nasi; contracted pupils in morphine addiction or dilated pupils in cocaine; dirty deposit at junction of gums and teeth; bluish and whitish needle scars on thighs and arms.

Editorial Notes and Comments

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EDITORS
CHARLES E. DE M. SAJOUS, M.D., LL.D., Sc.D.,
Philadelphia,
SMITH ELY JELLIFFE, A.M., M.D., Ph.D.,
New York

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PHYSICAL CLASSIFICATION OF RECRUITS.

Some time ago we suggested editorially that the exemption boards, in passing upon the recruits called under the national draft act, should follow the British precedent and divide them into classes in accordance with their physical qualifications. This work could have been done by the exemption boards without any additional labor, expense, or time beyond that required for clerical entries. As the work is being carried out, a conscript is either accepted for active service or rejected finally. This means that many men are rejected entirely who are quite competent to do certain classes of work in the service and that a considerable proportion of the men who are fit for the most arduous work in the trenches will have to be assigned to clerical work, garrison, or recruiting duty, or labor. In other words, it means that we are not making the best possible use of our material.

When the next draft is ordered we hope that the military authorities will have the foresight to instruct the medical examiners of the exemption boards to divide the conscripts into physical classes. From a practical point of view it would seem to us that four classes should suffice rather than the nine provided for in the British classification. In the first class would be the men physically fit for even the most arduous military duty. That means all those who are accepted under the present system. In the second class would come the men physically fit for labor. This would include, among others, those rejected because of defective eyesight, defective hearing, and color blindness. None of these physical disqualifications for active service would materially affect the usefulness of the conscript for labor. Men fit for clerical duty only would fall into the third class. This would include all those mentioned in the second class, except those in whom defects in eyesight or hearing were gross, and would also include men who are now rejected for flat feet, defective teeth, some forms of hernia, hydrocele, and hemorrhoids. Finally, the fourth class would comprise those totally rejected. Each conscript on being physically examined should receive from the exemption board a card stating the physical class to which he belongs. In calling the men to the colors the records of these boards would designate the service for which a man was fitted without additional physical examinations. The sole legitimate objection to this method would be its bearing upon the pension list, but careful records of admission would obviate this difficulty. The records would show, for instance, that the applicant for pension was suffering from a hernia when accepted, and consequently could not claim a pension on the ground that the hernia was acquired in the line of duty.

The arguments in favor of the adoption of this method are: 1. It would furnish a larger proportion of men for service than does the present system since it makes available for labor and clerical duty men who are now rejected. 2. It would give a larger proportion of men for active service at the front, since none of those physically fit for service at the front need to be detailed for labor or clerical duty as they now are. 3. The labor of physical classification would be carried on entirely by the exemption boards and therefore no additional work would be put upon the Medical Department of the Army save the formulation of the regulations for the guidance of the exemption boards. 4. The pressure now brought to detail certain men for home duty would be done away with, for no Class A man could be so detailed. No doubt, many of the men will be rejected in the final physical examination which will be held before actual enlistment. This will be the opportunity to apply the proposed method of classification.

CONCOMITANT LESIONS OF NERVE CENTRES AND MEMBRANES IN MENINGITIS.

The acute toxiinfections of the nerve centres and their membranes may give rise to diffuse or systematic disturbances and lesions. In the latter case, even when the process appears to be distinctly limited to a given point, concomitant reactions having a different site exist. The meninges and the different regions of the neuraxis are solidly united against all morbid factors. In reality, there are meningoencephalitides, meningomyelitides, and meningoradiclitides. The study of these concomitant lesions is of recent date and has been carefully worked out by Claude and Lejonne.

The examination of certain cases of meningitis in which there were signs of zona has resulted in attention to the union of these two syndromes. Margarot has been able to correlate many facts, and in order to give them a more solid basis a separate diagnosis of zona and meningitis was made in each case. The etiological, bacteriological, and clinical study of the cerebrospinal fluid was affirmative. The coexistence of these two syndromes being admitted, attempts have been made to show that it was not a simple coincidence and the resulting clinical, pathological, and etiological proofs obtained seem to affirm this point of view.

Clinically, there is a simultaneous or successive appearance of the meningeal phenomena and zona during the progress of a single acute state, while the frequency of multiple eruptions indicates the dissemination of the pathogenic elements by the meninges. Pathology offers the first explanation of the close union between the meninges and neuroaxis. It shows that zona is a syndrome related to the changes of one or several rachidian ganglia or of their homologous cranial ones. Now, according to the writings of Sicard and Cestan, the lamelloarachnoid culs de sac terminate in close proximity to the internal pole of the ganglion. The contiguity leads us to conceive with what ease the concomitant lesions are produced. The necropsies made by Tinel with a view to determining if any radicular changes took place in meningitis, reveal their reality and allow conclusions by analogy.

The causal factors giving rise to meningeal manifestations and zona are many, but in an individual case a single factor produces both syndromes, their intimate union being still more manifest in the light of the etiology. It is almost always an infection or intoxication and, according to the case, acts first on the arachnoid or the ganglion. On the other hand, this double localization of a morbid process may be primary or secondary to an antecedent affection. The causal factors are variable. Some, not all of those, of zona and meningitides, are to be found in the etiology of the double syndrome. Without being dogmatic on this point, is may be suspected that the constant presence of a lymphocytosis and the frequency of multiple eruptions favor this view.

In spite of the usual benignity of toxiinfections resulting in the association of meningeal reactions and zona, this may be explained to a great extent by the anatomical connections of the ganglion and lamelloarachnoid culs de sac, from which it may be deduced that the proper treatment is by subarachnoidal injections of antiseptic or antitoxic substances. The exhibition of electrocolloidal metals may, perhaps, give good results.

STATE SUBSIDY OF BIRTH A RECRUITING MEASURE.

"No man liveth unto himself and no man dieth unto himself." Social necessity with a truly eugenic outlook upon the present depopulation of the world asserts that likewise no man shall be born unto himself. Being born or not being born is not exclusively a personal affair nor one for parents alone. Rather, since it is an ancient truth that man cannot live unto himself, his birth must perforce be a matter of public concern, an affair for society's accounting. The world through its sharp division is being drawn still closer together than ever before. We believe that beneath the turbulent hostility these are fundamental problems even to our enemies. They too have been coming to share in a deeper and wider concern for the welfare of the greater whole and for the individual from the moment of his conception until he has been trained to fulfill his place in the common welfare of society. Do we not in fact owe much of the impetus of such a movement to them before they became our enemies?

The *Lancet*, June 23, 1917, comments upon the presentation of facts made by Professor Charles Richet before the French Academy of Medicine in regard particularly to the depopulation of France and its low birth rate for some years back. He also refers to Judge Henry Neil who came to England from the United States to present to the English people endowment for motherhood as it is already partially in practice in this country. "The war," says the *Lancet*, "is familiarizing the whole civilized world with the notion of endowing motherhood in one form or another, and more is likely to be heard of it." More should and will be heard of it, for just the reason of this advance into a truer community life. It was the herding instinct that gradually brought man out from his early isolation to make him a social being. Socializing has always cost him something—first, a curtailment of personal freedom in order to build up a more extensive liberty in safety and opportunity to pursue cultural advance. Just so, likewise, his herding brings him always a certain material cost as it will in this case of state subsidy the preservation and increase of population. This, too, however, is for the greater economic wealth of the herd since it stands for the production and training of recruits in the human army of conquest and progress to which all civilization is committed. The farsighted vision which foresees progress and enters upon it measures cost not alone in such material returns, but in the end to which such return is only the means, the way over. Within it the problem of birth rate, of conservation of infant life and of the building up also of infant population into strong citizenship, will take hold of a people as one of the most rational and natural of duties and privileges.

The world citizenship, moreover, from which, as it has been said, this war has rudely awakened us, is coming back to men in a greater measure when the war has completed its work. Therefore the problem of France's depopulation becomes ours; that of every nation merges itself into that of every other nation. All will share the incentive to a fuller and higher development which will demand recruits from the ranks of the unborn and welcome the opportunity to nurture, rear, and train them for the cause of civilization which lies ahead.

THE LETTER OF THE LAW.

A recent case in New York of a reputable practising physician now awaiting trial at Special Sessions illustrates how deviation from the strict letter of a law without regard to its spirit can result in gross injustice. The specific charge against this doctor was that for nearly two years he had failed to keep a record of the morphine which he had dispensed in his daily practice. Now if we had here one of those creatures—we hesitate to name them more exactly—who, under the guise of medical practice, dispense narcotics to any one who has the price, we should rejoice to see such a one get his deserts. But investigation into the circumstances of this particular case reveals the following facts: This doctor had been in practice for twenty-three years and was a member of his county medical society in unquestionably good standing. He treated as a daily average about twenty-two patients and wrote several thousand prescriptions in the course of a year. Furthermore the amount of morphine involved is figured out to be *one fifth of a grain a day*—one fifth of a grain a day divided among twenty-two patients! This simple statement is enough to establish the fact that this doctor could not have carried on an illegal trade in the drug. The amount of morphine he dispensed in his whole practice in three months would hardly have kept an addict supplied for one day.

Let us see exactly what heinous crime this physician committed. For a period covering nearly two years he failed to keep a record of the amount of morphine dispensed. A fault, no doubt. A man who has risen at two a. m. to help a woman pass through the Valley of the Shadow, who has then spent the day ministering to the suffering, snatching a bite to eat where and when he could, who settles down comfortably after dinner, only to be called across the city to another bedside, and who finally comes in at midnight dog tired, is hardly in the mood to make neat little entries in a memorandum book before he falls into bed. Day after day of this kind may follow, the physician always promising himself, "Some day when I have a few hours to spare I will get busy and bring my records up to date." But the few hours never come. Indeed, we have known physicians so busy that they neglect to enter charges against their poor patients, they forget to dun them, and when they are rung up in the middle of the night by these same patients, they forget the loss of time and money involved. They only remember the human body in pain.

But the law never forgets. Sooner or later it reaches out its long arm, clutches the busy doctor by the collar, and drags him into court to answer a criminal charge. Has he done anything really wrong? Has he injured any one? Has he been guilty of anything in fact but a little carelessness? Of course not, the law says, but my dignity must be preserved. A small matter, indeed, if the physician's time and energy are taken, his reputation and practice injured. Must he be dragged through the courts in company with housebreakers, thugs, and pickpockets? This physician broke the law as it is written. Is the law a wise law? In this case would it not have been sufficient for the majesty of the law to warn the doctor or to inflict a small fine? It should be enough for a practising physician merely to keep a record that on such a date he purchased a stated quantity of a habit forming drug and make an affidavit that during a stated time he dispensed this quantity in legitimate practice. Surely, if his word cannot be taken to that extent he is not fit to be practising. Moreover, if a doctor is dealing in narcotics for profit this will soon become evident to the police through their channels of information, the matter can be laid before the proper authorities and steps taken to revoke the license of the offending physician.

THE DRAFTING OF MEDICAL STUDENTS.

The Honorable Charles E. Hughes, in discussing the subject of exemption before the Conference of District Exemption Boards held at the Bar Association this week, pointed out the need for conserving the medical forces of the United States, but he also stated that under the existing law no one had authority to grant exemption to medical students. He therefore proposed that the conscription law be so amended at once as to enable the exemption boards to exempt these students. This matter has been given serious attention by many others. President Butler, of Columbia University, and Dr. S. S. Goldwater, chairman of the Committee on Hospitals of the Mayor's Committee of Defense, have been particularly active in the effort to procure exemption for the medical students.

The Provost Marshal General says that the statement that fifty per cent. of all medical students are in the first or second draft is erroneous. "Out of the 12,000,000 men of draft age the present call is sent only to 700,000, or one fourteenth. Therefore only one fourteenth, or thereabouts, of medical students can be taken on the present draft. This office realizes the danger that would ensue if the facts were as you suppose, but I do not think the members of the American Medical Association are fully acquainted with the precise operation of the law. They have been publishing the above figures, giving quite an exaggerated impression of the extent to which the medical profession might be reduced for the sake of fighting the war."

The facts indicate that while the Provost General's statement that only one fourteenth of those liable to duty will be called may apply in a general way to the twelve million men of draft age, they do not apply to the medical students, for they are almost without exception men in perfect health, they are citizens with but very few exceptions, and they are unmarried and can make no claim for exemption on account of occupation. Consequently the more important claims for exemption are not operative in the case of the medical student. There are 114 students in the class of 1918 in the College of Physicians and Surgeons of Columbia University. One hundred and nine of these are of military age and thirty-five members of that class had already been called to the service up to August 16th. In the class of 1919 there are 117 students, 103 eligibles with twenty-five called up to August 16th.

As pointed out by Doctor Goldwater in a letter to the Provost Marshal General, the efficiency of the army no less than the comfort and safety of the civilian population is seriously endangered if conditions at this school are typical of those in similar institutions. It takes only six months to make a soldier but it takes at least four years to make a doctor. Canada has sent 171,000 men to the front and has had 190,000 casualties, showing that many of these men have been wounded, repaired by their surgeons, and returned to the front. The plea for the exemption of the medical student is therefore based mainly upon the need of medical men in the army. A study of affairs in England and France confirms the wisdom of the move to exempt medical students. The first aid asked for by our allies and sent by us was a supply of medical men. If we are to furnish the doctors for our allies as well as for our own military forces and civilian population, it is imperative that the sources of supply for the near future be conserved and that all regularly matriculated medical students shall be exempt from service in the ranks.

The hospitals of this city are already seriously embarrassed by the operation of the draft on the interns and of the entry of the members of the visiting staff into the Medical Officers' Reserve Corps. Twenty-one of the hospitals of New York have 240 interns. Of these 186 are subject to draft and ninety have already been drafted, while 157 members of the visiting staffs of these twenty-one hospitals have joined the Medical Officers' Reserve Corps. These figures furnish conclusive evidence of the need for exempting not only medical students but physicians from the draft, unless indeed the physicians drawn are transferred to the Medical Corps of the army. It would certainly be a cruel waste of valuable material to take these ninety interns with all the knowledge and skill which they have acquired in years of study and hospital work and put them into the trenches with a gun and a shovel while our own army as well as the armies of our allies are in such crying need of medical officers. The surgeon general has been instructed by the Secretary of War to investigate and report on the draft returns from the ninety-seven medical colleges which admit men students, and we feel confident that steps will then be taken to prevent the drafting of either medical students or medical graduates for service in the ranks.

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News Items

Red Cross Army Titles for Foreign Use Only.—The War Department has authorized the bestowal of certain military ranks and titles on representatives of the Red Cross when they have occasion to go into foreign theatres of war. The department explains that this has been rendered necessary by the abnormal conditions existing in Europe, but a notice has been issued that these titles may not be used except in the European war zone and will carry no pay. Moreover the titles and the rights and privileges conferred will expire immediately on the bearer leaving the war zone or resigning from the Red Cross.

Public Health and Food Administration.—An advisory committee on public health has been appointed to aid the conservation division of the United States Food Administration. It is composed of the following members: Dr. W. H. Welch, chairman; Dr. Leonard P. Ayer, Prof. Herman Biggs, Dr. D. L. Edsall, Dr. Cary T. Grayson, Dr. A. W. Hewlett, Dr. T. C. Janeway, Dr. F. G. Novy, Dr. R. M. Pearce, and Dr. H. Gideon Wells.

To Rid Military Camps of Malaria.—The war council of the American Red Cross has appropriated $10,000 for the eradication of malaria from the Columbia, S. C., cantonment and its immediate vicinity. The Red Cross representatives are working in close cooperation with the South Carolina Board of Health and with the Public Health Service. Around the Columbia cantonment will be created a one mile zone free from the only species of mosquito guilty as a carrier of malaria. The war against the malaria carrying mosquito will be carried on at all the army training camps.

American Public Health Association.—A special war meeting of this association will be held in Washington, D. C., October 17th to 20th, under the presidency of Dr. William A. Evans, of Chicago. This will take the place of the annual meeting which was to have been held in New Orleans, La., in December. The papers and discussions will deal largely with health problems created by the war, such as the food supply, communicable diseases among soldiers, war and venereal disease, war and the health of the civilian population, etc. Preliminary programs will be mailed to members of the association about September 15th; nonmembers may obtain them by writing to The American Public Health Association, 128 Massachusetts Avenue, Boston, Mass.

Personal.—Dr. Charles V. Chapin, of the Providence, R. I., Board of Health, has been made a member of the research committee appointed by Brown University to cooperate with the National Research Council in preparing a national census of research work in the United States.

Dr. E. G. Birge, of Jacksonville, Fla., has resigned as director of the State bacteriological laboratory. Dr. Burdett L. Ames, of Montgomery, chief bacteriologist of the Alabama State Board of Health, has been appointed his successor.

Dr. Edward S. Godfrey, Jr., of Chicago, has accepted a position in the sanitary department of the New York State Department of Health. Doctor Godfrey was formerly director of the bureau of communicable diseases of the Illinois State Board of Health.

Dr. Alonzo E. Taylor, professor of physiological chemistry in the University of Pennsylvania, will visit the training camps for medical officers and deliver a series of lectures on food values, food needs, and the preparation and conservation of food. Doctor Taylor is a member of the advisory committee on food utilization of the United States Food Administration.

Intensive Training in Oral Surgery for Army Surgeons.—Surgeon General Gorgas, of the United States Army, has outlined an intensive course in oral surgery for military surgeons, as follows: Dissection of the face and the oral neck, nasal, and orbital cavities. Sepsis: Treatment of sepsis in and about the mouth and floor; necrosis of the jaw bones. Drainage: Special points in the drainage of the fat tissues, accessory sinuses, floor of the mouth, and neck. Fractures: Principles of fixation in the treatment of fractures of the maxilla and mandible; splints and orthodontic appliances. Wiring of the teeth, Gilmer band splint, Gunning splint, Kinglesly splint, swedged splint, fixative bars, etc. Drainage in feeding of patients. Deformities: Bony defects—treatment of bony defects—Prosthetic—Martens splint, obturators, dentures. Operative—Bone flaps, bone transplants. Malunion of fractures—Resection of the bones, correction by orthodontic appliances. Deformities due to scar contraction and absence of tissue. Operative release and repair. Making of flaps from the forehead, cheek, neck, chest, and arm. Repair of defects in mucous membrane of the mouth by skin flaps. Correction by orthodontic appliances. Approach to the temporomandibular joints. Salivary fistulas. Local and intratracheal anesthesia.

Hospitals Protest against Drafting Medical Students and Hospital Interns.—At a meeting of the Mayor's Committee on Hospital and Medical Facilities held at City Hall, New York, on August 15, 1917, the following resolution was unanimously adopted:

Resolved, That the Mayor's Committee on Hospital and Medical Facilities call the attention of the Secretary of War to the serious consequences to the civilian population of the country and to the maintenance and operation of the hospitals, of the inclusion of medical students and hospital interns under the act for selective service, and be it further

Resolved, That the chairman be directed to lay the views of this committee before the proper officials of the Government and the district boards of the State of New York and to take the necessary steps to bring about the temporary exemption of these students and interns in order to secure a constant supply of medical men to the army throughout the war and to prevent the embarrassment of hospitals and the consequent serious results to the population of the United States.

The following named hospitals were represented at the meeting: New York, Presbyterian, Manhattan Eye, Ear, and Throat, Lebanon, Mt. Sinai, Brooklyn Jewish, Long Island College, Brooklyn, French, Italian, Columbia University, Roosevelt, St. Luke's, Post Graduate, Swedish, St. Francis, Lincoln, German Hospital of Brooklyn, Columbus, Staten Island, Polyclinic, New York Orthopedic, Hospital for Deformities and Joint Diseases, Metropolitan, Kings County, Bellevue, City, Willard Parker, Kingston Avenue, Riverside, Montefiore, and the United States Naval Hospital.

Military Orthopedics.—Surgeon General Gorgas, of the United States Army, has announced the formation of a new department of military orthopedics for service in France. Major Elliott G. Brackett, M. R. C., has been appointed Director of Military Orthopedics. While the work will be under his authority, so much special organization will be required that the office of Director of Military Orthopedics for the Expeditionary Forces has been created and Major Joel E. Goldthwait, M. R. C., has been appointed to fill that position. Associated with him as assistant directors, Major Robert B. Osgood, now with United States Base Hospital No. 5, and Captain Nathaniel Allison, now with United States Base Hospital No. 21, will be transferred from their present posts to this department. Major Osgood will be temporarily assigned to report to Colonel Robert Jones, the Director of Military Orthopedics for the British Forces, for the study of details of organization and methods of treatment, and Captain Allison will be temporarily assigned to similar duty with the French and Italian forces. For the assistance of the directors an Advisory Orthopedic Board has been created and is now made up as follows: Dr. Robert W. Lovett, Boston; Dr. Albert H. Freiburg, Cincinnati; Dr. G. Gwillym Davis, Philadelphia; Dr. F. H. Alber, New York, and Dr. John L. Porter, Chicago.

Social Hygiene for Soldiers.—Surgeon General Gorgas has organized a section on social hygiene in the medical department of the United States Army which will devote its efforts to the prevention and treatment of venereal diseases within the area of the military encampments. One officer of this section will have charge of the laboratory investigations, one of the medical work, and one of the educational and environmental measures and of the sociological studies. These officers will, of course, have the active cooperation of the sanitary officers of the several camps. The United States Public Health Service will cooperate with the local civil authorities and the Red Cross workers in looking after the health of the territory surrounding the camps, while the commission on training camp activities will aid in the enforcement of the laws intended to eliminate prostitution from the cantonment areas and will provide entertainments in moral surroundings calculated to prevent the soldiers from seeking it in immoral surroundings. The complicated interlocking of military and civil interests in the protection of soldiers and civilians from vice and disease affords an opportunity for many useful activities of volunteer agencies. This is particularly true in the field of social hygiene. In the interest of efficiency and avoidance of confusion and duplication of effort a small number of such agencies have been recognized as clearing houses for military-civil work of a very large number of organizations in their respective fields.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

THE USE OF INEXPENSIVE DRUGS IN PRACTICE.

By Louis T. de M. Sajous, B. S., M. D.,
Philadelphia.

(*Concluded from page 328.*)

That sodium nitrite, the least expensive drug of the nitrite group, presents several advantages over such other agents as nitroglycerin and erythrol tetranitrate in high blood pressure and other conditions sometimes dealt with by continuous nitrite treatment, was suggested in preceding installments. The relative advantages of amyl nitrite and nitroglycerin in emergency conditions requiring more prompt vascular relaxation were also discussed. There remains to be considered the status in this group of the spirit of nitrous ether.

This preparation is, as already pointed out, in the official dose of thirty minims, about five times as expensive as nitroglycerin in the ordinary dose and six times as expensive as sodium nitrite. Are its special virtues such as frequently to warrant the greater expense its employment thus entails? Each thirty minim dose of the spirit of nitrous ether of the U. S. Pharmacopœia contains 1.2 minims of the active nitrite. Assuming that the pharmacological activity of ethyl nitrite is roughly the same as that of the chemically similar amyl nitrite, the nitrite action of the average dose of spirit of nitrous ether cannot be very marked, and if a nitrite action is desired equal to that of the official dose of nitroglycerin or sodium nitrite, the amount would have to be considerably increased, with a corresponding increase in the relative cost. A certain amount of alcohol present in the preparation in a concentration not far from that of official alcohol is ingested. Thirty minims of alcohol, while equivalent only to about one half the minimum therapeutic dose, may exert a slight effect in the action of the nitrite on the walls of the vessels, especially those of the skin. On the other hand, it seems probable that any relaxation which the nitrite may induce in the splanchnic vessels will be in part counteracted by the customary vasoconstrictor action of small doses of alcohol. The net result of the combined action of the two remedies is thus a dilatation of the skin vessels, with some shifting of the blood from the splanchnic to the cutaneous distribution. Hence the special reputation of spirit of nitrous ether as a diaphoretic. While some have believed the preparation to be inactive in this respect, evidence seems to controvert this view, at least where a full dose, such as one dram, is used. Its action is, of course, enhanced by warm covering of the patient and the drinking of hot lemonade, but this is true as well of other recognized diaphoretics.

The sudorific effect of spirit of nitrous ether is concerned in its use in the early stage of febrile conditions, when the skin is hot and dry, the relaxation of the cutaneous vessels leading to increased heat dissipation and a tendency toward reduction in temperature. Elimination of toxic and waste materials with the sweat is doubtless slightly increased, a result likewise favored by any stimulating effect the drug may exert on the kidneys. The superficial vasodilator property has also been considered serviceable in colds, the aim being to equalize the distribution of blood and decongest the affected areas. The diuretic effect is in some degree due to the alcohol. While this effect has, in common with the diaphoretic effect, been questioned by a few, clinicians as a whole seem disposed to continue to give it credence, especially in pediatric therapeutics. Thus, according to Henry Jackson, 1912, spirit of nitrous ether serves a useful purpose as diuretic and antipyretic in bronchopneumonia in children. None of the clinical evidence, however, need prevent us from agreeing with Sollmann that as a diaphoretic and diuretic the preparation is "not very energetic." The diuretic effect, in particular, may be characterized as inconstant, its occurrence depending in part upon the relative action of the remedy on the renal vessels and on the blood pressure in the remainder of the vascular system.

Apart from the action of spirit of nitrous ether on the superficial vessels, clinical opinions are not wanting as to its action in high pressure states. While the actual effect on the blood pressure does not lend itself to definite sphygmomanometric investigations, the remedy is accorded by some a distinct place in high pressure therapeutics. Bastedo, 1913, believes that spirit of nitrous ether may be of use in overcoming the tendency to raised blood pressure in fever. Vaquez, 1908, the well known French clinician, regards it as a general circulatory sedative and prefers it for continuous use in chronic hypertension, reserving the other members of the group for emergencies. He advocates its persistent use in small doses in these cases, evidently having confidence in its capacity to afford continuous benefit. According to Lawrence, 1912, the output of urine and of the solids it contains is, as a rule, and sometimes to a considerable degree, increased by nitrites in patients with a very high blood pressure.

On the whole, it seems evident that, because of its relatively feeble action, and especially by virtue of its content of alcohol, which probably favors its diaphoretic and diuretic effects, spirit of nitrous ether presents therapeutic indications sufficiently distinct and separate from those of the less expensive remedies of the nitrite group, nitroglycerin and sodium nitrite, to remove the occasion for substitution of these remedies for it on economic grounds. Probably justifiable, however, would be the substitution of a simple mixture of nitroglycerin and alcohol, the latter in the amount actually present in spirit of nitrous ether, and the former in a dose so diminished as to reproduce the feeble nitrite activity of the spirit, e. g., 0.25 minim of nitroglycerin to every thirty minims of undiluted alcohol.

Treatment of the Diatheses in Children.—J. Epstein (*Medical Record,* June 30, 1917) describes a general constitutional diathesis characterized by general bodily weakness or universal asthenia. To correct this general diathesis the child's entire life should be rearranged; he should be removed to the country, and his diet and general hygiene improved with tonics such as codliver oil, iron, arsenic, and strychnine. Metabolic diathesis is shown by a nontolerance for protein, fat, or carbohydrate, and its treatment is mainly dietetic. The hemorrhagic diathesis is best treated by transfusion of blood when there is actual hemorrhage; when a child is suspected of being a bleeder a course of calcium lactate and an injection of blood serum should be given before any operation such those on tonsils or adenoids is performed. Scurvy which belongs to this diathesis must be given appropriate treatment. The lymphatic diathesis or status lymphaticus is a general hyperplasia of the lymphatic system for which there is no specific treatment although a dry equable climate and good hygiene with Fowler's solution and iodide of iron may be of service. Enlarged thymus may be benefited by the x ray. The exudative diathesis consists of abnormality of the skin, mucous membranes, lymph glands, and general nutrition with a tendency to eczema, urticaria, bronchitis, and asthma. It is probably a result of overfeeding and autointoxication, and is treated by restriction of diet especially of sugars and fats. Other diatheses are the nervous, or spasmophile, and the endocrine.

Diabetes Mellitus.—H. P. Greeley (*Journal A. M. A.,* June 9, 1917) says that the subsequent education of the patient in keeping sugar free is more important now than ridding him of his sugar and acidosis, since this can be so easily accomplished by the fasting treatment. The education of the patient can best be accomplished by having him and a member of his family spend several weeks in an institution where they learn the examination of the urine, the preparation of foods, and the methods of controlling the diet to keep the urine free from sugar. Here, as well as in classes, they are encouraged by seeing the hopeful progress of their fellow sufferers. It is not sufficient merely to devote the attention to the control of the diet, but it is necessary to go carefully into the patient's home and business environment and his habits of life and temperament. These should all then be regulated to avoid all forms of worry, strain, and fatigue, and to secure a sufficient amount of healthful exercise shortly after each meal and before retiring for the night. The patients should be taught the advantage of reduction in weight to a level fifteen to twenty pounds below the proper average for their stature. The carbohydrate tolerance should be carefully determined and checked from time to time and the full diet ultimately allowed should contain not over eighty per cent. of the patient's tolerance. The use of white bread should be denied to all patients whose tolerance is less than fifty grams of carbohydrate and the commercial gluten flours should not be countenanced at all, as they are usually gross frauds and contain about forty per cent. of starch. It is quite as important to adjust the protein and fat intake as well as the amount of the total diet as it is to limit the carbohydrate, and the keynote of success is underfeeding. The diet must be carefully balanced in all of its constituents to meet the individual needs of the patient, and individualization in treatment is absolutely necessary for success. Previous treatment of diabetes by the usual older methods renders it more difficult to control the patient and makes the prognosis less favorable than it is in cases coming under care for the first time. The longer the duration of hospital care the longer will be the average period of freedom from glycosuria after discharge. Similarly, the ultimate results of treatment will vary directly with the intelligence of the patient.

Salvarsan and Intramine.—J. E. R. McDonagh (*Lancet,* June 16, 1917) contends that the arsenic in salvarsan does not kill the parasites of syphilis directly, but only by virtue of its oxidizing action on the protein particles in the serum, an action common to all metals. Other metals less toxic than arsenic can be used and colloidal mercury, as now prepared, is about three times as active as salvarsan against blood parasites. From five to fifteen mils of a one per cent. solution can be given intravenously at a single dose. Combined with this the treatment should include injections of intramine, a sulphur reducing body, which should be preceded or accompanied by an injection of colloidal iodine to fix the mercaptan group caused by the breaking down of the intramine and thus to enhance its action. This combined treatment by alternating oxidizing and reducing agents gives results better than those obtained from the use of salvarsan in syphilis and can be completed in about two weeks, nine injections being given intravenously in that period. The intramine should be given intramuscularly, though an intravenous form of this new drug is now available. None of the drugs directly destroys the spirochetes.

Treatment of Neuritis.—Harrington Saintsbury (*Lancet,* June 16, 1917) gives the following treatment originated by Dr. Hugh Wingfield as one which is extremely simple and most satisfactory in the majority of cases, especially those of sciatica. The treatment consists in first carefully mapping out the tender spots along the nerve involved, as well as its entire course. Then a pledget of cotton is firmly compressed into a ball about the size the knuckle of the middle finger and saturated with half to one dram of pure concentrated hydrochloric acid. After the application of vaseline the ball is grasped in the fingers, and a strip about one and one half inches wide is painted with the acid along the entire course of the nerve. The immediate response is usually no more than a slight smarting, though at times it is more marked; this passes off in a few minutes. The treatment may be repeated twice a week if necessary; the acid does not burn or corrode the skin. In a few cases it may be followed by a papular rash and the application should then not be repeated until this has disappeared. The treatment should be continued so long as the local pain and tenderness persist, but it will usually cure even the very obstinate cases in a comparatively few applications. The *modus operandi* of the treatment is not understood.

Luargol in the Treatment of Malaria.—J. Montpellier (*Paris médical,* June 9, 1917), in view of excellent results obtained with Danysz's "102" in syphilis, was led to try the same remedy in malarial cases. No local or general reaction followed the intravenous injections given. The doses were 0.05, 0.1, and 0.15 gram, repeated on five to seven consecutive days. The first injection was usually given during a paroxysm. In a cachectic patient with ascites, edema of the ankles, marked splenomegaly, and hepatic insufficiency, luargol was, as usual, well borne and brought about considerable improvement. In seven of the ten cases in which the remedy was tried, Plasmodium vivax was the infecting organism. It rapidly disappeared from the circulating blood. In the three cases exhibiting instead the Laverania malariæ, the crescents persisted after the treatment. In one of these, however, luargol brought the temperature to normal, after quinine in alternation with hectine had failed to arrest the paroxysms. While apparently luargol has a special influence on the vivax parasite, Montpellier is unable to vouch for its ability permanently to remove this organism, the cases not yet having been sufficiently long under observation. A very pronounced stimulating effect on the general condition of the patients was, however, noticed. The red cell count rose by one half to one million in two weeks to a month, and the hemoglobin meanwhile by five to eighteen per cent. Luargol is therefore held to be a powerful new weapon against the disease.

Colored Glass as a Means of Eliminating the House Fly.—C. Galaine and C. Houlbert (*Journal de médecine de Paris,* May, 1917) have been able to show that the eyes of the house fly perceive satisfactorily only white light, the simple colors of the spectrum having practically no effect, especially violet, red, blue, and green. The last two, while slightly perceived, exert a repellent effect on the insect. Yellow and orange are the most clearly perceived of the spectral colors. Into a room with a single window fitted with light blue panes, many flies were attracted through the open window by means of odoriferous substances. One pane had been hinged so as to admit white light at will. Upon closing the window the flies were observed to become at first somewhat restless and soon after to settle down as in darkness. When a beam of white light was admitted through the movable pane, they promptly escaped from the room through the white light. Green panes gave the same results. With yellow panes, not quite as many left the room when the white light was admitted. Thus, in rooms or halls lighted from one side only, as is often the case in hospitals, private dwellings, factories, shops, etc., flies can be got rid of by using blue panes, hinged at intervals. Flies will not enter such premises; any that have entered while the windows have been open will either come to rest or quickly escape through the movable pane when the windows are closed. In rooms lighted from more than one side, the blue windows should be opened on only one side at a time. Flies observing the blue light within will not enter, or will soon turn back and out again. Blue windows are also advantageous in keeping out heat rays in the warm season. As they cut down the light somewhat, a mixture of blue with green, yellow, and even red panes, arranged in mosaic form if desired, is to be preferred. Such a mixture will give results practically identical with those from exclusively blue panes. To increase the efficacy of the outlet panes in a badly lighted room, a convex mirror should be so placed outside as to throw into the room a divergent pencil of white light: the flies, as they enter this pencil, are aspirated, as it were, to the outside. In food stores, restaurants, confectionery and fruit shops, etc., all exposed foods should be kept under blue glass.

The Established Value of Radium.—W. H. B. Aikins (*Canadian Practitioner and Review,* June, 1917) reviews the present status of radium as an established therapeutic agent. It is a valuable analgesic in cutaneous irritation, pruritus, neuritis, and neuralgia. It has a wide field of usefulness in the realm of skin disease. In cutaneous cancer, especially rodent ulcer and epitheliomas, it is unsurpassed by any other means of treatment. Cancer of the mucosa of the pharynx, larynx, and buccal cavity is not easily influenced by it, and the same is true of carcinoma of the breast, except as a prophylactic after operation. Good results follow its use in cancer of the bladder and prostate, and even better in cancer of the uterus. Lymphosarcoma yields to its use in a fair proportion of cases. Several nonmalignant affections are cured or greatly benefited by radium. These include warts, nevi, keloids, lupus, papillomas, psoriasis, adenitis, various forms of uterine hemorrhage, and uterine fibroids. It is also of value in stimulating the repair of indolent wounds and aids the tissues in overcoming local infection. Failures from its use in appropriate conditions are usually due to the use of insufficient quantities or to the lack of experience on the part of the one applying it.

Peritoneal Disinfection by Means of Alcohol.—I. Tansini (*Presse médicale,* June 7, 1917) attributes to alcohol a high degree of antiseptic and bactericidal power in relation to the peritoneum, which bears free application of alcohol very well. In a difficult anastomosis of the ileum after resection for tuberculous stenosis, fetid material escaped from a greatly distended portion of gut, notwithstanding careful precautions, and soiled a large area of intestine. After the suturing, the entire contaminated, dark yellow surface was washed with alcohol on pledgets of cotton, including the suture lines, and the abdominal wound closed. There was no postoperative rise in temperature and the patient was discharged cured in a month. In a somewhat similar case in which malodorous material unavoidably contaminated about 240 square centimetres of intestinal surface during a removal of the cecum and part of the ascending colon for tuberculoma, washing with alcohol was again followed by uneventful recovery, the temperature not exceeding 38.1° C. after the operation. Since his experience with these two cases in 1911, Tansini has regularly and exclusively employed alcohol for peritoneal disinfection, especially in operations on the gastrointestinal, including the rectum, whenever the intestinal contents have soiled the peritoneal surface. Perfect results have uniformly attended the procedure.

Radium Applicator for the Throat.—C. W. Hanford (*Journal A. M. A.*, June 23, 1917) recommends for the radium treatment of tonsil and soft palate lesions the use of a rubber dental plate made to fit the upper jaw. To the back edge of this is fixed a one millimetre silver wire, five centimetres in length. The radium in a tube, properly screened, is applied by winding the wire about the tube and drawing a rubber finger cot over the wound tube. By bending the wire the tube can be placed and held in any desired position. Sprinkling a little gum on the plate serves to secure its retention.

Duodenal Alimentation in Dyspepsia Following Gastroenterostomy.—Max Einhorn (*Medical Record*, June 16, 1917) states that the new train of symptoms which sometimes follow gastroenterostomy are usually caused by peptic ulcers in the stomach or bowel in the vicinity of the new stoma, or adhesions. These disturbances ordinarily are relieved by a liquid diet, large doses of bismuth, and gastric lavage, but when these measures fail, duodenal or jejunal alimentation will be found to be of great benefit. In ten such cases eight were so much improved that no further treatment was necessary; the other two had to have a secondary operation.

Drainage of Septic Knee Joints.—W. A. Carline (*British Medical Journal*, March 3, 1917) advocates the drainage and lavage of early cases of septic infection of the knee joint. Tubes can be passed through the joint on the inner side without lying between the articular surfaces. With all openings of the tubes clamped except one, a solution of phenol of one to twenty strength is injected until the joint is distended. The tubes are then opened and the fluid allowed to escape. The process is repeated until the injected fluid returns clear. Many patients can thus be cured with mobile joints, while others will recover with more or less stiffening, much of which can be removed by chlorine ionization. A saturated solution of magnesium sulphate may be used instead of the phenol.

Abortive Treatment of Typhoid Fever.—A. Mauté (*Presse médicale*, June 21, 1917) expresses doubts as to the specificity of antityphoid vaccine, given intravenously for curative purposes, since similar reactions can be provoked by colon bacillus injections and various proteins. In view of the severe circulatory depression which sometimes follows intravenous typhoid vaccine injections, he deems such treatment inadvisable, in spite of the brilliant results reported in a number of cases. Planning to excite a maximum humoral stimulation with the least possible secondary toxic effects, he was finally led to administer intravenous injections of an emulsion of a saphrophytic, motile organism derived from spring water, highly resistant to heat, and devoid of toxicity when injected in laboratory animals. The doses used ranged from 100 to 500 million organisms, sterilized with 0.5 per cent. phenol and given either in isotonic saline or thirty per cent. glucose solution. Twenty-two cases of typhoid and one case of paratyphoid A were thus treated. All recovered but one, in which the autopsy showed purulent peritonitis, due to perforating cholecystitis, established before admission to the hospital. In nineteen of the twenty-three cases the temperature dropped to or below normal within twenty-four hours after the first injection, and remained normal thereafter in twelve. In the others the second, and exceptionally the third, injection brought the temperature permanently to normal. Even more striking than the temperature effects were those on the symptoms and general condition. Usually in three days after the first injection the patient was asking for food. No relapses occurred. No other treatment was given save heart stimulants, including adrenalin. The general reactions following the injections were far less than those noted after intravenous typhoid vaccine or colloidal gold injections.

Phlyctenular Ophthalmia.—Michael Goldenburg (*Journal A. M. A.*, July 14, 1917) contends that there is no convincing evidence for the belief that this condition is a local manifestation of tuberculosis. In fact there is considerable evidence in the form of negative therapeutic results against such a view. In seeking an explanation of the origin of the affection all of the local antiseptics and mydriatics of value were tried in turn and singly, and it was found that atropine was the only one which gave any beneficial results. Acting on the theory that the ultimate cause of the condition might be referable to intestinal putrefaction the various reputed intestinal antiseptics were tried in turn and singly, and it was found that calomel alone was capable of favorably influencing the course of the disease. Further study pointed to the probability of the condition being associated with the excessive use of carbohydrates, and a series of cases were treated by dietary regulation alone with results even better than those obtained from either atropine or calomel or the two combined. On this basis the routine treatment of sharp restriction of carbohydrate, topical application of atropine, and its internal administration to control the vagotonia has given gratifying results.

Treatment of Varicocele by Excision.—Philip Turner (*Lancet*, May 19, 1917) emphasizes the fact that the usual operation for the removal of varicocele fails to meet certain important requirements. It is prone to be followed by painful inflammatory thickening between the divided ends of the venous plexus; adhesions may form; suppuration may result secondarily, and the testicle is poorly and unnaturally supported. The following simple operation avoids all of these disadvantages and gives the most satisfactory results: After exposing the cord a small longitudinal incision is made through the fascial coverings of the cord over the front of the venous plexus. The fascial sheath is then separated by blunt dissection from the veins until the attachment between it and the cord is reached posteriorly. The anterior three quarters of the venous plexus containing all of the dilated veins is then separated from the vas and remaining veins and this separation is extended in both directions as far as desired. The mass of veins is ligated at each end and cut away, the ends of the ligatures being cut short. The testicle is then returned to the scrotum and supported by transverse suture of the longitudinal incision made in the fascial sheath. The wound is then closed in the usual manner.

Miscellany from Home and Foreign Journals

Obsolete Miliary Tubercles of the Spleen.—Oskar Klotz (*American Journal of the Medical Sciences*, June, 1917) found tuberculosis in 172 cases in a series of 404 autopsies. The spleen was involved sixty-nine times, and in forty of these miliary lesions were completely or almost completely healed by fibrosis. The average age was forty-two, the youngest eighteen years. Six of the cases showed a persistent tuberculosis in other organs. In fifteen the liver also contained healed miliary tubercles. In none of these cases had there been recognizable clinical manifestations of splenic involvement. The spleen was not enlarged. In twelve cases with healed miliary tubercles of the spleen no other tuberculous process was found.

The splenic infection was a hematogenous one, arising most commonly from antecedent foci in the lungs or peribronchial glands. Those cases in which no primary tuberculous focus was found probably had a similar mode of origin in which the initial focus was of minor extent unrecognizable at the time of the autopsy. The healed splenic tubercles are to be recognized only by careful search and complete gross sectioning of the tissues of the organ. The presence of the healed miliary tubercles of the spleen indicates the frequency of a tuberculous bacteriemia from which the tissues may recover entirely. The different organs demonstrate a variable resistance to the tuberculous infection. Reinfection may take place in the spleen.

Influence of Renal Function on Hyperglycemia and Glycosuria in Diabetes Mellitus.—Albert A. Epstein (*American Journal of the Medical Sciences*, July, 1917) says that a condition stimulating renal diabetes, a glycosuria without hyperglycemia, may occur in diabetes mellitus. In order to prove the existence of a true renal diabetes it is necessary to show that the total sugar content of the blood is not increased above normal. Hyperglycemia without glycosuria is of frequent occurrence in diabetes mellitus. This indicates an altered state of carbohydrate metabolism in which a balance is established between the supply of sugar to the blood and its utilization by the tissues on a higher plane than that found normally, which is interpreted as a condition of increased tolerance of the kidneys for sugar and not that of a lessened permeability. Renal disease need not interfere with the elimination of sugar. The cessation of glycosuria in diabetes mellitus when a nephritis supervenes is not necessarily the result of the kidney affection. Increased tolerance of the kidney for sugar may exist when a nephritis develops. The two conditions may be synchronous. Lessened permeability of the kidneys leads to the progressive accumulation of sugar in the blood and the diminishing or disappearance of the glycosuria. This portends the approach of coma and appears to be due to a circulatory disturbance of the kidneys associated with a general cardiovascular asthenia. The administration of appropriate medication may overcome the disorder, when improvement manifests itself by the reappearance of the glycosuria and a fall in the hyperglycemia. The development of an anasarca may cause a fall in the blood sugar content and thus conceal the retention of sugar by the abstraction of the latter from the blood by the edema fluid. The subsidence of the anasarca causes a return of the hyperglycemia. Testing the kidney function by means of phenolsulphonephthalein is a useful procedure in diabetes mellitus. It aids in understanding the relation of the hyperglycemia to the glycosuria and is particularly helpful in those cases in which a fall in the urinary sugar is associated with a rise in the blood sugar.

Visceral Findings in One Hundred Syphilitics.—Tasker Howard (*American Journal of the Medical Sciences*, July, 1917) maintains that visceral syphilis is at least as common and much more serious than cutaneous syphilis, which has been given the greater amount of attention. The manifestations of visceral syphilis are detectable in the early stages of the disease in a large proportion of the cases, and are about as readily controlled by proper treatment as are the visible signs of the disease. In view of the extreme seriousness of the later stages of visceral syphilis it is important that the treatment be pushed energetically from the start. Furthermore, it is important that every patient with syphilis be carefully watched for signs of visceral involvement indicating treatment in addition to the ordinary antisyphilitic measures. A dilating heart in early syphilis indicates rest just as clearly as though it were due to rheumatic carditis, and the neglect of this precaution may leave the patient with a weak heart even though he be lucky enough to be cured of his syphilis. Cardiac dilatation of several weeks' duration sometimes occurs after the administration of salvarsan.

Diagnosis of Early Pulmonary Tuberculosis.—James I. Johnston (*American Journal of the Medical Sciences*, July, 1917) urges that the recognition of early pulmonary tuberculosis belongs to the physician in general practice and the internist, rather than to the specialist. Active tuberculosis is the only form that concerns the clinician or is of import to the patient. Early pulmonary tuberculosis cannot be diagnosed positively at one séance; when tuberculosis can be positively diagnosed at the first examination the case is one of established pathology and probable permanent damage. A definite knowledge of tuberculous association is of far more significance than one of diseased ancestry. The chief complaint is apt to be of some condition remote from the seat of pathology. Epigastric pain, fatigue, loss of weight, palpitation, flushing, malaise, as well as the common complaints of cough, fever, asthenia, or expectoration, are among those offered. A period of diagnostic study is necessary; suspicious cases should, if possible, be worked out to a confirmation by all available means. The diagnosis is difficult at times, an immediate diagnosis is sometimes impossible, and then the statement that no active tuberculosis is found is an honest one, no matter what subsequent developments may occur.

Rate of Excretion of Uric Acid, Urea, and Creatinin in Nephritis.—C. K. Watanabe (*American Journal of the Medical Sciences,* July, 1917) says that uric acid is normally much less readily eliminated than either urea or creatinin, and that there appears to be comparatively little difference in the ability of the kidney to eliminate the last two. With a lowering in the activity of the kidney the uric acid is apparently the first to suffer, although in advanced stages of nephritis the ratio between the urea of the blood and urine may be higher than the uric acid. In these severe cases creatinin seems to be the last to be markedly influenced. The combined formulas of Ambard and Weill or the index of urea excretion of McLean gives little more information of diagnostic or prognostic value than the blood urea alone. The limits of variations thus obtained are normally so great that it is difficult to define them for pathological comparison.

Chloride Excretory Function.—C. C. Wolferth (*American Journal of the Medical Sciences,* July, 1917) concludes from his study of forty-four cases that an elevated plasma chloride threshold, when circulatory disturbances can be excluded, is valuable evidence of the presence of nephritis. A normal threshold may be found in cases with marked impairment of ability to excrete chlorides, particularly if the patient has been kept on a régime including salt free diet and measures to stimulate elimination. Sodium chloride added to the diet is sometimes excreted as completely by impaired kidneys working under the stimulation of a high chloride content of the plasma as by normal kidneys working under normal threshold; added chloride may be retained when the threshold is normal; the information to be gained by both methods of study is desirable. Chloride excretory function is impaired in nearly all cases of nephritis and is much more disturbed than the urea excretory function in eclampsia.

Typhoid Carriers.—A. J. Chesley, H. A. Burns, W. P. Greene, and E. M. Wade (*Journal A. M. A.,* June 23, 1917) report the results of the efforts of the Minnesota State Board of Health to discover and deal with carriers of typhoid and paratyphoid organisms. The plan of investigation and control is outlined and the results for a period of three years are given. During that time thirty carriers were found among the inmates of state institutions in which the diseases were endemic. Twelve carried Bacillus typhosus, twelve Bacillus paratyphosus, and one both organisms. Thirty-nine carriers were found among the general population, thirty-two of Bacillus typhosus, the rest of paratyphoid. Two hundred and thirteen cases with twelve deaths were traceable to thirty of these typhoid carriers, or an average of seven cases for each carrier. Twenty-five of thirty Bacillus typhosus carriers were females with an average age of fifty-two years and a minimum of thirty-two years. The average age at infection of the typhoid carriers was over forty years, and this and the high proportion of females both agreed with the relative preponderance of cholecystitis and cholelithiasis. The two conditions seemed to be closely related.

Lead Poisoning in Children.—Kenneth D. Blackfan (*American Journal of the Medical Sciences,* June, 1917) urges that energetic prophylactic measures be taken with children who eat painted articles. Three children of his four reported cases licked the paint from the furniture, and since his attention has been directed to this source he has found a number of children who nibble the white paint from their cribs. In all patients with convulsions in which the etiological factor is not clear, lead should be suspected and evidences of poisoning looked for.

Paraffin Covered Bandages.—Torald Sollmann (*Journal A. M. A.,* April 21, 1917) suggests several practical uses for paraffin in connection with bandages. After the dressing has been put on, it may be painted with melted paraffin and thus stiffened so as to give support to the wound and even take the place of a splint in some cases. This plan will also suffice to fix a bandage in place so that it will not slide; to prevent the fraying of loose ends or edges; to replace adhesive plaster for holding it; and to protect the dressing from becoming moist or soiled.

Malarial Infection and the Wassermann Reaction.—Query (*Presse médicale,* May 17, 1917) applying the Wassermann test in sixty malarial cases treated with quinine, with or without arsenic, and free of syphilis, noted a positive reaction in thirty-three per cent. of the cases. The positive result of the test was found directly related to the presence of plasmodia in the blood. In 100 blood examinations positive for plasmodia the Wassermann was found likewise positive in seventy instances. These observations are held to contribute additional evidence of the nonspecificity of the complement deviation test in the diagnosis of syphilis. Another point noted was that the higher the leucocyte count the less the number of plasmodia present.

Action of Anaerobes in the Tissues.—Herbert Henry (*British Medical Journal,* June 16, 1917) studied the anaerobic flora of war wounds and found that the organisms of this class could be separated into two distinct groups: 1, sugar fermenters, including the Bacillus welchii, or Bacillus aerogenes capsulatus, the Bacillus edematiens, etc.; and, 2, those with marked proteolytic properties, including the Bacillus sporogenes and others of less common occurrence. The first type of organism were found in a large proportion of all war wounds, whether there was gas gangrene or not. The course of the development and the action of organisms of both classes in the production of gas gangrene were worked out as follows: The primary trauma causes death of some of the tissues and establishes a focus for the growth of the anaerobes. The rapidly growing saccharolytic organisms gain a foothold first and produce large amounts of gas and acid. The gas serves further to destroy the tissues in the region through damage to the blood supply by pressure, which is added to that already caused by the edema of the parts. The proteolytic organisms then begin to take hold and complete the destruction of the dead tissues with the liberation of the poisonous products of protein decomposition. Finally, near death or afterward the organisms enter the bloodstream.

Localized Tetanus from Injury.—E. Colombini (*La Riforma medica,* April 28, 1917) reports two cases of localized tetanus, one in the right arm, the other in the right lower leg, from shrapnel wounds. Local treatment with lactic acid solutions from fermented milk, together with injections of antitetanic serum brought both cases to complete recovery.

Sterilization of Knives and Scissors in Liquid Petrolatum.—Henry Lyman (*Journal A. M. A.,* June 23, 1917) points out that boiling in water soon destroys the edges of cutting instruments and of hypodermic needles. This can be avoided and perfect sterility secured by heating them to 150° C. for ten minutes in liquid petrolatum or any clear mineral oil of high flash point. The temperature can be controlled by using a tube of chloride iodide of mercury which melts at 155° C.

Diverticulum of the Duodenum.—Seymour Basch (*American Journal of the Medical Sciences,* June, 1917) is of the opinion that duodenal diverticula are of more frequent occurrence than would appear from the number of reported cases. Unless specially sought for they are easily overlooked at operation or autopsy. They can be diagnosed by Röntgen ray examination when they form distinct pouches. They may produce symptoms sufficient to require surgical intervention, and they can be cured by operation.

Sycosis in Military Practice. — Spillmann (*Presse médicale,* April 2, 1917) points out that this affection, insufficiently treated, is capable of rendering many men unfit for military duties for several weeks or even months. All subjects with rebellious sycosis should be promptly referred to the special dermatological hospitals, where x ray treatment can be applied. Judiciously used, this measure rapidly yields a permanent cure of sycosis. Under any other form of treatment prevention of recurrence is very difficult.

Auricular Fibrillation. — Samuel A. Levine (*American Journal of the Medical Sciences,* July, 1917) draws the following conclusions from a study of 128 consecutive cases of auricular fibrillation diagnosed by electrocardiograms and of 261 consecutive autopsies. Auricular fibrillation is a very common condition in a general hospital, being met with almost as frequently as lobar pneumonia. Syphilis plays an unimportant rôle in its etiology. The transient form is much more common than is ordinarily believed; careful observations and electrocardiographic tracings are necessary in order to avoid missing the transient cases. About one third of the patients with persistent auricular fibrillation have had one or more attacks of rheumatic fever or chorea and show clinical signs of chronic organic mitral endocarditis. The average age of these patients is about thirty-seven years. About one third of the cases have not had rheumatic fever or chorea and show no signs of chronic organic mitral endocarditis. The average age of these is about fifty-eight years. About one third of the cases fall into neither group. Chronic organic mitral endocarditis is quite infrequently found in patients over fifty years of age in either the living or the dead. In most patients with organic mitral disease mitral stenosis develops and few reach the fiftieth year.

Typhoid Meningitis.—Stanhope Bayne-Jones (*American Journal of the Medical Sciences,* July, 1917) describes a case of purulent cerebrospinal meningitis due to Bacillus typhosus which occurred in the fourth week of a typical case of typhoid fever. Death occurred within a few days. Statistics of the medical clinic of the Johns Hopkins Hospital show five cases of typhoid meningitis out of 2,768 cases of typhoid fever. The entire number of known cases is only thirty-three.

Syphilis in Mongolian Idiocy.—J. E. McClelland and H. O. Ruh (*Journal A. M. A.,* March 10, 1917) conclude from an analysis of Stevens's series and an exhaustive study of thirteen of their own cases that mongolianism cannot be ascribed to congenital syphilis. In their own series blood and spinal fluid Wassermann reactions were negative in all cases to four different antigens, the spinal fluid cell count ranged from none to four, globulin was present in three cases, and the colloidal gold test was negative in all.

A Preliminary Report on the Use of Radium in Mobilizing Joints Having Fibrous Ankylosis Following Tuberculous Arthritis.—John Joseph Nutt (*American Journal of Orthopedic Surgery,* February, 1917) states that during the past two years he has been experimenting with the use of radium pads, radium emanation water, and the intravenous injection of radium element in cases of fibrous ankylosis following tuberculous arthritis. All of the six cases so treated improved with no complications following. The treatment apparently acted as a general tonic.

The Association of Gastric Symptoms in Nephritis with Retention of Nitrogenous Waste Products in the Blood.—Arthur F. Chace (*American Journal of the Medical Sciences,* June, 1917) says that gastric symptoms are among the most common early symptoms of nephritis. In cases with obscure gastric disturbances the chemical examination of the blood has been found very valuable. Several cases are reported in which the estimation of the blood creatinin not only showed that the patients were suffering from severe nephritis but gave a fatal prognosis. In some of the earlier cases the blood uric acid was of value as an early diagnostic sign.

Still's Disease.—Arthur S. Rosenfeld (*Journal A. M. A.,* July 14, 1917) reports a case of this uncommon form of arthritis and reviews the literature bearing on its probable causation. He points out that in his own case the patient had evidence of systemic infection from numerous foci in her mouth about her teeth. From these a staphylococcus and a streptococcus were isolated and when injected into rabbits caused joint lesions from some of which the typical streptococci were recovered. Extraction of the infected teeth, cleaning up of the oral infection, and the administration of an autogenous vaccine produced a marked amelioration in the severity of the patient's disease and completely checked the recurrent periods of febrile reaction. It is suggested that, in this case at least, there was strong evidence for the belief that Still's disease may be merely a youthful form of secondary infectious arthritis, a suggestion which has been made by others.

Proceedings of National and Local Societies

AMERICAN ASSOCIATION OF IMMUNOLOGISTS.

Fourth Annual Meeting, Held in New York, April 6 and 7, 1917.

The President, Dr. RICHARD WEIL, in the Chair.

Treatment of Dermatitis Venenata by Vaccines.—Dr. ALBERT STRICKLER, of Philadelphia, undertook this study with the following objects: to elaborate an endermic skin test; to determine whether the intramuscular injection of the homologous vegetable toxins would influence the course of dermatitis venenata; to determine whether it was possible to desensitize individuals by the injection of the homologous vegetable toxins, and to determine whether complement fixing bodies could be found in the serums of patients who had had an attack of dermatitis venenata and had been treated by the injection of the homologous vegetable toxins. Toxins of ivy, sumac, and nettle were isolated and employed. In all, twelve patients were studied with the following results: 1. Intramuscular administration of the toxins of the various poisonous plants influenced the course of dermatitis venenata. 2. This procedure was advocated only in extremely severe cases, or where there was a desire to attempt desensitization. The immunity was temporary and had to be frequently renewed. 4. It was possible to develop a skin test in dermatitis venenata and to desensitize individuals against plant poisoning. 5. Complement fixation was apparently absent in dermatitis venenata.

Doctor HITCHENS thought that the results of Doctor Strickler were like those of Doctor Ford, of Johns Hopkins, seven or eight years ago in studies of the substance in Rhus toxicodendron. This substance in suspension was injected into horses and an antirhus tox serum produced which when applied locally caused the disappearance of the rash overnight. However, the word toxins, to describe the extracts, was hardly correct.

Doctor COCA agreed with Doctor Hitchens that the active principle in these plants was not a toxin; their injection into normal individuals did not produce a poisonous effect. The idiosyncracy of individuals to poison ivy was the same as sensitiveness to any other vegetable protein and the resistance after treatment was not immunity but desensitization. It would be interesting to know if the individuals showed positive skin tests after the treatment. Robert A. Cooke showed that the skin test would still be positive after the successful treatment with the pollens to which they were sensitive, although the ophthalmic test became very quickly negative.

Dr. JOSEPH HEAD asked if the injection of the poison was attended with any soreness.

Doctor STRICKLER replied that when the test was made with small doses below 0.4 c. c. there was no soreness, but beyond 0.5 there was considerable. The skin reaction test had not been done on any of the cases reported, but this was a very good suggestion and would be carried out in future.

Epidemiology of Bacillary Dysentery.—Dr. WILSON G. SMILLIE, of New York, reported the results of a series of studies conducted by the Floating Hospital of Boston in 1916 to discover the origin of infection in cases of bacillary dysentery and the important factors in transmission. Cases were studied from the community point of view, neighborhood conditions, family conditions, and the sources of infection. These studies showed that the incidence seemed to follow the fly curve more closely than the temperature curve; that poor housing conditions were a fertile soil for the development of the disease; and that the disease was more common among children of American and first generation parents than among those of foreign women, probably because the latter were breast fed. The sources of infection were contact with an acute case, contact with a carrier, contact with a house case, condensed milk of inferior quality, cheap ice cream, flies, impure milk, impure water, and fruit. Results were often fatal in infants from contact with mild adult cases. As a rule, the older the children, the milder the disease.

Studies on the Isolation of Streptococci from Rabbits.—Dr. EDGAR T. H. TSEN said that in investigating the relation of streptococci to poliomyelitis, the brains of rabbits inoculated with either poliomyelitis virus, streptococci, or Treponema pallidum were cultured, and streptococci and sometimes other Gram positive diplococci were isolated. Out of nine normal rabbits growths of the same kind of microorganisms were obtained from the brains of six. Rosenow's culture methods were used. It was evident that streptococci could very often be found in many parts of the body in the presence of diseases for which they were not specifically responsible. Moreover, they could sometimes be isolated from the tissues of normal individuals whose blood was not actually, but only potentially, sterile. Many streptococci and small diplococci were found in the brains of syphilitic rabbits. Such cocci were found by Flexner, Noguchi, and Rosenow who interpreted their findings in different ways. The speaker's interpretation differed from all three; he considered these cocci in the case of poliomyelitis neither extraneous contaminations nor the specific causative agents of the disease, but as organisms, probably saprophytic in the normal body which under conditions of lowered resistance from other causes acquired the power of invading the tissues more extensively.

Doctor KOLMER said that during the recent epidemic of poliomyelitis in Philadelphia, Doctor Freese, Doctor Brown, and himself found streptococci widely disseminated in the tissues after death, not only in the brain and cord but also in the internal organs as well, which did not produce poliomyelitis in experimental animals. It was possible that they possessed a certain degree of virulence and in poliomyelitis occurred symbiotically with the true microparasite, playing a certain rôle in the pathogenesis of poliomyelitis as streptococci did in scarlet fever.

Dr. Hans Zinsser, of New York, supported Doctor Tsen and said he did not intend to convey the impression that these organisms were purely saprophytic, but simply that they were not the etiological factor of poliomyelitis. Whether they were contributory causes to the symptoms of the disease it would be hard to say as yet.

Conclusions Drawn from a Comparative Study of Different Methods of Performing the Wassermann Reaction.—Dr. J. Bronfen-Brenner's paper will shortly be published in full in the Journal.

Dr. Hans Zinsser, of New York, believed that fresh serum was absolutely necessary and it was not a good plan to do the reaction with unheated serum.

Doctor Kolmer agreed entirely with Doctor Bronfen-Brenner's statement that crude alcoholic extracts of tissues, with or without the addition of cholesterol, should not be used in conducting the syphilis reaction with active serum. In these reactions a suitable extract of aceton insoluble lipoids served best as antigen and was least likely to yield nonspecific reactions.

Doctor Weil said that he believed the serologist should report the reaction as he found it without reference to the clinician, on purely immunological grounds.

Doctor Bronfen-Brenner replied that the only way for a serologist to standardize his reagents was to do so with a known syphilitic serum on hand. A good and complete history was essential, if the serologist was to make a complete report of his findings in the cases of recent infection, or in the cases under treatment. The reporting of the degree of fixation to the clinician was of little value; the serologists should correlate the findings with the history. On the other hand, the serologist should never make a diagnosis. Many doubtful reactions would be better understood if a proper history was available.

Complement Fixation Studies on the Group of Acid Fast Bacilli.—Dr. Jean V. Cooke found that cross fixation tests, with varying amounts of immune rabbit serums and a number of both pathogenic and nonpathogenic acid fast bacteria as antigens, gave the following results: 1. Immune serums, giving fixation in amounts varying from 0.004 to 0.0002 c. c., could be obtained with any of the acid fast bacteria. 2. There was a group fixation reaction in which all members of the group participated when 0.1 c. c. of immune serum was used. With serums of very high titre, all organisms reacted with 0.01 c. c. of serum. As smaller amounts of serum were employed, various members of the group failed to give fixation until near the titre limit there was usually a small group which still reacted. These groups were not always sharply defined. 3. The immune substances were still present and could be detected in serums for more than three years.

An Antigenic Classification of the Group IV Pneumococci.—Miss Miriam Olmstead read this paper. A study of Group IV pneumococci was undertaken at the Presbyterian Hospital in the investigation of postoperative pneumonia in which the Group IV pneumococcus was found to be an important etiological factor. Agglutination was used for differentiating the strains, confirmed by a few absorption experiments and complement fixation tests. Not all cultures were tested against all serums, but enough tests were performed to demonstrate twelve distinct groups, the members of which cross agglutinated with each other but not with other groups. The groups contained from two to seventeen strains each, many apparently identical but some divided into subgroups, evidenced by nonreversible reactions. A few strains were slightly and irregularly agglutinated by Group II serums, but according to agglutination and complement fixation reactions were much more closely related to Group IV strains. These might be considered connecting links between Group II and Group IV, but should be classified as pneumococcus IV rather than II.

Dr. Rufus Cole desired to know whether Miss Olmstead had tried dilutions of these serums and also if she found that the organism was typical. The study of these types of organisms was very interesting work from an immunological standpoint. It would be interesting to discover whether persons closely associated with each other carried organisms of these nonpathogenic groups. It remained to be shown whether these atypical kinds tended to become more fixed and whether their occurrence ever produced epidemics.

Doctor Weil asked if the absorption tests followed an absolute parallel with the agglutination tests, and if the different known agglutinating strains showed any capacity for absorption whatever.

Miss Olmstead answered that the strains within any group agglutinated each other 1-80 or 1-160. In some groups there were subgroups, the type serums agglutinating all strains in the same dilutions, but the serums of the subgroup not agglutinating the type strains. In many instances no agglutination was noticeable until after standing in the icebox over night. Few absorption tests had been done, but those few paralleled the agglutination tests.

Further Observations on Local Resistance to Syphilis in Reinoculated Rabbits.—This paper, by Dr. Hans Zinsser, Dr. J. G. Hopkins, and Dr. M. McBurney, was read by Doctor McBurney, of New York, who reported eight more reinoculations in addition to those published in the *Journal of Experimental Medicine* in November, 1916. In the first series of seventeen reinoculated rabbits some doubtful nodules were felt and in three cases spirochetes were demonstrated in the testicles by puncture. Only one rabbit developed frank lesions containing active spirochetes, and in this case the reinoculation was performed less than two weeks after the apparent healing of the original lesion. In the other rabbits the interval varied from three weeks to a year. Many normal rabbits were inoculated at the same time and lesions developed in 100 per cent. of the cases. In the few cases of successful reinoculation the second lesion was usually different in type and location from the first; that is, a diffuse lesion was succeeded by a nodule at one pole of the testis or by chancre confined to the scrotal tissue. It appeared, therefore, that while as a rule a previous lesion in a rabbit conferred resistance to reinoculation, the successful reinoculation could be explained on the hypothesis that the resistance was local and limited to the tissue previously involved. In two rabbits inoculated in one testicle and reinoculated in both, local resistance seemed to have developed on both sides. Only lesions showing active spirochetes were used for inoculation.

Doctor WEIL thought this a remarkable phenomenon if it indicated a localized specific immunity. He did not question the occurrence of this phenomenon; it agreed with what was known of localized variola, for example. In making repeated serum injections, the sites which had received the earlier injections were the ones which lighted up when subsequent injections were made at a distance. This seemed to show excess of antibody at the site of original infection.

Doctor ZINSSER said this was the first evidence of traceable immunity in rabbits. Rabbits could be reinoculated on the opposite side with a positive result. There were no antibodies demonstrable against spirochetes in the serum of syphilitic animals or human beings. Culture spirochetes had nothing in common with virulent spirochetes, which seemed to be entirely unsusceptible to serum effects. Syphilitic serum did agglutinate culture spirochetes slightly, but there was not enough difference between normal and syphilitic serum to warrant diagnostic use of the reaction. The absence of circulating antibodies in syphilitic individuals rendered the discovery of a purely localized resistance all the more interesting. It was not believed that this was necessarily resistance in an active sense, but the apparent resistance, i. e., lack of lesion, was an indication of inability to react on the part of cells which had once reacted directly within the virus.

Desensitization of Guineapigs Sensitized to Dog's Serum.—Dr. ARTHUR F. COCA said that one of the constant characteristics of the anaphylactic state was the phenomenon of desensitization which might generally be produced in sensitized animals by the intravenous injection of sublethal quantities of the respective antigen, or by the intraperitoneal or subcutaneous injection of multiples of the intravenous lethal dose. Experimentation along this line had resulted in the following findings: 1. Guineapigs, actively sensitized to dog's serum, could not be desensitized by subcutaneous injections of large amounts—fifteen lethal dose—of dog's serum; by intraperitoneal injections of one third of a lethal dose, nor by the intravenous injection of one half of a lethal dose, this quantity of the antigen, however, producing severe symptoms of anaphylactic shock from which the animal quickly recovered. 2. Nevertheless, the desensitization was accomplished by slow intravenous injection—fifteen minutes—of two lethal doses diluted to two c. c. with physiological salt solution.

Doctor ZINSSER asked if there was any difference in the method employed and that of Friedberger of slow injection.

Doctor COCA replied that his was the method used by Friedberger. He wished to point out that this was the only method of accomplishing this result.

Studies in Reducing Action by Bacteria.—Dr. B. ARANOWITZ, of New York, summarized his results as follows: The reducing enzyme was not secreted by the cell. The action of the enzyme was independent of the life of the cell. It was destroyed after fifteen to thirty minutes at 60° C. It was held back by the Berkefeld filter. Chemicals known to make the cell membrane more transfusible did not accelerate secretion of the enzyme. Grinding of the bacteria, freezing, thawing, and subsequent extraction of remnants did not aid in isolating the enzyme. Autolytic processes and digestion in two per cent. trypsin emulsion in 0.05 per cent. sodium carbonate solution did not contribute to the release of the enzyme by the cell protoplasm, though possibly the reducing property was destroyed. After the elimination of the unbacteriolyzed cells, the perfectly clear fluid showed the presence of the reducing enzyme. The existence in cultures grown on protein free fluid media showed that proteins in the media were unnecessary for the reducing activities of bacteria.

Cellular and Humoral Factors in Anaphylaxis and Immunity.—Dr. W. H. MANWARING, Dr. YOSHIO KUSAMA, and Dr. ARTHUR R. MEINHARD reported that analysis of the anaphylactic and immune reactions by means of perfusion experiments with isolated rabbit and guineapig tissues showed that the hypersensitive and immune, humoral, and cellular factors might coexist in the bodies of anaphylactic and immune animals in the following combinations: 1, cellular anaphylaxis and approximately normal blood conditions; 2, cellular anaphylaxis and humoral anaphylaxis; 3, cellular anaphylaxis and humoral immunity; 4, cellular immunity and humoral anaphylaxis; 5, both cellular and humoral immunity; 6, humoral anaphylaxis and humoral immunity; 7, cellular anaphylaxis and cellular immunity.

Absorption of Foreign Protein by Anaphylactic Tissues and Hepatic Reaction in Anaphylaxis.—Dr. W. H. MANWARING and Dr. HAROLD E. CROWE stated that if the lungs of a sensitized guineapig were repeatedly perfused with one per cent. foreign serum, diluted either in Locke's solution or in fifty per cent. defibrinated normal blood, there was typical anaphylactic reaction. Quantitative titrations of the perfusion fluid by means of specific precipitans showed no recognizable change in the concentration of the foreign serum as a result of the perfusions. If one per cent. goat serum in fifty per cent. defibrinated normal blood was repeatedly perfused through the liver of a normal or immunized guineapig, there was slight reduction in the toxicity of the perfusion fluid observed on subsequent test with the isolated anaphylactic lungs, but the detoxicating action of the normal or immune liver was not sufficient to render the perfusion nontoxic.

Standardized Wassermann Reaction. — Dr. JOHN A. KOLMER said that research has been instituted in the McManes Laboratory of Pathology, University of Pennsylvania, to standardize the technic of the Wassermann test. The various methods were classified and every step was submitted to experimental test, selection being made as to superiority on the basis of experimental evidence.

(To be continued.)

Book Reviews

[*We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.*]

The Intensive Treatment of Syphilis and Locomotor Ataxia By Aachen Methods. By REGINALD HAYES, M. R. C. S., etc. Second Edition, Revised. London: Bailliere, Tindall & Cox, 1917. Pp. vi-88. (Price 3s. 6d.)

Dr. Reginald Hayes states in the preface that "the present edition varies little from the first written three years ago," yet I am indebted to the reprint for introducing me to the eighty-three pages of this well written and readable book. Doctor Hayes apparently specializes in rubbing, and he is an enthusiastic protagonist of the well known procedure employed at Aachen. The argumentative methods common to all protagonists are here scrupulously followed. Other procedures are decried; an exhaustive account of the advocated method is given; it is correctly clad according to the prevailing scientific mode; on personal and canonical authority certain advantages are claimed for it, and ten happy examples of its efficacy are recorded. Much of what Doctor Hayes says concerning the dangers of salvarsan injections, the vague consciousness of the medical profession, which determines fashions in drugs, is now beginning to endorse. For his emphasizing of the evils of intraspinal medication thanks are due. His advocacy of a method of treatment insuring "a minimum of danger, pain, and discomfort" must surely be grateful to every patient, and to every physician who believes that if treatment cannot benefit it should at least be free from menace to those who come under his care. Unlike salvarsan, mercury seldom acts as an acute menace to a patient. The delayed evils in cardiovascular renal disease, which almost invariably and often secretly accompany the conspicuous manifestations of tabes, are not considered by Doctor Hayes. Yet in the one fatality in his diminutive series the patient "died quite suddenly." Case I, who "had been treated for two years with mercury by mouth and subsequently by courses of mercury combined with potassium iodide for varying periods," subsequently acquired cerebellar and spinal syphilis. Case II, with cerebral gumma, gave the following history: "Sixteen months before . . . he had acquired syphilis, which was treated with a full dose of 606 intravenously, and then with mercury pills by the mouth. Six months later while still under this treatment, he developed partial ptosis of one eye and extreme pain in the head." Case III, early tabes, had had syphilis, had been treated "by pills for two years, and medicine had been frequently taken at intervals since." Case IV had syphilis of the labyrinth associated with neuritis, "had acquired syphilis about eighteen years before, and had taken mercury on and off for eight years." Case V, with cerebrospinal syphilis, "had acquired syphilis fourteen months before and had taken Hutchinson's (mercurial) pills continuously up to the end of December, 1909, . . . when he was seized with paresis of the left face, arm, and leg." Cases VI and VII gave no history of syphilis. Case VIII, severe gastric crises, "contracted syphilis in 1894 and had taken mercurial pills for two years." Case IX, obstinate throat affection, does not concern us here. Case X had no history of syphilis. Case XI had prolonged treatment when he acquired syphilis and received Hutchinson's pills for six months. He was suffering from a relapse after Aachen treatment when he came under Doctor Hayes's skilful care.

The immediate worth of mercury in syphilis is incontrovertible. Of its ultimate value we are ignorant. John Hunter, who infected himself in an unavailing attempt to establish the clinical distinction between gonorrhea and syphilis, stated that if there was one drug which acted as a specific in a disease, mercury was a specific for syphilis. Yet John Hunter died from rupture of an aneurysm. Mercury proved useless to him as a safeguard against syphilitic vascular disease. In all the cases enumerated by Doctor Hayes in which nervous lesions had followed a known syphilitic infection, prolonged and energetic oral administration of mercury had failed to prevent these lesions. Fournier, Déjerine, Head, and others have made this observation. The prolonged and recurrent treatment which Dr. Hayes insists upon is in itself proof that he knows mercury cannot permanently arrest syphilis. To blame the oral administration for the failure of the drug is ridiculous. Competent observers, disappointed in inunction, have had recourse to fumigation and to intramuscular, intraspinal, and even introcerebral injections without obtaining satisfaction. If mercury is to be administered in syphilis, inunction certainly imposes "the minimum of danger, pain, and discomfort." Nervous manifestations occurred in spite of and in the midst of continuous mercurial treatment six months after infection in one and fourteen months in another of Doctor Hayes's series. Yet Doctor Hayes does not mention the possibility of metallic antisyphilitic substances predisposing the patient to an attack by the spirochete on nerve structures. As syphilitics among races such as the Egyptian, the Chinese, and the negro, which are as a rule free from antisyphilitic treatment, are also as a rule free from syphilitic nervous diseases, surely this possibility needs investigation.

There is an elementary principle in equity that praise and blame should be impartial. Yet the record of those whom the Aachen method failed to help is omitted from the book, although any method is obviously as entirely responsible for failure as it is for success. The successes reported by Doctor Hayes are in general mitigation of ataxia, pain, and crises; increase in weight; slightly lessened drooping of an eyelid, and change in the Wassermann reaction. Pupils did not recover their mobility nor knee jerks their briskness. The change in the Wassermann reaction was undoubtedly of more interest to the serologist and rubber than to the patient. Variations in ptosis occur often from day to day and even from hour to hour, according as the patient is fatigued or fresh. The variations in weight which accompany and indicate variations in mental states are observable by every physician among his nontabetic patients, sometimes maybe in himself. The nausea due to physical causes is also within the experience of all of us. The tabetic has "more pangs and fears than wars or women have." Doubtless, the rubbing he "delights in, physics pain." But what merit has the mercury? The amount of ataxia is a measure not so much of the extent of the syphilitic lesions as of the deterioration of the cerebral power below the level needed for effective moving. Yet Doctor Hayes makes no attempt to distinguish the mental from the physical basis of the symptoms he treats and he credits his drugs with any mental improvement which happily follows the use of the Aachen method he employs.

At Aachen the similarly sick congregate. Their régime is regulated. They are subject to a physician whose word is law. Rest, dieting, baths, strong smelling sulphur waters, rubbing by the faithful, salutary competition for health—all serve to create an atmosphere which is essentially identical to that surrounding pilgrims at a holy well. It is interesting to learn from Doctor Hayes's experience that both the initiated and the uninitiated manage to derive similar benefit from the miniature Aachen he staged in London before the war. I wonder how he finds his procedure affected by the present anti-German sentiment in England. Doctor Hayes states: "At Aachen the opinion was held that in tabes generally, and oculomotor cases in particular, those which are going to respond satisfactorily to treatment ought to show some signs of progress by about the seventieth day, and I can bear out the accuracy of this observation." May I suggest that the key to this sentence lies in the word "seventieth"? Only the hard of heart, the unbeliever, the tabetic with a greater physical than mental element in his disability, could resist for more than seventy continuous days the sulphurous exorcising, the holy inunction, the healing baths, the salutary discipline, and the beneficent suggestion of rubber and physician. "If improvement results, the rubbings are continued for two years with an interval of three to six months between each series. . . . Provided that benefit is derived from this a few weeks treatment every six or twelve months—for an additional period of some length is strongly advocated." In other words, the Aachen tabetic seeking health parodies the hermit who sought virtue:

> Remote from man, his days are passed in rubs;
> Sulphides all his perfume, all his pleasure tubs.

If there is any pharmacological worth in this method of treatment, let Doctor Hayes collect a series of cases of approximately the same race, age, sex, social, and physical state; let him give them all the same treatment, tubs and drinks of sulphur water, diet, rest, discipline, and rubbings; but let one half be rubbed with the mercurial ointment and the other with the same ointment minus the mercury. If the Aachen method of mercurial inunction has any demonstrable medicinal foundation in nerve syphilis it can thus be laid bare. If, on the contrary, its value proves wholly psychological, then sulphurous smells and tastes, massage and baths may be usefully reinforced by mauve, orange, magenta, and other color schemes; by chants, fugues, symphonies, and other melodious measures; by prayer, pilgrimage, Christian Science, and other religious influences; by all the aids to mental ease which lie to our hand. And these aids could be systematized and used in due strength and order so that there then might be fewer patients who would not respond before the seventieth day. There would certainly be fewer physicians ignorantly applying psychotherapy merely through the venerable but faulty and unscientific medium of drugs.

Traumatic Surgery. By John J. Moorhead, B. S., M. D., F. A. C. S., Adjunct Professor Surgery, New York Post-Graduate Medical School and Hospital; Visiting Surgeon, Harlem Hospital; Attending Surgeon, Park Hospital, etc. With 552 Original Illustrations. Philadelphia and London: W. B. Saunders Company, 1917. Pp. 760. (Price $6.50.)

At a time when a large part of the surgery of injuries will have to be rewritten in view of the wide experience being daily gained in the war hospitals of Europe it is a pity that a book on Traumatic Surgery should not contain anything new based on the experience of the present war. Furthermore, in view of the many standard textbooks on fractures and joint injuries, including those by Stimson, Speed, Scudder, Cotton, and others, there is small need of adding to the literature on this subject. One half of this treatise seems superfluous. The other half contains little that is new and is largely a repetition of what is found in standard English and American works. The chapter of ten pages on foreign bodies takes up twelve different organs, and obviously can be of little practical value to one seeking knowledge in a special case in regard, for example, to a foreign body in the eye. The book is not sufficiently systematic for the undergraduate and is too superficial for the practical surgeon. Entire disregard of the lessons learned during the past three years of the war further diminishes the value of the book as an up to date exponent of present methods.

Röntgen Technic. (Diagnostic.) By Norman C. Prince, M. D., Attending Röntgenologist to the Omaha Free Dental Dispensary for Children; Associate Röntgenologist to the Douglas Count Hospital, Bishop Clarkson Memorial Hospital, Swedish Immanuel Hospital, St. Joseph's Hospital, and Ford Hospital, Omaha, Neb. With Seventy-one Original Illustrations. St. Louis: C. V. Mosby Company, 1917. Pp. 140.

The rather sketchy manual directs the novice in his technical use of x ray apparatus. The field of diagnosis is not touched upon. The underlying principles involved are simply and clearly explained. In the very important chapter on Operation of Machine, the milliampères recommended are much lighter than the seventy-five milliampères advised by the makers of the Coolidge tube for even the broadest focus tube. A beginner should rather be content with the forty-five milliampères taken by a medium focus tube and a simpler technic. Many, for instance, use only three rheostat settings delivering twenty-five, forty-five, and seventy-five milliampères, respectively, at five and one half inch, six inch, and seven inch spark gap, depending on the density of the part. This would permit surer results even for the experienced operator. The Kuegle technic is simple and seems good. For some machines the spark gap will need to be increased to six inches for the thicker work. The author recommends, as a rule, larger cones that give the sharpest detail. The time of exposure is calculated apparently with only a small, perhaps 100 pound, woman as a subject. For the average subject, double the total amount of exposure specified will be needed.

It is now accepted that chest plates should always be made in the vertical position and stereoscopically as a matter of routine rather than choice. In gallbladder work, the tube is usually tilted downward. For serial work on the stomach, the ordinary table recommended will prove fully as satisfactory for the beginner as the special apparatus described, which would be difficult and expensive to obtain. Many believe that standardized apparatus always surpasses special designs in the end. The dark room chapter is good and practical. Since satisfactory and safe examination by the use of the x ray involves skill in the control of electrical and other apparatus of some precision, a working knowledge of photography, and experience in medical interpretation which the novice does not have, it is really a specialty requiring special study under a competent teacher. A manual of this limited scope tends to give a false feeling of confidence in early proficiency.

Manual of the Diseases of the Eye. For students and general practitioners. By Charles H. May, M. D., Director and Visiting Surgeon, Eye Service, Bellevue Hospital, New York; Attending Ophthalmic Surgeon to the Mt. Sinai Hospital, New York; Consulting Ophthalmologist to the French Hospital, to the Italian Hospital, New York, and to the Monmouth Memorial Hospital, etc. Ninth Edition, Revised. With 377 Original Illustrations, including Twenty-two Plates, with Seventy-one Colored Figures. New York: William Wood & Co., 1917. Pp. v-440. (Price $2.50.)

In presenting the ninth edition of this well known work the author states that every page has been carefully examined, alterations and additions made to improve the text, and the book kept up to date, yet without increasing its size. Little more needs to be said regarding a textbook which is so widely used and has been reviewed so many times in the Journal.

After Office Hours

From the *Smart Set* for September: "The tears of a thousand dying Camilles are as a light fall of April dew compared with the tears of a young mother on the day they cut off her little boy's curls." George Jean Nathan.

* * *

Scribner's for July has an unusually clever story by Mary Synon, Clay Shuttered Doors, which takes the reader into the operating room of a base hospital and turns upon the hesitation of a surgeon to cut into a septic wound when he had neither gloves nor antiseptics to save himself from possible infection.

* * *

After endless stories dealing with pulchritudinous female models and their downfalls or near downfalls it is at least a change to turn to a story like The Downfall of Tony in *Young's* magazine for September, where a male model is enticed by a neurotic amateur artist.

* * *

The *Metropolitan* continues to dabble in spiritualism; in the September number the creator of Sherlock Holmes tells how he himself has been taken in.

* * *

It seems that in these days when the world is shaken to its foundations by the struggling nations the human soul turns blindly, wildly, seeking for some foothold in Chaos. Thus H. G. Wells, after years of writing stories of the fantastic, the social drama, and finally realism à la Arnold Bennett, Compton Mackenzie, and George Moore, has proclaimed a new religion, somewhat nebulously but none the less passionately. His God is a splendid youth, fighting, always fighting, wrong, ignorance, evil; and behind him there is another being, aloof, alone, unapproachable, and unknowable.

* * *

Whence the fanatical fury with which *Life* assails the medical profession? What complex is responsible? In a recent issue it published a picture of a doctor entering a recruiting office, with the caption, "Giving the devil his due." In the same number there was a bitter attack on the practice of vaccinating soldiers. We love the sense of humor of *Life*, we enjoy its pictures, we are only mildly bored by the essays of E. S. Martin, but when we note its persistent campaign against such vitally important matters of public health we are in favor of a year's close confinement for the man who is responsible for this folly, during which time he should be compelled to post himself on medical matters.

Perhaps the greatest joy in bringing up children is in recognizing in their adventures, games, daily reading, and so on, the same experiences we passed through long ago. The supposedly irate parent who has discovered his boy reading Deadwood Dick behind his geography is in reality thinking of that day in school, thirty years ago, when he did the same thing under the nose of his teacher, to the vast admiration of his cronies and the delighted awe of a little girl in pigtails in the next seat. How many of us were brought up on the *Youth's Companion* and now subscribe to it for our young ones, occasionally picking it up from the playroom floor and running over its familiar topography with a thrill which shakes the long years off like apple blossoms before a southern breeze? Long may it prosper, the *Youth's Companion!* Good, clean fun and adventure. Never priggish, never sentimental, never blood curdling, never hypocritical, but always good, wholesome food for the restless mind of a growing child.

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Official News

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers serving in the United States Public Health Service for the seven days ending August 15, 1917:

Bolten, Joseph, Assistant Surgeon. Ordered to proceed to Newport and other places in Rhode Island to assist in the investigation of an outbreak of diphtheria.

Faget, F. M., Assistant Surgeon. Relieved from duty on the coast guard cutter *Androscoggin* and ordered to proceed to the Mobile Quarantine Station and assume charge.

Freeman, A. W., Epidemiologist. Relieved from duty at Fort Sill, Okla., and ordered to proceed to Spartanburg, S. C., on special temporary duty.

Galloway, T. C., Assistant Surgeon. Ordered to proceed to Greenville, S. C., on special temporary duty.

Giordano, A. A. S., Assistant Surgeon. Ordered to continue on duty at Philadelphia, Pa.

Gorman, P. J., Assistant Surgeon. Granted fifteen days' leave of absence from August 10, 1917.

Gwyn, M. K., Surgeon. Granted ten days' leave of absence from August 17, 1917.

Lake, G. C., Assistant Surgeon. Relieved from duty at Chicago, Ill., and ordered to rejoin station at the Hygienic Laboratory, Washington, D. C.

Leake, J. P., Passed Assistant Surgeon. Detailed to deliver an address on poliomyelitis at the meeting of the Augusta County Medical Society, at Staunton, Va., August 17, 1917.

Liddell, T. J., Assistant Surgeon. Relieved from duty at the Mobile Quarantine Station and assigned to duty on the coast guard cutter *Androscoggin*.

McCoy, G. W., Surgeon. Ordered to proceed to Newport and other places in Rhode Island for the investigation of an epidemic of diphtheria.

Mathewson, H. S., Surgeon. Granted four days' leave of absence on account of sickness, from July 17, 1917.

Michel, Carl, Assistant Surgeon. Relieved from duty at San Juan, P. R., and ordered to continue on duty on the coast guard cutter *Itasca*.

Perry, J. C., Senior Surgeon. Granted one day's leave of absence, August 11, 1917.

Preble, Paul, Passed Assistant Surgeon. Ordered to proceed to Topeka, Kansas, for conference relative to sanitary survey.

Reichard, J. D., Assistant Surgeon. Granted five days' leave of absence on account of sickness, from July 23, 1917.

Ridlon, J. R., Passed Assistant Surgeon. Relieved from duty at Little Rock, Ark., and ordered to proceed to Anniston, Ala., on special temporary duty.

Safford, M. Victor, Passed Assistant Surgeon. Relieved from duty at Columbia, S. C., and ordered to proceed to Boston, Mass.; granted thirty days' leave of absence on account of sickness, from August 7, 1917.

Tanner, W. F., Assistant Surgeon. Granted two days' leave of absence from August 15, 1917.

Treadway, W. L., Assistant Surgeon. Granted three days' leave of absence on account of sickness from August 1, 1917.

White, H. F., Passed Assistant Surgeon. Ordered to proceed to Montgomery, Ala., for conference relative to sanitary survey.

Wilson, J. G., Assistant Surgeon. Relieved from duty at Chillicothe, Ohio, and ordered to proceed to Leavenworth, Kansas, on special temporary duty.

Young, C. B., Surgeon. Granted six days' leave of absence from August 10, 1917.

Ziegler, Mark V., Assistant Surgeon. Continued on duty in studies of rural sanitation at Maysville, Ky.

Resignation.

Resignation of Assistant Surgeon Joseph D. Stout accepted by the President to take effect August 31, 1917.

Boards Convened.

Boards of medical officers convened to examine certain assistant surgeons to determine their fitness for promotion to the grade of passed assistant surgeons as follows:

Ellis Island, N. Y., August 27, 1917, detail for the board: Surgeon E. H. Mullan, chairman; Passed Assistant Surgeon E. R. Marshall, recorder. Marine Hospital, New Orleans, August 27, 1917, detail for the board: Surgeon G. M. Corput, chairman; Passed Assistant Surgeon C. P. Knight, recorder.

Board of medical officers convened to examine a certain passed assistant surgeon to determine his fitness for promotion to the grade of surgeon as follows: Port Townsend, Wash., August 23, 1917, detail for the board: Passed Assistant Surgeon B. H. Earle, chairman; Acting Assistant Surgeon L. T. Seavey, recorder.

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Births, Marriages, and Deaths

Married.

Freeman-Bisbee.—In Norwich, Conn., on Saturday, August 11th, Dr. Alfred Clark Freeman, of Norwich, and Miss Eva Annie Bisbee, of Waitsfield, Vt.

Rice-Finlayson.—In Des Moines, Ia., on Sunday, August 5th, Dr. Floyd W. Rice, of St. Louis, to Miss Jessie Finlayson, of Des Moines.

Died.

Bingham.—In Burlington, Vt., on Tuesday, August 7th, Dr. Albert L. Bingham, aged sixty-four years.

Chicoine.—In Lynn, Mass., on Wednesday, August 8th, Dr. Isadore Hermanigilde Chicoine, aged fifty-two years.

Cox.—In East St. Louis, Ill., on Thursday, August 9th, Dr. Logan O. Cox, of Hallidayboro, Ill., aged sixty years.

Esslinger.—In Nashville, Tenn., on Monday, August 6th, Dr. Levi P. Esslinger, of New Market, Ala., aged forty years.

Farquhar.—In Pittsburgh, on Friday, August 10th, Dr. Raleigh Claude Farquhar, of Monongahela, Pa., aged thirty-eight years.

Gallup.—In Willimantic, Conn., on Thursday, August 9th, Dr. Isaac Benjamin Gallup, aged seventy-one years.

Greenberg.—In Brooklyn, N. Y., on Thursday, August 9th, Dr. Augustus Abraham Greenberg, aged thirty-eight years.

Hitchcock.—In Toledo, on Tuesday, August 7th, Dr. Charles Sumner Hitchcock, aged fifty-one years.

Hodgson.—In Toronto, on Sunday, August 5th, Dr. John Hodgson, of Sewanee, Tenn., aged fifty-one years.

Keegan.—In Rochester on Wednesday, August 8th, Dr. William A. Keegan, aged fifty-six years.

Kerr.—In Chambersburg, Pa., on Friday, August 3d, Dr. Robert A. Kerr, aged sixty years.

MacConnell.—In Cranford, N. J., on Wednesday, August 15th, Dr. Joseph K. MacConnell, aged eighty-one years.

Moore.—In Houston, Tex., on Tuesday, August 7th, Dr. Harvin C. Moore, aged forty-two years.

Rave.—In Huntington, N. Y., on Friday, July 27th, Dr. Edward George Rave, aged seventy-three years.

Walker.—In Staten Island, N. Y., on Friday, August 17th, Dr. H. Ellsworth Walker, aged fifty-two years.

Weed.—In Los Angeles, on Friday, August 3d, Dr. Frances Tudor Weed, aged fifty-two years.

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Original Communications

THE INTERNAL SECRETIONS AS RELATED TO TUBERCULOSIS IN CIVIL AND MILITARY PRACTICE.*

BY CHARLES E. DE M. SAJOUS, M.D., LL.D., Sc.D.,
Philadelphia.

Although the discovery of the tubercle bacillus has immeasurably widened the scope of research and increased somewhat our therapeutic efficiency, the underlying physical condition which predisposes to the development of the tuberculous process has remained obscure. Time has served to emphasize increasingly the importance of the ductless glands in many directions. May they not be concerned with the process as a whole and afford opportunity for improvement, at least of our prophylactic methods? I have long urged that this was the case, and if I repeat here some assertions of former days, it is because considerable evidence recorded since by others has served greatly to sustain my position. In the study of the ductless glands in their relations to tuberculosis, we are bound, with the teachings of modern research before us, to take into account the rôle of these organs in both phases of metabolism; that is to say, the building up and breaking down process in the tissue cell, including the elimination of what wastes are formed as end products. Indeed, the breaking down feature of cellular function, catabolism, is intimately related with protection against infection, including that due to the tubercle bacillus, since the defensive process is but an amplification of that of catabolism in the sense that the identical function which serves to break down used up tissue elements is also employed to destroy pathogenic organisms and their toxins. Nature does not resort to complicated mechanisms to attain her ends; the process of life, as I view it, is intimately blended with its preservation, the ductless glands, particularly the pancreas, adrenals, thyroid, parathyroids and thymus, being the main active factors in the process. Such being the case, insufficiency of these glands means not only slowing of metabolism, the so called "lowered vitality," but also deficient defensive activity.

Beginning with the *pancreas,* Lépine in 1889 first pointed out that this organ was the source of an internal secretion which has to do with carbohydrate metabolism, a view confirmed by Schäfer. Thanks to the labors of Opie, W. G. MacCallum, and others, this property has been traced to the pancreatic islets of Langerhans. Again, as first shown by Blum and confirmed by Josué and others, the adrenal secretion influences these islets to activity. W. G. MacCallum (1) rightly holds that the weight of evidence is in favor of the view that the adrenal secretion can "in some way stir up the tissue [of the islets] to set free sugar into the circulation or mobilize the carbohydrates." These few facts, which have been abundantly sustained, illustrate various features that apply directly to our subject. The pancreas is shown to influence carbohydrate metabolism through its internal secretion. This means, when we recall that muscular strength is dependent in great part upon carbohydrates—entirely, in fact, if we accept oxen, horses, and other animals as standards—that impairment of the pancreatic internal secretion means reduced muscular power, or myasthenia. Again, the adrenal secretion, possessing the power to "stir up," as MacCallum words it, the islets of Langerhans[1]; any degree of hypoadrenia tends to inhibit their action likewise—another source of myasthenia through the pancreas. We thus have through insufficiency of the latter and of the adrenals one of the most marked early symptoms credited to tuberculous infection: loss of strength, the so called neurasthenia, or chronic fatigue.

Another common symptom, indigestion, "usually," as Myer Solis-Cohen states (2), "occurring an hour or two after a meal," is obviously from my viewpoint, referable to the pancreas, but of course to deficiency of its intestinal or external secretion. Loeper (3) has in fact identified a syndrome in pulmonary tuberculosis due to pancreatic insufficiency, consisting of diarrhea showing an excess of fats, carbohydrates, and muscle fibres in the stools; emaciation out of proportion to the pulmonary lesions, and at times, glycosuria.

There is, however, an even more important passive rôle played by the pancreas in the preparation of a soil for tuberculous infection. Nearly fifteen

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*Lecture delivered July 25, 1917, at the Trudeau School of Tuberculosis, Saranac Lake, N. Y.

[1] The view of Eppinger, Falta, and Eppinger that the adrenal secretion inhibits the action of the pancreas is rightly denied by MacCallum and others. It is based from my viewpoint on an experimental error due to the use of too strong solutions. Hoskins has shown that the presence of one grain of epinephrin in 1500 gallons of fluid bathing a piece of isolated intestine is sufficient to check its activity. Benedicente, Glässner, and Pick found that it took large doses of adrenalin to inhibit the secretion of the pancreas.

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years ago I urged (4) that Metchnikoff's cytase, the trypsin like ferment with which phagocytes break down pathogenic organisms and which acts also as bactericidal agent in the intestinal canal according to Levaditi and others, also took part, in the body at large, in the metabolism of tissue cells and, as a corollary of this function, in their defense. I submitted evidence to the effect that this digestive ferment and others, were transported from the intestinal canal to the tissues *per se* by leucocytes. Abderhalden (5), after an exhaustive study of the subject, reached very similar conclusions. "Each separate tissue cell," writes this distinguished Swiss biochemist, "with very few exceptions, disposes of the same or similar ferments as those secreted by the digestive glands in the digestive canal." As to the manner in which these ferments are conveyed to the tissues, he says: "Many facts accord with the suggestion that leucocytes play a part in this connection." We have also Mendel's (6) authority for the statement that "enzymes are no longer thought of exclusively as agents of the digestive apparatus; they enter everywhere into the manifold activities in almost every feature of metabolism." As to the coincident protective process I have mentioned, Abderhalden has also termed "defensive ferments," the digestive enzymes referred to, which have for their purpose "to bring the so called reactions of immunity into close line with processes that are normal and consequently familiar to the cells." Briefly, *the digestive ferments carry on simultaneously two processes in the cell: metabolism and protection.*

A leading point now asserts itself when tuberculosis is in question, viz.: the fact that Abderhalden gives examples of demonstrable ferments in the pulmonary alveoli which, he states, "take their origin from leucocytes that migrate therein in multitudes to oppose an invasion of microorganisms." Recalling that the intestinal canal contains the same ferments, and that its glandular tissues are likewise the source of "multitudes of leucocytes," we are brought face to face with the fact that, where the pancreas or the adrenals or both are functionally deficient, the main barriers to infection, the intestinal and alveolar, are more or less unable to carry on their defensive functions. To analyze profitably the whole question, however, we must depart from the common and misleading habit of attributing to a single gland the whole responsibility for any one disorder. Each gland has several distinctive landmarks or stigmata, but even these, if carefully scrutinized, would be found to depend for their full expression upon the participation of other glands which seemingly are clinically quiescent, particularly the four I have enumerated besides the pancreas. Again just as we have seen that the pancreatic islets of Langerhans are stimulated by the adrenal secretion, so does that of these islets excite simultaneously the secretory elements of the adrenals. In fact all the ductless or endocrinous glands stimulate one another through their products or hormones. When therefore we speak of insufficiency of one gland in connection with vulnerability to infection, we must include in the morbid process the other endocrinous glands.

The *adrenals* play a leading part in this connection, their stimulating action upon the pancreas being but a fraction of their functions. The early myasthenia or muscular weakness of tuberculosis is a manifestation of pancreatic insufficiency, we have seen; but it is also one of the most striking signs of adrenal insufficiency. You will recall that it is one of the prominent symptoms of Addison's disease. The latter shows another sign which you have been attributing to the latent stage of tuberculosis, a low blood pressure, due to dilatation of the arterioles and reduction of the vascular tension with more or less recession of blood from the periphery toward the great splanchinc area. The intense myasthenia thus finds another cause in the inadequate supply of blood to the general musculature besides that due to the direct action of the adrenal secretion upon the muscular elements themselves, including particularly those of the arterioles.

Important in this connection is the direct action of the adrenal secretion upon the heart, first pointed out over sixty years ago by Brown-Séquard, who urged that it participated directly in the "dynamism" of this organ, a fact subsequently confirmed by Oliver and Schäfer. Indeed, if we trace the course of the secretion of the adrenals in the vena cava, it will be found to reach the right ventricle with the venous blood, thus coming into direct contact with the cardiac muscle, and to be diffused through it, as my own observations on the ox heart have shown, by way of the Thebesian foramina. Any adrenal insufficiency, therefore, by reducing the supply of secretion to the right heart, thus impairs its contractile power and also, thereby, its ability to distribute adequately the venous blood throughout the lungs, for proper oxygenation.

Especially does the importance of the latter fact assert itself when we take into account the fact pointed out by myself in 1903-1907 (4), that the adrenal principle served to take up the oxygen from the alveolar air and then became a constituent of the hemoglobin. To the many facts which have tended to confirm this conclusion may be added the recent observation of Bernstein and Falta (7) that injections of adrenalin in normal individuals produced an increased consumption of oxygen and an increase of carbonic acid excretion, the respiratory quotient as a whole being increased.

If we now, with these facts before us, inquire into the influence of adrenal insufficiency, or hypoadrenia, upon the vulnerability of the body to tuberculous infection—or other infections, I might add—several suggestive points will appear. Thus, recalling the presence of Abderhalden's "*demonstrable defensive ferments*" *in the pulmonary alveoli,* we now find that besides the deficiency of ferments which impaired pancreatic activity entails, we have not only an inadequate supply of blood throughout the lungs owing to the low vascular tension and the weakened heart, but the blood itself is deficient in oxygen. And where are these qualitative and quantitative deficiencies most effectively felt in virtue mainly of the deficient propulsive power of the heart? The pulmonary apices, i. e., where the earliest lesions of pulmonary tuberculosis tend, as you well know, to develop. Ischemia is, indeed, so marked, as a precursor at least of tuberculosis, that as any laryngologist will tell you, pallor of the palate, fauces, and larynx, particularly about the arytenoid area, is one of the earliest signs of laryngeal tuberculosis. He will tell you also that local applications even of lactic acid are beneficial, particularly, and only, in many cases, when rubbing or massage of the tissues is carried out simultaneously. The reason for this you may easily surmise: local hyperemia is produced and the tissues are given, temporarily let me say, an increased supply of their *pabulum vitæ*. As the same morbid state of things exists in the defensive lymphatic tissues of the upper respiratory tract, including the tonsils, these also become avenues of infection.

Not to be lost sight of is the direct participation of the adrenal secretion itself in the defensive process. So marked is it that lesions of the adrenals, clinical or experimental, increase materially the vulnerability to infection. In tuberculosis, in fact, adrenal stigmata are very common, twenty-four per cent. according to Lafitte and Moncanny and twenty per cent. according to Laignel-Lavastine of cases taken at random having shown more or less bronzing—a sign of advanced lesions of the adrenal tissues. I specify "advanced" here because the adrenals are supplied with eleven times the cellular elements required to carry on their functions. True bronzing is seldom found, however, early in the course of the disease when a purely functional disorder of the adrenals predisposes the body to infection. This direct connection of the adrenals with the defensive functions of the body was emphasized nearly twenty years ago by Professor Charrin (8), of Paris, when he wrote, after experimental studies of the subject: "That relations exist between the adrenals and infection is today an incontrovertible fact." To the vast amount of work on the subject may be added the more recent investigations of, among others, Halpern (9), Jackson (10), Josué (11), Kariya and Tanaka (12), and Jona (13), besides the host of clinicians who have shown the therapeutic value of adrenal extractives in infections.

Turning to the *thyroid gland*, atrophy of this organ has been considered a prominent feature in tuberculous subjects. Thus, M. Morin observed it in twenty-five per cent. of 348 cases of tuberculosis. Others have considered tuberculous infection a prominent cause of hyperthyroidia, sufficient in some instances to simulate Graves's disease. Both these seemingly antagonistic observations are reconciled, however, when we take into account the fact that the thyroid takes part not only in tissue metabolism as its morbid rôle in cretinism and myxedema and other facts plainly show, but also when its parathyroid glandules are included within their functional sphere, in the defensive functions of the body. While an atrophic thyroid may thus predispose to tuberculosis, an enlarged overactive thyroid is one capable of reacting, even to the point of hyperplasia, against the infection.

Atrophy, or defective development of the thyroid, is commonly observed in persons predisposed to tuberculosis and other infections. Indeed, the prominence of Adam's apple in many such subjects is due to the fact that a flat thyroid fails to fill sufficiently the infrathyroid portion of the neck to preserve its normal shape. Such a diminutive thyroid may be due to deficient antenatal or postnatal development, but in many instances it is traceable to infectious diseases which, by causing interstitial punctiform or extensive hemorrhages, or other changes in the glandular parenchyma, initiate therein the formation of fibrous tissue which inhibits more or less the functional efficiency of the organ. This is sufficiently marked in some instances to arrest the development of the body and mind, i. e., to cause more or less marked cretinism. In the vast majority, however, the thyroidal lesions are just sufficient to prevent complete development, and we have the pasty, flabby, torpid, and often "backward" child of our schools, which, as recently shown by Knopf (14), are unusually liable to tuberculosis, including that type which many years ago was styled "scrofulous." This includes also the many children in whom adenoids, enlarged tonsils, previously referred to, and lymph nodes afford tangible evidence that the defensive functions of the body are subjected to a stress which leads to a physiological strengthening of the barriers protecting the more vital organs.

I need hardly recall that the thyroid hormone owes its functional activity to the iodine in organic combination it contains, and that long before this fact was known we had learned the value of iodine in the treatment of tuberculosis. This clearly suggests the protective rôle of the thyroid in this disease.

The most active agent concerned with this defensive process, however, is a group of organs which form part, it is believed, of the thyroid mechanism —the parathyroid glandules. The antitoxic rôle of these structures is well shown by the fact that their removal is followed by tetany, a condition due to endogenous poisons which it is partly the rôle of the parathyroid secretion, probably in conjunction with the thyroid hormone, to convert into eliminable end products. This thyroparathyroid mechanism has a function of even greater importance from my viewpoint. Léopold-Lévi and H. de Rothschild (15) state in this connection: "Sajous has attributed among the functions of the thyroid body a rôle to the latter which he assimilates to that of opsonins and to autoantitoxins. More recently, Miss Fassin, M. Stepanoff, and M. Marbé have confirmed on their side the influence of the thyroid on the blood's asset in alexins and opsonins." Briefly the thyroparathyroid apparatus serves to sensitize bacteria and to render them vulnerable to the digestive action of the trypsin in the phagocytes and tissue cells, which also, we have seen, is to be found in the pulmonary alveoli and in the intestinal canal. To these we should add the defensive structures of the upper respiratory tract in their capacity of barriers to infection.

Another function of paramount importance in the genesis of tuberculosis with which the parathyroids are concerned is calcium assimilation. A local disorder of the parathyroids such as fibrosis following interstitial hemorrhages, adenoma, etc., is known to produce osteomalacia. Conversely, removal of the parathyroids will check the development of callus. In tuberculosis of the bones the parathyroid product is an active factor in the process of repair, since it not only sensitizes tubercle and pyogenic bacteria to facilitate their digestion by phagocytic and cellular trypsin, but also takes part in the curative process by promoting the formation of calcium phosphate. You will doubtless recall the important rôle calcium plays in the curative process of tuberculous lesions. The parathyroids working in harmony with the other ductless glands thus take part both in the bactericidal process and in that of repair.

The *thymus* is another ductless gland which must be taken into account particularly in respect to the osseous and nervous symptoms of the child. We cannot say "internal secretion" in speaking of this organ, because, as I urged as far back as 1903 (16), it does not show evidence of being the source of a secretion, but of nutritional lymphocytes. My own view has been—and here, again, experimental and clinical evidence have sustained me—that these white cells supply, through their nucleins, the excess of phosphorus in organic combination that the body, particularly the osseous, nervous, and genital systems, requires during its development and growth, i. e., during infancy, childhood, and adolescence. When, as has been abundantly shown, the thymus loses, through lesions caused by the febrile infections of childhood, precocious involution, etc., a part or all of its functional efficiency, we have deficient development of the bones, deformities suggesting rickets or osteomalacia, deficient stature, etc., and often mental backwardness which, in cases of total absence of the thymus, may attain a condition of true idiocy. Yet the parathyroids are also, we have seen, concerned with calcium metabolism. From my viewpoint, the thymus functions harmoniously with the thyroparathyroid apparatus as a whole, acting as a preparatory laboratory for the excess of phosphorus laden nucleins, which the child requires during its development.

The relation of the thymus to tuberculosis becomes manifest mainly when in precocious involution of the organ, local lesions impairing its functional integrity, starvation, etc., the osseous development of the child is inhibited. The pigeon breasted, bowlegged, and rickety urchin so frequently met in the slums, is an example of hypothymia. His bones yield readily to infection, particularly the hip joint and spine.

We have so far connected five ductless glands with tuberculous infection. Do others, the pituitary, spleen, pineal, etc., show any connection with this disease? Advanced destructive lesions of the pituitary are sometimes terminated by an intercurrent tuberculous infection; but we know too little of this pathogenic relationship to establish a direct connection between the two morbid processes. This likewise applies to the other endocrinous gland. Limiting ourselves then to the glands concerning which considerable knowledge has now been garnered, the pancreas, adrenals, thyroid, parathyroids, and thymus, we find that their products work harmoniously in all tissue cells to sustain their metabolism—which means their very life—and also their autodefensive activity. When through heredity, local disease or exhaustion by disease, or excessive exertion or starvation, their participation in these all important functions are correspondingly weakened, the body is rendered vulnerable to infection. The portals of defense, faucial, pulmonary, and intestinal, are opened because they lack digestive ferments to break down the pathogenic bacteria and their toxins; they lack thyroparathyroid secretion to sensitize these organisms to render them vulnerable to the action of the digestive ferment; they lack in the child the excess of phosphorus laden nucleins that the thymic lymphocytes supply—the process being continued in the adult also by leucocytes, but with nuclein derived originally from food; they lack sufficient adrenal secretion to sustain adequately the contractile power of the cardiovascular muscles. Not only are the lungs inadequately supplied with blood, particularly the apices, but oxidation being deficient, the defensive functions are inhibited precisely where, as stated by Abderhalden, the digestive bactericidal ferments are demonstrable, the pulmonary alveoli, which but typify the mode of defense wherever barriers against infection are necessary.

On the whole, the relationship between the ductless glands and tuberculosis is mainly concerned—as far as our present knowledge permits us to believe—with the defense of the body against infection. To emphasize the importance of this fact, I may recall the emphatic declaration of William H. Porter (17) three years ago, that, while it may be impossible to exterminate tuberculosis as completely as theory would suggest, it is still within the range of probability to prevent the development of hundreds of thousands of cases every year. "Its accomplishment," he declared, "is to be effected along the line of prevention of a soil suitable to the growth of the tubercle bacillus." This is precisely, from my viewpoint, the rôle of the ductless glands. When through heredity or local disease these organs are weakened functionally, the vitality and defensive power of the body at large are impaired.

Another feature which finds elucidation in this connection is the process through which the body acquires immunity to the disease. Indeed, the whole trend of clinical and experimental investigation in this direction tends to show that continuous defensive stimulation of the ductless glands such as that provoked by every day exposure in thickly populated centres particularly, tends to enhance the autoprotective efficiency of the body. We now know, mainly through the labors of E. R. Baldwin, that while the human species is endowed with no natural immunity to tuberculosis, a certain degree of acquired immunity exists in the white race as a result of exposure to infection through the general intercourse of every day life. Baldwin also found considerable variation in the resistance in some species, "probably due," he states, "to the chemical effect of these secretions or physiological differences in the animals"—a suggestive statement when viewed in the light of the facts I have submitted.

Turning to the symptomatology of the morbid process. I am increasingly of the opinion that various symptoms attributed today to tuberculous infection in cases in which the tubercle bacillus and the various tests prove negative, are but the signs of pluriglandular insufficiency. Indeed, it is very suggestive that the symptoms of this condition are precisely those believed to indicate an early though undemonstrable tuberculous infection, viz., loss of strength, a low blood pressure, emaciation, anorexia often with gastric disorder and pallor usually attributed to anemia. A little thought, in fact, will suggest that these are not symptoms denoting infection by a bacillus known to be capable of evoking a febrile reaction such as that which appears later or which may be awakened by an injection of tuberculin. When, on the other hand, there occurs any degree of fever, that is to say, when the active symptoms replace those previously enumerated, which might be termed the passive symptoms of ductless gland insufficiency, then the protective resources of the body, including the ductless glands, attempt to do what the physicians should have done. Another leading thought that I would like to impress upon you in this connection, and one, I may add, based on nearly forty years of clinical experience, is that *the prevailing custom of awaiting a diagnosis of tuberculosis to inaugurate active treatment is one of the most active factors in the perpetuation of tuberculosis.* By identifying, as we can, with the addition of knowledge concerning the ductless gland abnormalities, the presence of vulnerability to infection, we can arm, as it were, all exposed subjects against the disease, not only saving their own lives, but also reducing the number of carriers in proportion. Of course, it might truthfully be said that scientific precision demands that a diagnosis of tuberculosis be established before treatment is instituted. Were it even so, our duty as humanitarians should stand foremost; indeed, science becomes a curse when its claims are placed before those of humanity. In the present instance, however, no sacrifice of scientific tenets need be made, for the therapeutic measures indicated in the latent or pretubercular stage of tuberculosis are those likewise indicated in the condition which predisposes to it, polyglandular insufficiency. Need I recall that, as stated by Joseph Walsh (18), of the Phipps Institute for the Study of Tuberculosis, "the only specific which has stood the test of time is iodine." the very agent, we have seen, which is the active principle, in organic combination, of the thyroid hormone, and which Justus has found in the cellular nuclei of the body at large? Before the treatment of the condition in point is considered, however, a question concerned with the prevailing war requires attention, e. g., the influence of excessive exertion, shock, etc., with which the ductless glands are actually concerned in predisposing the body to infection.

Our army will soon be exposed to conditions calculated to cause considerable anxiety in view of the reported unusual prevalence of tuberculosis among French troops. A recent editorial in the NEW YORK MEDICAL JOURNAL (9) has shown, however, after an analysis of the question, that only about two per cent. of the military population is thus affected, a number no larger than in civil life. The care taken by our military and naval surgeons to keep out of the services all physically unfit, the excellent food supplied to our land and sea forces, and the out of door life they will lead, will do much to prevent infection, notwithstanding the hardships and overcrowding that a campaign entails. There are phases of the present conflict, however, which tend to weaken greatly the resistance powers of the troops to disease, that previous wars have presented to a comparatively very limited degree. These are mainly those due to the vast increase of artillery of large caliber, the intense shell fire, the rapid fire guns, etc., so prolific as causes of shock, terror, etc. Now, over fourteen years ago, I urged that the pituitary, the posterior lobe of which governed, from my viewpoint, the functions of the adrenals and thyroid glands, was a *sensorium commune,* through which fright, anger, traumatic shock, etc., produced their morbid effects. The investigations of Cannon and De la Paz, Cannon and Hoskins, in respect to the adrenals; of Blanc, as regards the thyroid; of Crile, in connection with what he has termed the "kinetic system" through which also abnormally active stimuli, trauma, pain, fear, emotion, etc., are deemed by him to react, have demonstrated the relationship between these causes of stress and the organs mentioned. They have shown that shocks such as those to which the soldiers of our day are subjected repeatedly at short intervals and sometimes for days and weeks at a time, cannot but wear down the efficiency of his ductless glands. While the labors of Cannon, De la Paz and Hoskins have shown the influence of fear, rage, and great excitement on the adrenals of animals by causing these organs to secrete in excess, Crile deemed it "a striking fact" that adrenalin alone "causes hypochromatism, followed by chromatolysis, and, in overdosage causes destruction of some of the brain cells." As to the thyroid, Blanc recently called attention to the frequency of abnormal functioning of the thyroid and parathyroids in troops as a result of emotional stress, excessive fatigue, and defective hygiene. Need we doubt that glandular deficiency was the paramount source of disorder when he states that thyroid and parathyroid medication caused the morbid symptoms to disappear?

On the whole it is apparent that this intense functional activity of the ductless glands exerts not only a deleterious effect on the nervous system, probably explaining such conditions as shell shock, but that as a result of their inordinate secretory activity, these glands suffer from exhaustion. This means, in the light of the facts previously submitted, that *such men are vulnerable to infection of any kind, including tuberculosis.*

What prophylactic measures are indicated are selfevident. Unfortunately, the harmful influence of modern shell fire, etc., cannot be controlled. Yet much could be done by reducing to the shortest possible limit compatible with the needs of field service, the periods of service in the trenches. It should be remembered also that meats tend more actively than vegetables and fats to supply substances for the elaboration of secretory products, though all these foods are necessary.

STIGMATA OF ENDOCRINE INSUFFICIENCY IN APPARENTLY WELL MEN.

A careful search for the stigmata of endocrine insufficiency should form part of the examination of recruits. Particularly should it include examination of those organs concerned with the defensive mechanism herein described. Restricting the list of those phenomena which the average subject would deem insignificant, even if known to him, or at least to constitute an illness, the following may be observed. In *hypopancreatism,* more or less marked adynamia, mental and physical, often mistaken for neurasthenia, accompanied in some cases by occasional gastrointestinal discomfort occurring one or two hours after meals, and perhaps alimentary glycosuria. In *hypoadrenia,* also more or less marked adynamia, but with low arterial tension; weak cardiac impulse, slight pallor and sensitiveness to cold, particularly of the extremities. Overworked and underfed men often show these symptoms and promptly recover under normal military conditions and food. Bronze spots, particularly on the back of the hands, are of no significance in such cases unless baldness, deficient eyebrows, and lack of hair in the axillæ and on the mons, and also dyspnea under normal exertion are noticeable. Sergent's white line may be obtained but only where advanced hypoadrenia is present. *Hypothyroidia* may be present with the thyroid either atrophied or hypertrophied, because the latter condition may be due to compensative hyperplasia of a deficient gland. As this enlargement may occur as a symptom of Graves's disease, larval or active, such a subject is quite liable to break down under stress or mental exertion of any kind. We have seen that Blanc noted the predilection of this gland to abnormal functioning in the present war. He found the oculocardiac reflex exaggerated in such cases. In true hypothyroidia the subject may be fat, pudgy, prone to sweat easily, but with the skin rather pale than florid; they are often flatfooted, and their sweating feet are often foul smelling. They are usually obtuse and frequently mere grown up backward children, who, we have seen, are unusually liable to tuberculous infection. Their teeth are apt to be bad, and they often refer to rheumatic pains and have suffered from enuresis when young. Physical examination reveals but little that is certain other than the objective phenomena mentioned. Their fat neck renders examination of the thyroid difficult. Yet atrophy or defective development of the organ may sometimes be discerned by palpation, while the head is rotated and bent backward during deglutition. The heart, under auscultation after a period of rest, shows weakened systole, usually with low blood pressure. Varicose veins are not infrequent in such cases. Fat pads about the neck are seldom sufficiently prominent to be distinguishable from the surrounding adiposis. Rarely, the symptoms of this latent hypothyroidia are observed in lean subjects, particularly in those with rounded shoulders and prominent Adam's apple, due we have seen to deficient filling out of the infrathyroid area by a thin isthmus and small lobes. These structures are so atrophied in some instances that they can be outlined only with great difficulty. *Hypoparathyroidia* may be associated with the foregoing or not. The symptoms pointing to this condition are often of a nervous order, usually choreic in character. The subjects are prone to eruptions of various kinds, and occasionally to asthma; and often furnish a history of numerous children's diseases. Injuries entailing solutions of continuity heal slowly, and their teeth are usually poor and yield readily to caries. Especially is this the case when the *thymus* which has usually undergone involution when the recruit is of age, has done so too early. Here osseous deformities, particularly the pigeon breast, and a history of rachitis may be traced on inquiry. In this connection I may recall the possibility of a *hypertrophied thymus,* a dangerous condition in a soldier exposed to violent exertion, owing to the possibility of sudden thymic death. The typical circumscribed triangular area of dullness over the manubrium, bulging veins over the upper part of the chest, and stuttering, as recently shown by William Browning (20), are the salient symptoms of this condition.

All these stigmata of insufficiency may, as previously stated, be merged evenly in some, or irregularly, one or more standing out more or less prominently in others. Where the symptom complex fails to point to one enfeebled organ, the so called "neurasthenic" complex, including such symptoms as loss of strength and low blood pressure, prevails. The two organs whose stigmata are most frequently discerned, however, are the adrenals, insufficiency of which, as Sézary (21) also concludes, means "a permanent inability to protect the body against infection," and the thyroparathyroid apparatus, concerned, as Léopold-Lévi and De Rothschild (15) contend, "with the mechanism of every day infections."

TREATMENT OF PLURIGLANDULAR INSUFFICIENCY.

Remaining strictly within the precincts of our subject, does organotherapy add anything to our resources in the protection of a subject showing the stigmata which indicate vulnerability to infection and particularly to tuberculosis? Clinical experience has shown that the use of organic products are valuable additions to our prophylactic methods, but on the condition that their random use, now so prevalent, be avoided. If, for instance, thyroid gland is administered in full doses the case may rapidly get worse, because catabolism is enhanced with further emaciation, a rapid heart beat, lassitude, and at times "rheumatic" pains as a result. Anabolism, i. e., the constructive phase of anabolism, should have been encouraged. Apparently, then, small doses are indicated. Even then but temporary results are obtained, occasionally, in fact, with aggravation, because they will have sensitized the cellular nucleins, and increased their oxidation at the expense of the already weakened adrenals. Briefly, the patient will also need some form of adrenal product, or, preferably, its far more efficient homologue, posterior pituitary, to take the place of the deficient adrenal secretion, and nucleins, as supplied by a diet rich in animal food. The pancreas, so important not only in intestinal digestion, we have seen, but also as the active agent in the defensive process, sometimes recovers its activity without requiring the administration of pancreatic preparations. In most instances, however, where insufficiency of the pancreas is clearly discernible through the phenomena described, pancreatin will prove a very efficient adjunct. Where the heart is abnormally dilated, an index often of hypoactivity of the adrenals, digitalin is helpful by stimulating these organs. Indeed, several investigators have shown that severing the splanchnic, which contains the nerves to the adrenals, arrests the action of digitalis. Where the hemoglobin ratio is low, iron is helpful with the adrenal products or their congeners, to build up rapidly the hemoglobin molecule.

These examples must suffice, lest this paper be unduly prolonged, to indicate that the intelligent treatment of these exposed subjects, whether in civil or military practice, requires careful adjustment of the measures employed to each case, as elsewhere in the domain of rational therapeutics.

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2043 WALNUT STREET.

THE DIAGNOSIS OF SURGICAL LESIONS OF THE KIDNEY AND URETER.*

By A. RAYMOND STEVENS, M. D.,
New York,
Assistant Surgeon, Urological Service, Bellevue Hospital.

The refinements of the methods of investigation employed in the discovery, differentiation, and localization of surgical lesions of the urinary system have reached a degree of precision which affords a near approach to certainty in the diagnosis of urinary diseases. Rarely is exploration by operation needed; in conditions of the upper urinary tract this last resort should be preceded by an accumulation of data permitting immediate judgment at an operation concerning the surgical procedure to be employed. The history is a valuable guide in examination, but is notoriously unreliable for accurate diagnosis. Too often it may lead us astray. Serious pathological conditions may lie dormant or may give rise to only general or vague symptoms and to none of the classic pictures we are taught to expect. Moreover most symptoms are common to many diseases. One has but to mention in illustration, pain in the back, renal colic, and frequency of urination. The larger the group of accurately observed complaints, the more likely will the tentative diagnosis be correct. We say "tentative," as no surgeon will regard as final a conclusion based on symptoms alone, when the modern methods of urologic examination permit of almost mathematical accuracy.

Our first aim is to establish whether the urinary tract is involved, whether it is wholly or in part responsible for the illness in a given case. The three cardinal indicators of a pathological state of the urinary tract are disturbances of micturition, especially frequency, abnormal urine contents, and pain. Frequency of urination as a marked symptom of disease of the kidneys and ureters is notably characteristic of tuberculosis. The writer has published a paper (1) on the meaning of this symptom in general and the differential diagnosis of the causes. It is important for the present purpose to note that continued frequency by night as well as by day in a young man should indicate tuberculosis in the prostate or kidney, till fully disproved. In calculus, frequency may occur with acute attacks of pain. Otherwise this symptom is usually not marked in surgical conditions of the upper urinary tract.

The presence of pus in the urine always demands an explanation. In most instances in men its origin is the genital tract, and often this may be conclusively demonstrated by a test so simple that one wonders why this procedure is neglected almost universally except by urologists. As a rule we look at the first urine voided. If a source higher than the urethra is suspected, reverse the rule and submit the last urine to microscopic examination. This last voiding represents the bladder urine quite as accurately as a catheterized specimen. In the absence of blood, a clue to renal origin of pus is sometimes afforded by an excessive amount of albumin, more than experience proves to be the usual accompaniment of the pus present. However, with the establishment of the pus, with or without bacteria in the bladder urine, the further localization of the source is a task for the expert cystoscopist and urologist. Ureteral catheterization is essential.

To establish the ureter as the source of blood in the urine, there is but one dependable method. One must actually see blood coming from the ureter during cystoscopy. A mass in one kidney region, a deformed renal pelvis as demonstrated by pyelography, a proved renal tuberculosis or calculus, long thin clots in the urine, or associated renal colic—these may strongly indicate the source of a hematuria, but only visual demonstration is proof. Blood obtained from a ureter by ureteral catheterization means little. Not infrequently this is obtained in normal cases, due to traumatism.

The pain associated with renal and ureteral disease affords an interesting study. Typical renal colic radiating along the course of the ureter is fairly certain evidence of stone or blood clot in the ureter. Pain in the kidney may be caused by any surgical renal lesion, by distention due to obstruction in the ureter, and by perirenal inflammation. But it is sometimes difficult to persuade ourselves that a dull pain referred to the kidney region does not necessarily mean renal diseases, and most confusing to the doctor and inexplicable to the patient are those occasional instances of pain in one kidney and disease in the other.

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*Read before the Passaic (N. J.) Medical Club, April, 1917.

The accuracy of diagnosis of lesions of the urinary tract is in direct proportion to the intelligence and care and skill employed in examination. Our mistakes will be fewer if we do not neglect the general survey, the search for disease elsewhere. Coming directly to the subject under discussion, we wish to emphasize the necessity of examining the whole of the general urinary system in every case. A routine urine examination is made and the first portion voided is compared with the last. If the presence of pus is the only indication of renal disease, and there is no pus in the last urine voided, the matter is settled—the kidneys are not the source of the pus. General abdominal palpation, especially of the kidney regions, is a part of the routine. The inguinal glands are noted, then the scrotal contents; and a rectal examination always must be included. In hospital work a röntgenogram is taken of all patients whose history is at all suggestive of urinary calculus. A satisfactory plate should show most urinary calculi, excluding those composed of uric acid or urates only, and also the outlines of the kidneys. All this precedes the bladder examination, as in connection with this, there are many possible lines of investigation. These may not easily all be done at one séance, and to save the patient the discomfort and the doctor the work of a second cystoscopy, all possible data are collected prior to this examination to make clearer just what points need elucidation. We have learned to rely to a great extent on the phenolsulphonephthalein test, and like to have the output of this drug determined before the special examination is made.

In doing cystoscopy, one incidentally rules out urethral stricture tight enough to cause severe symptoms. The bladder capacity is noted. Neoplasms, calculi, ulcers, and diverticuli are looked for. These are important as causes of hematuria and frequency of urination. Cystitis and ulcers may increase a suspicion of renal inflammation. Indeed in men, a primary cystitis is rare. The ureteral orifices by distortion, retraction, inflammation, or ulceration may give a strong clue to trouble higher up. This is notably so in tuberculosis. A localized swelling above an orifice may be caused by a stone in the intramural portion of the ureter. Occasionally the stone is actually seen protruding. Sometimes urine from a kidney is so full of pus that a milky ejection is visible; and as stated before, blood from a ureter can be diagnosed only by a cystoscopic observation. In certain instances much valuable information can be obtained by noting the time of appearance of color of certain dyestuffs injected intravenously and excreted in the urine. Sometimes ureteral catheterization is impossible and this is our only resort. Indigo carmine is the drug usually employed, but phthalein may be used satisfactorily by making the irrigation fluid in the bladder a little alkaline with a few drops of sodium hydrate.

For the precise determination of kidney lesions and renal function, ureteral catheterization must be employed. Here we are confronted by a double problem, to locate the disease and to estimate the functional value of the existing renal tissue. The question arises: Are there two kidneys, and are they both working? A satisfactory answer is often obtained by seeing urine spurt from two ureteral orifices. For precise information, segregation of the urines by ureteral catheterization is essential. Obstructions in the ureter are often met with. They may be significant or they may have no pathological basis; another type of catheter may pass readily. If a hydronephrosis or pyonephrosis is tapped by the catheter there will be a continuous flow of fluid until the sac is emptied. Then the characteristic intermittent flow of urine from the ureter is observed. The urines obtained synchronously are examined comparatively. Microscopically we are interested chiefly in casts, pus, red blood cells, and bacteria. If pus and bacteria in fair quantity in an ordinarily stained smear are present, there is an infection, probably not tuberculous. If few or no bacteria are found, the tubercle bacillus should be diligently searched for. Repeated and careful examinations must be made; it is better to have many specimens searched for short periods than one for a long period. Tubercle bacilli are found in the urine by careful workers in seventy to eighty per cent. of tuberculous cases. A guineapig may be inoculated at once, but a diagnosis in six weeks is the best we can hope for. Moreover, other considerations may vitiate this test. A microscopical diagnosis gives a quicker result in the majority of cases, and in competent hands a most reliable one. Recent work indicates that exposure to the x ray may hasten the growth of a tuberculous process in a guineapig, so that a result is obtainable in ten days. The writer has had no experience with this method. The possibilities of simple renal excretion of tubercle bacilli from an active lesion in another part of the body and of a reflux up the ureter from the bladder are to be borne in mind in obscure cases. The presence of albumin has a value only in connection with the foregoing data. A comparison of the output by the two kidneys of normal excretory products is of great value. Of these, urea is the only one usually considered. Both the urea percentage and the total amount in synchronously obtained specimens are indicative of the relative values of the two kidneys. The amounts of urine obtained are worth considering. If water is forced by mouth, a good kidney will respond with a greater increase of urine output than a poor one. A bad kidney tends to work all the while at its maximum capacity.

Many other methods have been devised for judging kidney functional value. Cryoscopy has its ardent adherents. The determination of the amounts of certain substances normally present in the blood is of value, but not in connection with ureteral catheterization. The estimation of the urinary output of numerous substances injected in the muscle or vein has been employed to indicate renal capacity. While we must remember that the physiology of the kidney is intricate and imperfectly understood, and that each test is probably a test of the efficiency of only a portion of the excretory apparatus certain of these tests have been shown by wide clinical observation to have a real value in practice. Two of the dyestuffs, phenolsulphonephthalein and indigo carmine, head the list. The former is more widely used. It is largely excreted by the kidney and is easily estimated. In connection with ureteral catheterization, it is injected intravenously. The relative amounts of its excretion by the two kidneys run closely parallel to that of urea, but in addition its excretion has an absolute value that the urea excretion does not possess. Roughly speaking, fifteen per cent. recovered from a kidney in fifteen minutes after its first appearance represents a normal output.

At this stage of the investigation, we may have sufficient data or may proceed in various lines. The capacity of the renal pelvis may be determined by injection and recovery of sterile salt solution. Dilatation of the pelvis till pain is produced is an important diagnostic procedure, as the patient can usually appreciate it as the same pain or as a different pain from that originally complained of. Shadows on the x ray plate suspicious of urinary calculus can be shown to be such or not by outlining the ureter and pelvis on a subsequently taken radiogram with a wire stylet in a catheter, with a catheter impregnated with bismuth or lead, or with some silver salt like collargol or better thorium nitrate. Stereoscopic plates render this procedure more accurate. The outlines of the pelvis and ureter may in a similar manner be secured by the injection of thorium. This will determine dilatations, strictures, and abnormalities of form. A movable kidney may be graphically demonstrated by two x ray exposures with the patient standing and lying down. With stereoscopic plates a kink in the ureter is sometimes clearly shown on the plate taken with the patient reclining. In connection with this, a wire placed on the skin outlining an abdominal tumor will show the relation of this tumor to the kidney as defined by the pyelogram. To identify a suspicious x ray shadow as a ureteral stone and to demonstrate uric acid stones, the wax tipped catheter has come into prominence recently. It has been used many years for a similar purpose in women by working through a Kelly cystoscope—a simple tube. But even with the more complicated water cystoscope, with careful manipulation contact of the wax with the instrument can be avoided. The scratches produced by calculi on the wax are often difficult to see except with a lens, but are sharp and clean cut and afford a very definite diagnosis.

With the foregoing facts in mind, what are the data on which we base the diagnosis of the more common surgical lesions of the kidney and ureter? Tuberculosis may give general symptoms, such as fever and loss of weight, strength, and appetite. There may or may not be pain in the kidney region. It commonly causes frequent and painful urination by night as well as by day, and often hematuria. To be sure a similar picture may be given by tuberculosis of the prostate or any acute inflammatory condition of the posterior urethra. Cystoscopy reveals tubercles, ulcers, or edema about one ureteral orifice, or indeed may disclose a normal bladder. Fortunately, when the patient first seeks advice, but one kidney is involved, or at least one is much more markedly diseased than its mate. The bad kidney will give pus and tubercle bacilli and will show low renal function. Other renal infections may be associated with general poor health. They cause less frequency of urination or none. The bladder is usually less involved than in tuberculosis. Bilateral lesions of about equal severity are common in the absence of stone. A kidney so involved gives pus and one of the pyogenic bacteria, most commonly the colon bacillus. Such bacteria are as a rule plentiful enough to be easily found in smear preparations. The function is decreased in proportion to renal involvement. These cases must be investigated for stone and for ureteral obstruction. Calculus of the kidney or ureter may cause any degree of pain. Severe renal colic, radiating along the ureter from kidney to bladder, when typical, is almost pathognomonic of stone. But in most instances the pain is not so definite either in character or locality. The varieties are indicated by the numerous wrong primary diagnoses made in a series of 141 cases recorded recently by O'Neil from the Massachusetts General Hospital. They were appendicitis, gallstones, lead poisoning, malaria, gynecological conditions, hernia, orthopedic diseases, prostatitis and seminal vesiculitis, pyelitis, hypernephroma, nephritis, and hydronephrosis with kinked ureter or removable kidney. Calculus cases usually have blood, at least microscopically, in the urine with the severe pains, and less frequently with milder symptoms. From eighty-five to ninety-five per cent. of urinary stones will throw shadows on a röntgenogram. Pure uric acid or urate stones will not do so. Suspicious shadows may be proved or disproved to represent urinary calculi by outlining the ureter by an x ray catheter, by showing dilatation of the urinary tract above the stone, or by obtaining scratch marks on a wax tipped catheter. The latter two methods are chiefly depended upon to diagnose uric acid calculi. In a recent case, such a calculus was demonstrated as an apparent vacuole at the bottom of the column of thorium filling the ureter. Segregation of the urines from the two kidneys will often disclose infection on the affected side, and usually a decreased function even when infection is not present.

In hydronephrosis the ureteral catheter gives a continuous fast flow of urine when first introduced into the renal pelvis, followed by an intermittent flow after the pelvis is empty. The pelvic capacity is easily measured. Normally this is from six to ten c. c.; some place the figure as high as fifteen. Radiographic demonstration is easily produced by injecting thorium into the kidney pelvis just before the plate is exposed. The obstruction—stricture, stone, or outside pressure on the ureter—must be determined if possible.

The diagnosis of renal neoplasm depends on a history of hematuria, usually painless, with the blood present in the same density in first and last urines voided, negative bladder findings, visual demonstration of blood ejected from one ureter, and a certain deformity of the renal pelvis as demonstrated by a pyelogram. Pain in the kidney is an uncertain factor. General symptoms are not present until late in the disease. The tumor may or may not be palpable.

That pain is due to nephroptosis in a given case is strongly suspected from a history of relief on reclining or on wearing a properly fitting abdominal support. The pain may be reproduced by deliberately dilating the kidney pelvis through a ureteral catheter. Definite radiographic demonstration of ptosis of the kidney can be quite as definitely secured as that of ptosis of the gut.

From this outline of the methods employed in differential kidney diagnosis, we would leave several impressions in prominent relief. 1. Symptoms are often unreliable, sometimes positively misleading. 2. Careful and complete examination is essential for diagnosis, and we possess means to arrive in most instances at accurate clean cut diagnoses. 3. In men "cystitis" is rarely a justifiable diagnosis. It is nearly always a secondary consideration, and the burden of proof is on him who diagnoses a case as primary cystitis.

REFERENCE.

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10 EAST FORTY-FIRST STREET.

DEVIATION OF THE SEPTUM AND SUBMUCOUS RESECTION.*

By H. M. GODDARD, M. D.,
Philadelphia,
Laryngologist and Rhinologist, Jewish Hospital, Philadelphia;
Laryngologist and Rhinologist, Eaglesville Tuberculosis Sanatorium, Eaglesville, Pa.

A submucous resection implies an operative accomplishment that aims at the ultimate approximation, if not complete restoration of the calibre of the nares to that of the normal. The result of such correction is improvement in respiration. To rectify errors in breathing is, in itself, deserving of commendation, for experience has amply demonstrated the importance of adequate oxygenation of the blood. Since it is true that one of the chief causes of improper oxygenation is nasal obstruction and since it is known that to overcome this the patient resorts to an improper method of breathing, viz., buccal breathing, and that persistent buccal breathing will promote a despoliation of facial appearance, it behooves us earnestly to consider means of alleviation and cure. I have no new ideas or innovations. Much has been accomplished by the great workers of the past, and the profession gratefully accepts the principles that they have established. I do believe, however, that a proper approach to the subject necessitates the adherence to essential facts as brought out after years of experience. I shall, therefore, consider those features of the work which to me seem most important.

First of all, a fundamental appreciation of the physiologicopathology of the respiratory portions of the body is essential to the treatment of obstruction within the nasal cavity. As I am concerned now with the deviations and corrections of the septum, I shall omit a consideration of the minute anatomy of the nasal structures and merely mention that we are dealing with a part consisting of bone and cartilage covered with mucous membrane which serves as a partition that divides the nasal cavity into two compartments. Histologically, the various deviations met with are cartilaginous or bony in nature or a combination of both. Of these, I believe we more frequently meet with the deformities consisting of bone and cartilage combined.

Many hypotheses have been advanced by different authorities regarding the disturbing factor back of the so called developmental deformities of the septum. The high arched, or Gothic, palate is normally present in infants. Interference with the development of the skull may also mean interference with the development of the palate, resulting in the persistence of the original high arch. This high arching of the palate reduces the vertical dimension of the nasal chamber and as a result the septum in the course of development deviates to one or the other side. This was clearly demonstrated by Freeman in ninety-six per cent. of the cases of high arched palate he had seen. Freeman also believed that faulty development of the superior maxillary bones had very often much to do with the deviation of the septum. Morgagni attributed deviation of the septum to excessive development of the vomer. Jarvis believed that hereditary influences were the direct and chief causes of septal deviations, while others maintain that faulty development of other bones of the skull and face may be its cause. The consensus, however, seems to point to traumatic conditions during early childhood, and this seems to me the most logical deduction.

The symptoms that urge the patient to seek the physician are usually those of the many complications and sequelæ that are known to follow obstructive deviations of the septum. If the obstructive deviation is in the region of the inferior turbinate, a sense of fullness or stuffiness manifests itself in the lower portion of the nose; whereas, if a similar deviation occurs higher up in the region of the middle turbinate, this sense of stuffiness or fullness may occur at a higher level, in the neighborhood of the bridge of the nose between the eyes. If the obstructive deviation is sufficiently pronounced to produce a catarrhal inflammation in the anterior ethmoidal cells, pain upon pressure is elicited at the inner angle of the orbit under the floor of the frontal sinuses. The inflammatory process may even spread further and invade the frontal sinus, as a result of which subjective pain will establish itself over the neighborhood of the frontal sinus, and in association there may be a purulent discharge into either the anterior or posterior nares. When high deviations occur, the patient not uncommonly complains of severe frontal headache, particularly in the morning upon awakening. In cases of deviation accompanied by ethmoidal or frontal involvement there may also be a predominating complaint of dizziness or vertigo, which may be exaggerated upon stooping or upon suddenly arising from a stooping posture. In certain instances a deviated septum may be the reflex instigator of asthma due to increased pressure within the nasal chamber which irritates the middle turbinate or ethmoidal cells. A discharge indicates disease of either the lower portion of the nasal chamber or its upper portion. Postnasal or epipharyngeal discharge usually points to ethmoidal disease the result of the obstructive deviation. When the septal deviation does not completely obstruct the nasal passage, the stenosis may be an intermittent one. This is often found in instances of septal deviation in the anterior or lower part of the nasal cavity. Of course, external deformity of the nose will often indicate a deviation of the septum. Upon investigation the appearance of the septum as to size, position, structure, and relation to the outer walls of the nose will give more definite information. Upon inspection, pus or dried secretions may be found in the olfactory fissure between the deviation of the septum and middle turbinate, the result of ethmoidal disease, from which area the secretions have drained off. Frequent mild hemorrhage or epistaxis is often the sign of deviation in the lower or anterior portion of the septum. The nasal secretions, as a rule, become densely adherent to the septum in cases of low deviation and produce a sense of irritation which urges the patient to pick the nose or blow it, thus often causing these deposits to be torn away from the septum with slight consequent bleeding.

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*Read before the Lackawanna County Medical Society, Scranton, Pa., April 24, 1917.

The degree of septal deviation is in all probability reached at the maturity of general body growth. I am of the opinion that it is better to defer operations for this condition until the age of fifteen years. Patients, in most instances, do not seek treatment until complications or sequelæ have established themselves. It is the complicating afflictions such as rhinitis, otitis media, pharyngitis, laryngitis, etc., and the nasal neuroses as hay fever and asthma, that usually impel the patient to seek medical advice.

For a more comprehensive view of the subject and a better appreciation of the importance of operative procedure in the treatment of these septal conditions, I believe that we should consider the types of deviations that usually present themselves. We must, however, not lose sight of the fact that there are nonobstructive deviations which do not necessarily require operation, unless some other complications arise that would urge it. The types of deviated septums that require operative procedure are chiefly those that mechanically obstruct the nasal passage and those that create diseases posterior to it. The types of obstructive deviation are: 1. The type which shows a ridge on the septum that encroaches upon the inferior turbinate of one side, i. e., actually presses against it. 2. The type in which, in addition to pressure of the ridge against the inferior turbinate, there is also a convexity high up on the opposite side which mechanically obstructs the olfactory fissure. 3. The type exhibiting double convexity due to a split septum. 4. The S shaped septum which creates an obstruction in the lower portion of the nasal cavity on the one side and an obstruction in the upper portion of the cavity on the other side. 5. The high angular deviation of the septum which obliterates the fissure on the side of the deviation. 6. The type in which there is a marked deviation of the septum along its crest which forces the vomer to impinge upon the inferior turbinate of the other side. 7. An abscess or hematoma of the septum which obliterates both nasal chambers.

In the past many operative measures were adopted and tried with the hope of restoring to a normal state disarranged relations within the nasal chamber. Many operations, such as the Gleason, Asch, Kyle, etc., were resorted to and no doubt many beneficial results were obtained, but it is because of the uniformly good results that follow submucous resection that this operation is so often selected as the procedure of choice by the great number of rhinologists. Our chief object is to give the patient good breathing space, and thereby generally improve his health. From the standpoint of conservatism, if the operation is properly performed, no mucous membrane is destroyed, there is little or no discomfort to the patient at the time of or following the operation, and two factors which chiefly interfere with the success of nasal operations—redundancy and resiliency—are positively eliminated. Still another important feature attending its employment is the fact that by its use the customary danger to the turbinate bones, through other operations, is reduced to a minimum.

The conservation of mucous membrane is a very important feature of this operation since once the ciliated epithelial lining of the nose is destroyed, it can never be replaced. Furthermore, if we reflect for a moment on the physiology of the nose, we cannot but appreciate the importance of an intact nasal mucosa. By destroying the mucosa we are very apt to substitute a perverted respiratory function for an obstructed one. For instance, where there was no nasal breathing, there is now breathing, but it may differ from the normal in that there is improper filtering of dust and germs from the inspired air, inadequate warming, or inadequate moistening of the inspired air, as well as a loss in effectiveness with respect to the antiseptic or bacteriolytic action of the mucosa. Besides these ill effects, there may also result affections of the olfactory, auditory, and vocal functions. Every deviated septum does not spell operation. It is only when definite pathological indications arise that operative interference is warranted, and past clinical experience will serve as a guide in these instances. Pathological indications are organic defects which create, 1, interference with normal functional activity of the inferior turbinates; 2, interference with the proper ventilation of the middle and superior meati and accessory sinuses; 3, interference with the drainage of the nasal chamber and sinuses.

The technic employed by me in this operative work is briefly as follows: A twenty per cent. solution of cocaine is first applied to both sides of the septum. After a few minutes a second application is made. I then place a thin layer of cotton dipped into a one to 1,000 solution of adrenalin chloride on both sides of the septum. Then after waiting fifteen to twenty minutes the adrenalin strips are removed and another application of twenty per cent. cocaine solution is made. By this time there are usually no sensitive areas. Next an injection of a two per cent. solution of novocaine is made at the junction of the skin and mucous membrane, since it seems impossible to obtain sufficient anesthesia otherwise. Having obtained complete anesthesia, we are now ready to proceed with the operation. I believe it is upon this first step that the success of the operation depends. An incision is made at the junction of the skin and mucous membrane starting high up and extending well down into the floor of the nose. The original incision is then carried well down to the cartilage and the shining surface of the cartilage exposed. If this is properly done the consequent steps of the operation are simplified. Next, I use a Carter curette and with a few rapid strokes the mucous membrane is readily separated from the cartilage. An incision is then made through the cartilage to the basement mucous membrane of the opposite side, and with the Carter instrument a rapid dissection is again made as on the first side. Having completely freed the membranes on both sides, the cartilage is engaged between the two blades of a nasal speculum; then with a pair of pointed scissors a nick is made in the cartilage as high up as necessary to remove the deviated portion. This incision in the cartilage is continued with a small swivel knife, and with speculum still in place, all the deviated parts are removed. The flaps are replaced and retained in position by a Simpson sponge splint on both sides. The following day it is my custom to remove all dressings and the patient is thereafter seen daily until the parts are considered properly healed.

During operation two complications, hemorrhage and perforation, may arise; I wish to call special attention to the latter. Despite every precaution, there are times when it will be impossible to avoid perforating, and if this is done, it is no reflection on the operator's ability. If the perforation occurs, I am of the opinion it would be better judgment not to attempt to close it since it is not ordinarily productive of any untoward results, providing it is large. Should hemorrhage occur at the time of the operation, it is usually controlled by placing a packing dipped in adrenalin chloride at the site of hemorrhage.

Among the chief complications to be mentioned that may follow the operation are hematoma, abscess of the septum, infection of the Eustachian tube, a sinking of the bridge of the nose below the nasal bones, and acute ethmoiditis. While it is essential to mention these possibilities, it has been my good fortune up to the present time to encounter only perforation, infection, and three hemorrhages in a series of several hundred cases operated; I may add that infection, as in all other surgical procedures, may occur despite every precaution. Whenever a hematoma manifests itself, the proper course is to open the original line of incision and establish drainage; this holds true in any case of abscess formation.

In conclusion I wish to state that my clinical experience in the several hundred cases warrants me to look upon submucous resection as the operation of election, since I have seen impoverished, undernourished patients increase in weight within a very short time, persistent coughs disappear, throat irritations improve, impaired hearing restored to practically normal, and tinnitus aurium totally abolished. Although not a panacea, past results recommend its careful consideration.

1338 Spruce Street.

INTUSSUSCEPTION IN CHILDREN.*

With a Report of Three Operations.

By Gaston Torrance, M. D.,
Birmingham, Ala.,
Surgeon to the Birmingham Infirmary.

To quote Kimpton, intussusception is essentially a disease of childhood. The diagnosis of intussusception is the mother's story practically every time. In hardly any disease is this so often true. Usually the mother will say that the baby was perfectly well when suddenly he began screaming, turned pale, and vomited, but got better very quickly. After that the baby was fussy, cried, and apparently had pain at intervals with straining. Soon after first sharp pains the bowels may have moved. Usually within the first twelve hours the mother noticed blood in the stools and sent for the doctor. It is very important that diagnosis is made on his first visit.

Diagnosis.—Colitis is the only condition to be ruled out. In colitis there are usually a rise in temperature and frequent movements mixed with fecal matter and bloody mucus. In intussusception usually an abdominal tumor can be felt, but sometimes this cannot be made out on account of straining. Kimpton (1) says: "The tumor felt by rectum could well be omitted, for it would seem just to say that many early cases have slipped by because of not finding a mass on rectal examination. So often is this error made that certainly lives are lost. A rectal mass has little to do with the diagnosis of intussusception in the majority of cases, at the time the diagnosis should be made." Snow (2) reports three cases in which the diagnosis was confirmed by the use of x ray and bismuth injection. Halahan (3), of Buenos Aires, reports a case of appendicitis simulating intussusception. A transverse mass could be felt and there were bloody mucus stools and no fever, and great pain. An enormous appendix, fourteen centimetres long, was found and removed. Butzner (4) reports a case of spastic ileus stimulating intussusception. A perfectly healthy child eight months old was suddenly seized with sharp pains which came at intervals of about five minutes. A mass could be made out in the upper abdomen; the temperature was subnormal and there were bloody mucus stools. At operation a dilated gut was found which ended at a point as abruptly as if clamped off. Abdomen was closed, and the patient recovered.

Etiology.—Cubbins (5) says that the long mesentery, two and one half to three and one half inches, of terminal ileum and the fact that the cecum in these cases had a distinct mesentery have attracted his attention. Ladd (6) says intussusception occurs more frequently in healthy and well nourished babies than in those who are poorly developed and nourished. Forty-nine of the sixty-three children he reported were under one year of age. Depping (7) reports two cases in which intussusception occurred as a sequel to whooping cough. McGlannon (8) reports a case in which the condition was caused by round worms. Two intussusceptions were found, one in the terminal ileum and one in the jejunum; the bowel was opened and the worms removed. The child died sixteen hours later. In most of Starr's forty-six cases there was a history of intestinal disturbance, either marked constipation or diarrhea.

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*Read before the Alabama State Medical Association, April 18, 1917.

Treatment.—No other means of treatment except operation should be considered after the diagnosis is made, and every patient should be operated on within the first twelve hours from onset. The incision should be made through the right rectus and should be closed with through and through silkworm gut to prevent the wound from opening up or the formation of a hernia, which frequently has happened from the child crying or straining. Great care should be used in "milking out" the intussusception and very little traction should be used. Reduction is successful in from eighty to ninety per cent. of cases. Tilton (9) advises giving salt solution by rectum or hypodermoclysis, and thinks it advisable for the mother to resume nursing the baby at an early date so as not to disturb it more than necessary. He thinks a dose of castor oil the best means of carrying off the accumulated fecal contents and blood.

Cubbins suggests suturing the head of the cecum to the pelvic peritoneum and the ileum to the ascending colon with four or five sutures, bringing them parallel to each other and thereby preventing an intussception from reforming. Tilton thinks that any operation to anchor the gut after reduction is useless and only prolongs the operation and tends to lessen the little patient's chances of recovery. Lord (10) operated on a child of eight months who had been relieved by hydrostatic pressure and inversion the third time within five and a half months. A large edematous appendix was removed and the mesentrics of the cecum and ileum were reefed with silk sutures. There was complete recovery and no return. Turner (11) says: "Taking all the circumstances into consideration, I do not think it is necessary to take any special means to anticipate recurrence." Gray (12) says: "I do not believe there is any need to fix the cecum as a preventive measure. Also in these cases no more should be done than is absolutely necessary."

Gerald S. Hughes (13) reports the case of a child six months old from the York County Hospital who was operated on forty-eight hours or longer after onset, iliocecal variety. Extending down into descending colon, fifteen inches of the gut were resected with complete recovery. Charles N. Dowd (14) reports an intussusception in an infant five days old who was operated on thirty-seven hours from the onset of the trouble. More than one third of the colon from above the middle of the transverse colon down to the upper portion of the sigmoid was excised with recovery. C. Leonard Isaac (15) of Swansea, England, reports the case of a child two years old, with irreducible iliocecal intussusception. He resected the cecum and did an anastomosis between the ileum and ascending colon with recovery. Gallie (16) reports forty-five cases from the Toronto Children's Hospital in which seventeen resections were done; all the children died. Gauntlett (17) reports a child ten months of age in whom he did a resection twenty-four hours after the onset with recovery. Eisendrath (18) reports the case of a three months old child seen on third day of intussusception. He did a complete resection with anastomosis of ileum to sigmoid with recovery. On the seventh day during crying spell there was a complete evisceration. The intestines were put back and the wound resutured. He says recovery after resection is rare, and that the mortality is close to 100 per cent. Elliott (19) reports a case of intussusception in boy seven years old in the small gut due to a Meckel's diverticulum. Resection was done with complete recovery. No blood was shown in stools, which is the rule rather than the exception above the iliocecal valve. Fraser (20) reports two cases of intussusception above the iliocecal valve in children one and a half and ten years old. Resection was done in both cases with recovery. There was no blood in the stools of either child.

Recurrence.—E. M. Mahon (21) recently reported the case of a boy three years old who was admitted to Guy's Hospital in November, 1910, and was operated upon by C. H. Fagge for iliocecal intussusception. He was perfectly well until July 15, 1913, when he had a severe pain, blood, etc., and was removed to the hospital and was operated eleven and a half hours after onset. The condition was found to be an exact duplicate of his previous trouble, and he again made a complete recovery. Charles P. B. Clubbe (22) says that it is very rare that any trouble follows complete reduction after operation; it did not occur in any of his 144 cases, extending over a period of thirteen years. He has operated on two children for recurrence coming on two and six months respectively after operation. Adams and Cassidy (23) record only one recurrence in 100 cases, and this occurred five weeks after operation. Thomas H. Kellock (24) reports the case of a child who had apparently had five attacks and was relieved three times by enemas and twice by operation. G. Grey Turner reports the case of a child eight months of age operated on June, 1907, again in October of the same year, and in May, 1908, for the same type of intussusception. At the second operation he sutured the ileum to the cecum for four inches, the sutures were found at the third operation to have held firmly . . . . "though there were long flimsy adhesions between the two." The child was in perfect health in 1913. He reports another case of a child operated on in 1910 at seven months of age; the following year he had a recurrence of the condition and the physician found a mass protruding from the rectum. When he was admitted to the hospital this could be felt up in the rectum, but when the abdomen was opened the intussusception had been relieved. Tyrrell Gray reports a case of a patient operated on three times for intussusception with recovery. At the second operation a mobile cecum was fixed. F. O. Allen (25) reports a patient who did well for four days after operation, and then recurred and was operated on again.

Mortality.—C. L. Starr's (26) paper is based on forty-six cases with thirty-one deaths and fifteen recoveries admitted from three hours to eight days from onset. The average in fatal cases was seventy-four hours and thirty-two hours in patients who recovered. In Gallie's forty-five patients, of whom sixteen recovered, twelve were operated on within twenty-four hours from onset. Parmenter (27) reports fifty-three patients operated upon by "a considerable number of Buffalo surgeons"; twenty-three were operated on in from three to twenty-four hours with only one death. The remaining thirty were operated on from two to four days with nine recoveries and twenty-one deaths. Abbott (28) reports twelve cases with four deaths and eight recoveries. McMurtry (29) reports four cases. Only one case was operated in; two patients recovered.

Results.—Dowd (30) reports two recoveries; the patients were nine months and three years old and were seen twenty and twenty-eight hours after onset. He thinks that by the use of bismuth and x ray and with the usual symptoms no case should escape an early diagnosis. Kimpton says that prior to 1908 the mortality was eighty per cent. in the Infants' and Children's Hospital. He quotes Clubbe's statistics that in the first fifty of 124 cases the mortality was fifty per cent., in the second fifty, twenty-five per cent, and in the next twenty-four, 12.5 per cent. Ladd says that prior to 1908 ten cases were operated in at the Massachusetts General Hospital with one recovery, and eight cases at the Infants' Hospital with one recovery. Since 1908 there have been sixty-three cases operated in with thirty-two recoveries and thirty-one deaths, a mortality of forty-nine per cent. Of the last nineteen patients operated on only four died, a mortality of twenty-one per cent. Four of these sixty-three were operated on in twelve hours with no deaths; eighteen at twenty-four hours with three deaths, a mortality of 16.66 per cent.; thirteen at the end of thirty-six hours with fifty-four per cent. mortality; and seventeen at sixty hours or more, a mortality of eighty-eight per cent. Peterson (31) reports nineteen personal cases, ages six days to thirteen months, with eight deaths. All were seen within twenty-four hours. Vance (32) reports seven cases with early diagnosis in the case of three patients who recovered and four late diagnoses in which all died. Abbott reports twelve cases with eight recoveries. Snow reports four cases diagnosed at two, thirteen, fifty-two, and eighty hours respectively, with two deaths. F. W. Wilkerson (33) reports a successful case of a child one year old operated on seven hours after onset.

I will now present three interesting cases:

Case I.—Breast fed child, seven months of age, was in perfect health and was suddenly taken with sharp, cramp like pains, became quieter, but was uncomfortable and irritable. There were bloody stools and a mass could be felt on left side of upper abdomen. At operation twelve hours after onset, an iliocecal intussusception involving the transverse colon was found and was easily deduced. There was considerable thickening of the head of the cecum. No fixation. Child died thirty-six hours later.

Case II.—Breast fed male child, five months old, was suddenly seized with pain. He was well and strong prior to this. He was sent to the infirmary for observation. There was blood in stools and a mass in the upper abdomen. He was operated on by Doctor Gewin eight hours after onset. Iliocecal type, acutely inflamed appendix. Reduction was easily accomplished, appendix removed, and abdomen drained. The child made an uneventful recovery.

Case III.—A perfectly normal breast fed little girl, nine months of age, was suddenly seized with pain. An inexperienced colored nurse had taken the child out in the woods a few hours before and told the mother that the baby had swallowed some leaves from some small plant. She grew more quiet and was brought into the city the following morning about eighteen hours after onset, and was operated on within two hours. She had bloody mucus stools and a mass could be felt in the epigastrium. Nothing was felt by rectum. Iliocecal variety passing beyond the hepatic flexure of the colon. A small drain passed down below the cecum. Soda proctoclysis was given. Uneventful recovery.

Sodium proctoclysis was given in all these cases.

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The Woodward.

TABES DORSALIS.

Notes on the Age of Onset, the Incidence of Syphilis and Tabes, and the Pretabetic Period.

By Morris Grossman, M. D.,
New York,

Adjunct Visiting Neurologist, Central and Neurological Hospital; Chief of Neurological Clinic, Lebanon Hospital, O. P. D.; Assistant Neurologist, Mt. Sinai Hospital, O. P. D.; Voluntary Assistant in Neurology, Montefiore Home and Hospital.

There is such a divergence of opinion regarding the age of onset of tabes and the age of incidence of syphilis and tabes that it seemed to me advisable to study as large a group of cases as I could gather in order to obtain authoritative data on these questions. This note is based on the study of 240 cases of undoubted tabes, taken from my private practice and from the services of Dr. B. Sachs, neurologist to Mt. Sinai Hospital; Dr. S. Wachsman, director of the Montefiore Home and Hospital, and Dr. W. J. M. A. Maloney, neurologist to the Central and Neurological Hospital, to all of whom I am greatly indebted for the privilege of using their material.

Age of onset.—As there is no agreement as to the minimum essential to constitute a diagnosis of tabes, and as it is well not to include any doubtful cases, the age of onset derived from this study will slightly exceed that given by others who have included not only probable, but also possible cases of tabes. In determining the age of onset in this group, I arranged the cases in order from the youngest to the oldest. I then found the percentage of cases occurring in different age periods and excluded those at both extremes of the column, so that rare cases of precocity and equally rare cases of onset in extreme age should not unduly influence the result. In this process, the seven youngest and the seven oldest cases were eliminated; of two others the age could not be ascertained. The average age of onset of tabes in 224 cases—240 less 16—was 39.1 years. There has been considerable discussion as to the effect of antisyphilitic treatment upon the duration of the pretabetic period. I divided my cases into two groups: those in whom there was a definite history of a primary chancre and those in whom there was no such history. In the first group were 102, or 44.35 per cent., and in the second group were 128 cases, or 55.65 per cent. There were ten cases that could not be estimated. The age of onset of tabes in the cases in whom a history of a primary chancre was elicited was 39.1 years. The age of onset in those in whom there was no history of chancre was thirty-nine years. It is fair to presume that those cases in whom a primary chancre was recognized, received more antisyphilitic treatment than those cases in whom no initial lesion was detected. Indeed, many of the latter were unconscious of the fact that they had ever been infected with syphilis. Comparison of the figures derived from the above study shows no appreciable difference in the age of onset of tabes in these two groups.

The incidence of syphilis and tabes is alleged to vary at different age periods. The average age of infection among those who had primary chancres, in this group of cases, was 24.44 years. The average age of onset of tabes was thirty-nine years. The average pretabetic interval was, therefore, 14.6 years. What I may call the age coefficient of tabes, the ratio of the duration of the pretabetic period to the age at which infection occurred, was 14.6 divided by 24.4, or 0.599. I have calculated this ratio for five year age periods, ranging from ten to fifty years.

Age period.	Number of cases.	Age coefficient.	Average pretabetic period.
10 to 15	2	0.935	13 years
15 to 20	27	0.86	16.37 years
20 to 25	35	0.671	15.17 years
25 to 30	21	0.448	11.85 years
30 to 35	10	0.423	14.00 years
35 to 40	5	0.327	9.05 years
40 to 45	1	0.268	11.5 years
45 to 50	1	0.291	14.0 years

The lowest individual coefficient was 0.1 and the highest was 1.55. The average or group coefficient was 0.587, after eliminating six cases at the two extremes. The coefficients here given are not absolute values. Most of the groups I deal with are too small to eliminate with certainty the variations which may be due to possible virulence of the infecting organisms, and to the difference in resistance in different individuals in the same group. Indeed, in the group of cases whose ages ranged at the time of infection from fifteen to twenty years, the coefficient varied from 1.39, the highest, to 0.36, the lowest. However, in groups of ten or more cases, I think the group coefficient approximates sufficiently closely the average for that age to permit us to make certain tentative deductions.

Thus there is no evidence to support Erb's contention that the younger the age of the infection, the earlier tabes follows. Mingazzini and Salvadori and Schaffer have all supported Erb's contention. These four observers have between them offered in evidence only four cases; the oldest of which was 22.5 and the youngest was 18.5 years of age. In my series there were twenty-seven cases in the age group between fifteen and twenty years, and they yielded a coefficient of 0.86, which is a figure higher than that given by any of the other age groups that contained more than ten cases. Pitres asserts that syphilis occurring in the aged is rapidly followed by tabes. In my group there were no cases of syphilis occurring in extreme old age. The oldest patient, in my series, received his infection at the age of forty-eight years, but the tendency to shortening of the pretabetic period as years advance, which is evident in my table, seems to confirm Pitres's observation.

Exceeding the average pretabetic period of all the cases, 14.6 years was that only of two groups: the group from fifteen to twenty years inclusive which was 16.37, and that from twenty to twenty-five years which was 15.17. From twenty years of age onward the average pretabetic period seemed to decline. This decline by the age of forty years equals 7.12 years, but the gain between the fifteen and twenty and the twenty to twenty-five year groups was 2.15 years. The significance of these variations, if further researches confirm them, is obvious. The resistance of the central nervous system deteriorates with age as Maloney contends.

CONCLUSIONS.

1. The average age of syphilitic infection, dated from the primary chancre, was 24.4 years.
2. The average age of the onset of tabes in 238 cases was thirty-nine years.
3. No detectable difference exists in the age of onset of tabes in those patients treated with antisyphilitic remedies and the age of onset in those untreated or presumably less treated.
4. The average pretabetic interval is not greater than 14.6 years.
5. The pretabetic interval in the young may, but seldom does, last for a shorter period than in the more mature.
6. The resistance of the central nervous system seems to deteriorate with age.

1 West Eighty-fifth Street.

Pyelotomy Versus Nephrotomy.—J. Welfeld (*Illinois Medical Journal*, April, 1917) in discussing operative procedures for the removal of renal calculi states that pyelotomy is the operation of choice. Its advantages over nephrotomy are absence of destruction, of secreting tissue, less danger of hemorrhage, and better chance of thorough exploration. If there is bilateral involvement there is not enough destruction of tissue to prevent functioning.

STUDIES IN ACUTE ANTERIOR POLIOMYELITIS.*

By George D. Heist, M. D.,
Myer Solis-Cohen, M. D.,
and John A. Kolmer, M. D.,
Philadelphia.

NOTES ON THE ISOLATION AND CULTIVATION OF THE GLOBOID BODIES.

Flexner and Noguchi in 1913 isolated a minute microorganism from the nervous tissues of human beings and monkeys dying of acute anterior poliomyelitis, which they termed "globoid bodies." Since that time Flexner and his associates have repeatedly isolated and cultivated the globoid bodies, but no one except those on the staff of the Rockefeller Institute has reported the finding of a similar organism.

We desire here to describe briefly the successful isolation and cultivation of an organism which corresponds in every particular with the globoid bodies of Flexner and his coworkers. Our methods were those employed at the Rockefeller Institute. We have succeeded in isolating four strains of the organism. Two were strains secured from glycerinated brain and spinal cord taken from human beings who died of poliomyelitis at the Philadelphia Hospital for Contagious Diseases; one strain came from the fresh brain of a monkey which Dr. Charles K. Mills and Dr. Allen J. Smith permitted us to culture, that developed clinical and histological poliomyelitis following the intracerebral injection of a human virus sent to the University of Pennsylvania by Doctor Leake from a patient in West Virginia succumbing during the winter epidemic of 1917; our fourth strain came from a poliomyelitic monkey, a glycerinated segment of whose spinal cord was given us by the Pennsylvania State Department of Health Laboratory through the courtesy of Dr. Samuel G. Dinon and Dr. James B. Rucker, Jr. In one instance fragments of the fresh monkey brain were planted in tubes of kidney ascites fluid; in the other three instances a Mandler filtrate was inoculated. In all about thirty-five tubes were inoculated with poliomyelitic material and successful growths were demonstrated in five tubes. The average time elapsing between inoculation and the appearance of a growth was over thirty days. Growth appeared only in tubes incubated under anaerobic conditions. In three instances a layer of paraffin oil two inches deep provided sufficient anaerobiosis for the initial growth to develop; in the fourth and most successful one the tubes in addition to being covered with oil were placed in an atmosphere of hydrogen. Uniformly successful subcultures were not obtained from any strain until all of the tubes were placed in the atmosphere of hydrogen. It seemed to us that the organism grew better when the rabbit kidney had been aged for several weeks before the ascitic fluid was added.

The utmost difficulty was experienced in staining the minute organisms. Giemsa's stain applied as described by Flexner and Noguchi failed to show distinct microorganisms in a majority of films prepared directly from the inoculated ascitic fluid. It was not until we adopted the method of searching for the pairs, chains, and clusters of minute globules in a simple hanging drop preparation that we were able to follow with certainty the slow development of the organism in the culture tubes.

In the fluid medium—rabbit kidney plus ascitic fluid—the organism seldom produced any change in the appearance of the fluid. Even when a fairly large number of organisms could be seen in a hanging drop the inoculated tube did not differ in appearance from the control tube. Occasionally, when a tube had been allowed to incubate for a prolonged period without being shaken, a careful examination against the black background would show a very faint haze which extended halfway up the column of fluid and stopped abruptly with a sharp line of demarcation. Very slight shaking would distribute the haze throughout the fluid so that it could no longer be recognized. In the solid medium a similar very faint haze, stopping abruptly some distance below the oil, was seen. Successful transfer from fluid to solid medium, resulting in a visible growth, was not accomplished until the ninth generation. One strain has been under cultivation for eight months and is now in the tenth generation. In the higher generations growth was more rapid. Seven to ten days elapse after inoculation before a good growth can be demonstrated.

We have found that the microorganisms can be stained easily with a number of the more active stains if previously freed from the ascitic fluid by centrifuging and washing in salt solution. In a satisfactorily stained film the very minute organism shows no particular arrangement. Large masses, clusters, chains, and single individuals may be found. The large masses are found only when growth has been very good and incubation prolonged. In such films degeneration forms are prominent. The organisms usually, but not invariably, stain violet with Giemsa, and the contrast between them and streptococci, which stain blue, is striking. In our hands they have uniformly been decolorized by Gram's method.

I. NOTES ON THE OPSONIC ACTION OF POLIOMYELITIC SERUM UPON VARIOUS ORGANISMS ISOLATED FROM ACUTE ANTERIOR POLIOMYELITIS. II. COMPARATIVE STUDIES OF STREPTOCOCCI ISOLATED FROM POLIOMYELITIS.

In addition to the globoid bodies, we have in several instances isolated from poliomyelitic material, a rather large streptococcus, occurring in short chains. With the object of determining whether it is one type of streptococci so commonly found associated with acute anterior poliomyelitis, or several, we obtained one strain isolated by Kolmer, Brown, and Freese, of Philadelphia, two by Rosenow, Towne, and Wheeler, of Rochester, one by Nuzum and Herzog, of Chicago, and two by Mathers, of Chicago. We have grown them side by side upon the same mediums. We have applied to them fermentative and other cultural tests found useful in the classification of streptococci. We have immunized rabbits with strains from the different sources and with the serums so obtained have performed opsonic tests upon each strain to see if the heated serum giving phagocytosis with the strain with which the rabbit was injected would also cause phagocytosis of the other strains. Wth these same immune rabbit serums we also performed cross agglutination tests.

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*The first part of this work was done at the Jules E. Mastbaum Research Laboratory of the Jewish Hospital and the McManes Laboratory of Experimental Pathology of the University of Pennsylvania; the second part was done at the Jules E. Mastbaum Research Laboratory of the Jewish Hospital.

The six strains of streptococci when examined by cultural methods appear to be identical or closely related. When examined by methods tending to bring out their functional activities Kolmer's strain, Mathers's strains, and Nuzum's strain from human spinal fluid are identical and the weight of evidence points toward the inclusion of Rosenow's strain No. 707 in the same group. The serum of a rabbit immunized with Rosenow's No. 44, however, caused the ingestion to a slight extent of Rosenow's No. 707, but not of the other strains. It would seem therefore that Rosenow's No. 44 is at least as different from Kolmer's, Mathers's, and Nuzum's strains as one type of pneumococci is from another. Agglutination tests failed to distinguish any difference between Kolmer's, Mathers's, and Nuzum's strains and Rosenow's strain No. 707. The serum of the rabbit immunized with Rosenow's No. 44 did not agglutinate any strain clearly, nor was No. 44 agglutinated by any serum. All of these streptococci were quite distinct from the globoid bodies in every particular. We have never found anything resembling a transition between the two organisms.

We have also studied a number of strains of these streptococci serologically to see if serum from patients with poliomyelitis would give a specific reaction with any of them that might point toward its presence at some time in the tissues of the patient. The serums of a large percentage of patients with poliomyelitis gave high opsonic indices with these streptococci, but not with streptococci from nonpoliomyelitic sources, nor with staphylococci, diphtheroids, and Gram negative bacilli obtained from poliomyelitic material. A full description of the experiments will be published shortly.

STETHOSCOPIC ELECTROVIBRATORY PERCUSSION.

By J. P. Hickey, M. D.,
San Francisco, Cal.,
Acting Assistant Surgeon, U. S. Public Health Service.

In reporting the use of an electric vibrator in conjunction with a stethoscope in determining areas of dullness it is possible that I am repeating something that has already been said, but if so I have been unable to find any reference to it in the literature and, having originated the instrument, I am, as far as I know, the first person to use and to report any such appliance.

While experiencing the usual difficulty in determining splenic dullness the use of a vibrator suggested itself in conjunction with the ordinary phonendoscope having a metal staff screwed into its outer diaphragm. I found that by using such an instrument it was possible to make out the upper border of the spleen, also to determine distinctly borders over which by ordinary percussion only relative dullness would be elicited. When the staff of the vibrator was placed over an area where there is an intervening structure, as for instance the upper border of the spleen with lung tissue intervening, there was noticed a shading of the vibratory note that was transmitted but the difference was, when placed outside the splenic area for comparison, sharply contrasted.

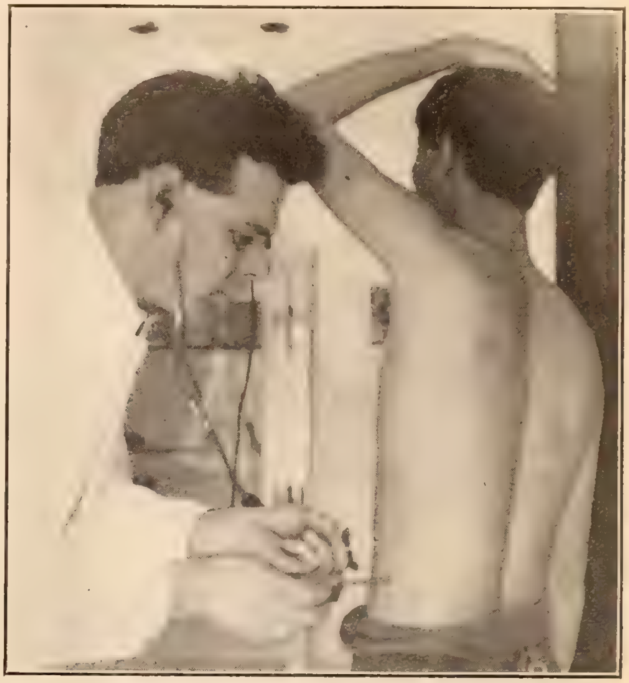

Fig. 1.—Outlining the spleen.

In using electrovibratory percussion and following the rules of ordinary percussion, it will be possible to outline rapidly and definitely both physiological and pathological dullness without annoyance from outside noises. The method will be found especially useful where many physical examinations are made at one time, where conditions are suspected wherein changes in the liver or spleen take place, and where it is desired to observe splenic and hepatic

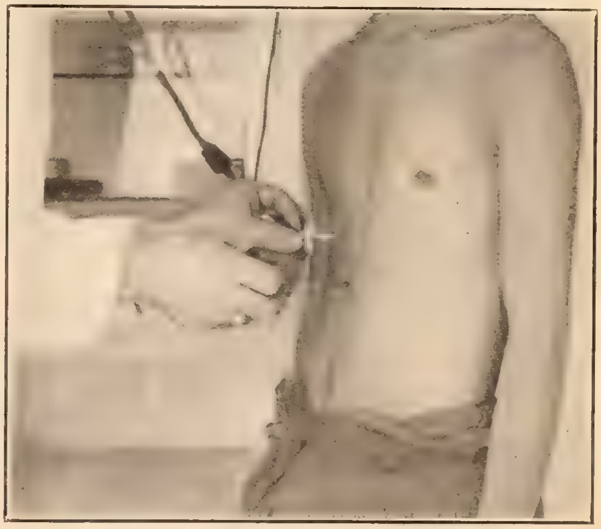

Fig. 2.—Outlining the liver.

fluctuation, e. g., in typhoid fever, malaria, kala azar, schistosomiasis, etc.

The technic is simple. Place the staff of a stethoscope or phonendoscope over the organ to be outlined, perferably over an intercostal space (see Figs. 1 and 2). Then, beginning at a distant point, approach the supposed position of the margin of the viscera with the staff of the vibrator. When the margin of the organ is reached a distinct sound will be produced or a change in the faint sound that had existed. The interspaces over which to place the staff of the stethoscope when outlining the various viscera are as follows: Liver, seventh in the mammary line, eighth in the axillary line; spleen, ninth or tenth in the axillary line; heart, third or fourth one inch inside the mammary line.

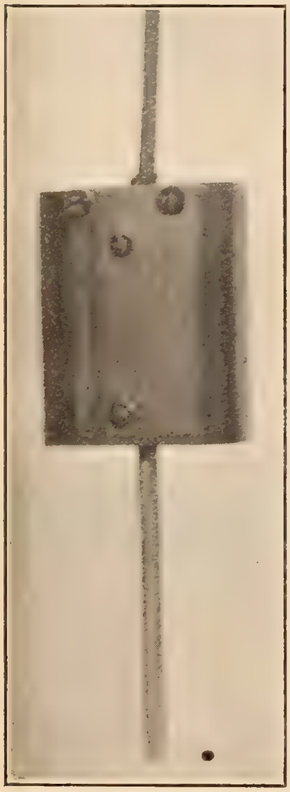

FIG. 3.—The vibrator. Dimensions: Metal case—length, two inches; width, three-quarters inch; depth, three-quarters inch. Staff—diameter, three-sixteenths inch; length, two and three-quarter inches.

When compared with ordinary percussion the chance for error is slight, as, for instance, in outlining the spleen the dullness may be increased by a full stomach, or colon at its splenic flexure. These sources of error will be eliminated by making the examination during fasting and after purgation. The posterior border of splenic dullness may be continuous with that of the left kidney, but the determination of the position of an anterior and inferior border of the spleen will give sufficient information for us to judge its size. The mapping out of the heart and liver presents no difficulties. These organs will appear larger owing to the vibratory sound being transmitted through the "areas of relative dullness."

The technic for determining dullness over the pulmonary apices is carried out by placing the vibrator staff over the spinous processes of the lower cervical or upper thoracic vertebræ while the staff of the stethoscope is placed in the supraclavicular space. It will be found that a distinct note will be elicited over the infiltrated area, while the sound will be scarcely perceptible over a normal one. This method has been used with success in cases of tuberculosis and paragonimiasis.

The apparatus consists of an electric vibrator enclosed in a metal case with a staff extending from its under side. Fig. 3 shows the instrument as used by me. Only one cell of dry battery or its equivalent of street current will be necessary to actuate it, this amount of current producing the most desirable light vibration. Any stethoscope equipped with a diaphragm and a staff may be used in conjunction with the vibrator.

2473 FOLSOM STREET.

THE NONFACETTED GALLSTONE.

Diagnosis and Medicosurgical Treatment.

BY ARNOLD PESKIND, M. D.,
Cleveland, Ohio.

Few diseases are as perplexing to the physician and surgeon as some of the affections of the chylopoietic organs, and the nonfacetted, usually solitary, biliary calculus is one of the most troublesome. Those who have met it in an appreciable number will understand the significance of these introductory remarks, and will also agree that cholelithiasis still needs much studious attention. Little will be said concerning its origin; it is common to all forms of cholelithiasis which has its beginning in acute infectious cholecystitis, secondary to an infectious process somewhere in the gastrointestinal canal. They also are seen in individuals having an idiosyncrasy toward concentration of the bile salts in the gallbladder, with a tendency to precipitation of the salts, not apparently due to any previous active inflammation. In this stage the symptoms and course are also alike in all forms of cholelithiasis.

Whether facetted or nonfacetted, gallstones start from small yellowish granules which are precipitated crystals of bile salts, deposited on the inflamed or altered mucosa of the gallbladder as a result of germ activity or of altered secretions of the cystic mucosa. While many of these granules are washed away into the intestinal canal, many remain that are shed with the mucous membrane and, falling to the floor of the gallbladder, are cemented by the plastic exudate into spherules. Coalescing, they form larger globules and through pressure or friction or both assume a facetted shape. This usually takes place after the acute stage has subsided and is the most common process of gallstone formation. At times these spherules are cemented together into a solitary globular or ovoid mass, irregular in outline, varying in color from yellowish white to bright and dark yellow to green and very dark green, rough to the touch and ranging in size from that of a small pea to a mass from three to over five centimetres in its largest diameter and sometimes over three centimetres in the largest transverse diameter. These stones are without facets and as a rule are solitary, but in recent cases two or three irregular round balls have been found in the same gallbladder at the same time. It is the increased number, however, that causes the formation of facets on the stone. The shape and size of this nonfacetted stone produces characteristic clinical symptoms which differentiate this stone from the facetted variety. This is especially true in the later chronic stages of stone formation when obstructive symptoms appear. The obstruction resulting from the impaction of the globular stone is as a rule complete as soon as the stone becomes impacted in the duct. This is rarely the case when the obstruction is due to a facetted stone. In the latter form of stone there is always in the very early stage of obstruction a small space left between the stone and the wall of the gallbladder for bile to trickle through into the intestinal canal. It is only when an acute inflammation of the duct supervenes or softening of the facetted stone accompanies the obstruction that the passage of bile is completely stopped.

In spite of these differentiating characteristics, the diagnosis is very often beset with the most embarrassing difficulties. The clinical history in most of these cases will bear this out. It is usually as follows: The patient goes to bed in apparently the best of health. Some time through the night he is awakened with a sudden distress in the epigastrium, a sensation of fullness, uneasiness in the stomach not actually pain, and no, or scarcely any, inclination to vomiting. Some home remedies are tried and the patient feels a sudden relief. He blames his last evening's dinner for his disturbed sleep. The attack, however, is soon over and he falls asleep again and forgets all about it. After a few days or weeks other and repeated attacks assure him that something else than a upset stomach is the matter. He consults the doctor. The latter blames a few more things, but affords not much permanent relief. And why? The globular or ovoid stone, after entering the cystic duct—usually at night, as the patient turns on his left side—blocks the lumen of the duct completely and the contents of the gallbladder are unable to empty themselves, and cause an acute distention of the gallbladder if the stone is impacted in the cystic duct. Muscular spasms of the duct and of the walls of the gallbladder cause the sudden distress. As soon as the duct is dilated somewhat from the backward pressure by the retained contents of the gallbladder, the ovoid stone slips back into the gallbladder and all the symptoms subside suddenly to leave no physical sign by which to suggest its presence in the viscus. The history varies a little in cases in which the stone has succeeded in passing the cystic duct and becomes acutely impacted in the common duct. This happens more frequently when the patient is up and about or is in a sitting position. It is also ushered in suddenly, but is most frequently accompanied by vomiting, at least nausea, with pain in the epigastrium and not infrequently chills and fever of short duration. These attacks usually pass off after an hour or two without leaving any physical evidence of the cause of the sudden onset. Should a specimen of urine be examined the following day, a variable trace of bile will easily be found following this attack. This is because the shape of the stone favored the complete occlusion of the duct, however short the time, and some retention of bile has taken place as a consequence. But beyond this there is nothing left to guide the diagnostician. Of course, should the impaction extend over a longer period of time, then the perceptible, gradual enlargement of the gall-

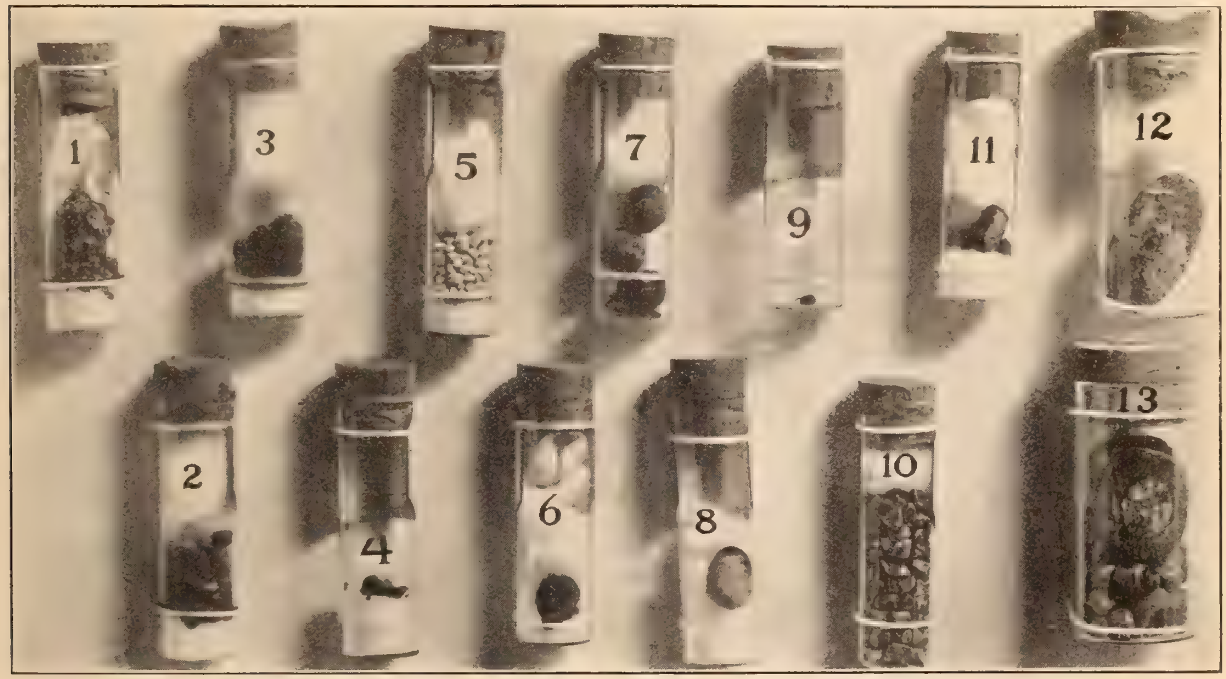

Fig.—Series illustrating the evolution of the nonfacetted biliary calculus. 1 and 2 show the bile crystals in process of precipitation. 3 and 4 show the conglomeration of crystals into spherules. 5. Spherules of bile salts, rich in lime salts. 6. Solitary gallstone, which was removed from cystic duct. Shows the stone as consisting of numerous spherules cemented into a ball. 7. Three nonfacetted calculi, all of recent formation, removed from a suppurative retention cyst of the gallbladder. One of the stones was impacted in the cystic duct. 8. Solitary calculus removed from the papilla of the common duct. A thin probe failed to discover its presence. 9. Caused many attacks of obstruction of cystic duct and consequent acute distention of the gallbladder. 10. Facetted stone removed from a suppurative gallbladder, after the patient suffered from symptoms of cholelithiasis for several months. 11. A large gallstone that blocked the common duct for over two weeks and passed through the duct without surgical assistance. 12. Shows the usual size and shape of the large ovoid or cone shaped solitary nonfacetted gallstone. 13. A large calculus, sawed through longitudinally, showing the original conformation of the cemented spherules into a nonfacetted globular stone. This latter, as a result of inflammatory processes or bile concentrations and of more bile salt precipitation, increased to its present size and shape, and through the additional formation of new stones became subsequently facetted at each end, where it came in contact with the stones of a later formation.

bladder, in case of cystic duct obstruction or pronounced early jaundice in common duct occlusion, are pathognomonic of the place of obstruction and the cause of the sudden onset. The clinical history is also modified in cases in which the stone in the gallbladder is too large to enter the duct, as the large ovoid or cone shaped stone. In these cases the symptoms often remain latent for years, except that occasionally reflex symptoms of cholelithiasis manifest themselves. Not infrequently symptoms of local irritation, acute inflammation, or ulceration develop with unmistakable signs of the seat of the trouble. Very frequently a mild inflammation will extend to the adjoining viscera and cause the formation of adhesions which interfere with motility of the latter organs.

More severe inflammatory adhesions of the gallbladder and duodenum produce symptoms of acute or subacute and chronic duodenitis. I know of a case where the adhesion and ulceration took place into the transverse colon with fecal fistula resulting when a small opening was made in the gallbladder for drainage to relieve concomitant duct obstruction with abscess formation in the gallbladder. Obstructive symptoms of the bowels are met with as a result of the ulceration and perforation into adjacent viscera and plugging of the lumen of the bowel by the extruded large stone. Often the perforation of the gallbladder takes place, permitting the stone or the contents of the gallbladder to pass into the peritoneal cavity and produce the fearful symptoms that accompany perforative peritonitis. The usual course for the stone after it enters the lumen of the bowel is, however, to pass along the tube of the viscus and be discharged. Such cases are spoken of as "spontaneous" recoveries. And recoveries they are. Sometimes a solitary biliary calculus will find its way into one of the hepatic ducts and produce jaundice that is not very intense, because at the same time some bile will flow into the intestinal canal from the other unobstructed duct; therefore the characteristic clay colored stool will be absent in such cases of gallstone obstruction. In one case of right hepatic duct occlusion by a solitary stone the pain was very severe on the right side under the liver extending to the back and upward to the right scapula and seldom was bile absent from the intestinal contents though the patient was icteric all the time. Such are the chief guiding signs of the nonfacetted biliary calculus, and such are the difficulties the diagnostician has to contend with.

Now a few words about the treatment of this form of cholelithiasis: Contrary to the common teaching that gallstones belong to the surgeon's specialty, this form of gallstone remains often an exclusively medical disease, and the physician leads the patient on the way to recovery. This is especially the case with the solitary stone impacted in the cystic duct. Guided by the condition of the gallbladder many cases are seen which, presenting no urgent symptoms, can well be left alone and treated expectantly. After the lapse of a few weeks, the stone will be forced through the duct and expelled with the feces and all the symptoms will be permanently relieved. The same is true when the obstruction is in the common or other hepatic duct. Expectancy is justifiable as long as the course is not too much prolonged and there is no danger of chronic invalidism; but repeated attacks, too prolonged occlusion of the duct and consequent distention of the gallbladder in case of cystic obstruction, jaundice in case of common duct occlusion that lasts several weeks, or the threatening of the patient with invalidism renders the delay of surgical interference unjustifiable. Such cases cross the borderline and enter the exclusive field of the operator.

The surgical treatment will now be briefly considered as it is not intended to enter here into the general care or treatment of cholelithiasis. Wherever the obstruction, whether in the cystic duct, in the common duct, or in either hepatic duct, the surgeon's duty is to lay free the gallbladder, to release it from all adhesions—this is always possible, however discouraging the adhesion may seem—and, whether the gallbladder is removed or not, always to lay the common duct wide open for thorough investigation. Never trust the finger in these cases, however sensitive and delicate the touch. The common duct must be incised, opened, and explored, not with a fine, very flexible probe, but with a nonresistant, heavy, though pliable, metal probe. There is always danger of the very thin probe passing the common duct between its wall and the stone and entering the lumen of the duodenum without detecting the presence of the impacted stone.

A word must be said of the chagrin and disappointments the surgeon experiences at times in operating in these cases for solitary stones. He may not find the stone he went after which he was positive must have been there. It is the most disappointing accident in a surgeon's experience. He is fortunate indeed if the nurse finds the calculus two or three days later in the intestinal discharges. The following three histories may be illustrative and they are not unique cases.

Case I.—The calculus, No. 9, illustrated herewith, was removed from a woman about twenty-four years of age, who suffered repeated attacks of short duration sometimes for a day or two at a time. Careful medical men had her under observation and pronounced her case as nervous dyspepsia. The somewhat enlarged gallbladder during one of these attacks brought her to the operating table to obtain permanent relief. It was easy to crush this little stone or force it through the duct and lose it.

Case II.—The stone No. 11, illustrated herewith, though much larger than it appears in the photograph, passed spontaneously through the common duct. An operation was advised in this case because the woman suffered fearful pain for over two weeks, had continued fever, higher at times, following a chill, vomited a great deal, was deeply jaundiced, and the gallbladder was not involved. To relieve her pain large doses of morphine had to be administered. A difference in diagnosis favored the family's disinclination to allow operative interference, and to the exultation of the family and the satisfaction of the consultant, the woman recovered without the operation. The large stone passed and was found in the feces. It was over 1.5 centimetres in transverse diameter. The surgical interference was, in my judgment, imperatively indicated, because such cases are liable to ulceration, fatal perforations, or exhaustion.

Case III.—The stone No. 8, illustrated herewith, was not detected by the finger nor by the fine probe and yet was tightly held in the common duct, close to its opening into the duodenum.

2414 East Fifty-fifth Street.

Our Readers' Monthly Prize Discussions

Twenty-five Dollars Is Awarded for the Most Satisfactory Paper

All persons, whether subscribers or not, are invited to compete for the prize of $25 offered for the reply deemed best by the editors to the following questions:

CLXXXV.—How do you treat acute tonsillar infections? (*Closed.*)

CLXXXVI.—How do you treat varicose veins in the leg? (*Answers due not later than September 15th.*)

CLXXXVII.—How do you treat tantrums in children? (*Answers due not later than October 15th.*)

The award will be based solely on the value of the information contained in the answer. No importance will be attached to literary style. Answers should preferably contain not more than six hundred words, and should be written on one side of the paper only. All papers submitted become the property of the JOURNAL, and should bear the full name and address of the author for publication. The prize will not be awarded to the same person more than once within a year.

The prize of $25 for the best answer to Question CLXXXIV has been awarded to Dr. Charles W. Wang, of Philadelphia, whose paper appears below.

PRIZE QUESTION NO. CLXXXIV.

HOW TO CORRECT BAD SPELLING AND FORGETTING IN CHILDREN.

By CHARLES W. WANG, M. D.,
Philadelphia.

With the advent of medical inspection of school children, the attitude of educators has undergone a radical change. The laggard, variously styled as slow, subnormal, backward, and dull, has long been recognized as the most difficult problem of the graded school. The reason for this was that the nature of the retardation was not understood. Modern education requires and emphasizes one point clearly: Every child is entitled to all the education that he is capable of receiving. This principle applies, irrespective of cost, to all children, the normal as well as the mentally and physically handicapped. There should be a distinction between the dull and the feebleminded child. The slow, dull, subnormal, or backward child has a place in the public schools, but the imbecile and idiot are institutional cases, and should by all means be taken care of under such auspices. Experience has shown that dull children under improved conditions of health, environment, and school training, may be greatly improved.

The elementary instruction of a child today depends for its success upon the coordination and retention of the various word and sound pictures, and coordination of the motor and sensory areas necessary for the movements of graphic practice. These make up the apparatus with which the child receives the stimuli and impressions which will result in the normal acquisition of facts which may be termed knowledge. In dealing with children in whom these impressions have not had their normal expected effect after a special pedagogical effort has been made, these children should then be investigated along other lines. This is accomplished by special medical investigation, by special pedagogical investigation and observation, and by sociological investigation and betterment. In these times, every school district should have its corps of trained medical inspectors. The acquiring of such is the first step in the treatment of such cases.

Medical inspection determines whether a child belongs to the dull, slow, or backward class, or to that of the mentally deficient; it investigates the underlying causes and their removal. This course of investigation should be systematic and thorough, and should not be considered complete without a psychological examination. A psychological clinic should either be a part of the school system or attached to one of the hospitals under the control and direction of the board of education. The data derived from such an examination will enable the authorities to make the proper assignment of each child, some to school, some to particular phases of school work, and some to institutions as custodial cases.

The correction of physical defects is of the greatest importance. A pupil with the reputation of being stupid will make progress after receiving proper refraction and glasses, and, if necessary, medicinal treatment. Children in this class are progressive myopes, high astigmatics, and those with corneal opacities and other pathological conditions that interfere with vision. The ears, when diseased, are a very important factor. Nasal obstruction, hypertrophied adenoids, and diseased tonsils have a direct bearing upon the auditory apparatus predisposing to acute inflammation and abscesses, with subsequent chronic ear discharge, catarrhal deafness, defective speech, and mental retardation. Malnutrition is a great factor in the retardation of an otherwise bright pupil. The application of remedial measures should be along lines making for better physical development either by surgical or medical means, the improvement of general home conditions, and the furnishing of proper nutriment according to its specific need.

These subnormalities act as causative factors in the production of poor spelling and forgetting, since, according to modern experimental physiology, the residua, or memory pictures, of earlier perceptions and movements are the foundations of psychical life. Development requires the association of memory pictures which multiply in the various areas of perception, the formation of general concepts which contain the characteristics of different perceptions in the same sensory sphere as well as those of other sensory areas. It is therefore important that the associative union of the tactile, sensory, and visual percepts take place. The paths of association and their possibilities of combination and application are innumerable. The better the constitution of the centres and paths, and the earlier these associative combinations and exercises take place, the more richly elaborated will be the content of the psychical life. Hence the conclusion is drawn that the intelligence can only be conceived as the combination and result of all the concepts arising from the perceptions of the senses. The remedial measures to be applied are: the correction of physical defects and prevention and treatment of malnutrition and its sequelæ; the betterment of home environment and hygiene; the admittance of children manifesting subnormal or backward characteristics to special classes where they will receive the training suitable to their individual needs and be under observation of physicians trained in this line of work.

Dr. August J. P. Pacini, of Brooklyn, N. Y., writes:

Since bad spelling and forgetfulness are disorders partly within the organism's physis, but for the greater part within the psyche, in order to correct them the varieties and character of the aberrations which may occasion these disturbances should be carefully examined. Bad spelling is in reality included in forgetfulness, and the mutual dependence of each makes it possible to study together the factors governing both conditions. Serious defect of memory is a state which should arouse alarm. Many cases among children in which the memory is clouded or befogged belong outside of any definite pathological category and are not associated with any disease. Bad spelling and forgetfulness are examples of this condition. Here drug remedies do not exist; and corrective measures other than the broad therapy for general systemic improvement, the health in these cases being generally below par, are based upon pedagogical rather than upon pharmacological grounds. Memory involves the coordinated functioning of three powers, or three phases of one power, of the mind: retention, reproduction, and recognition. Retention relates to changes which are produced by stimulation of the substance of the brain and which constitute the physical basis of conscious acts of memory.

Thousands of faint impressions are conveyed daily to the brain and seem to vanish without leaving even a trace behind. But these impressions linger a variable period of time, for by directing attention to them and consciously fixing and describing them, within a few seconds of their occurrence, it is possible to remember them. Some admit of recall for a period of many minutes after their occurrence. But if they are not attentively apperceived within this brief time, such impressions fade away beyond all recall. In the case of strong or often repeated impressions, however, the afterimages recur persistently, either wholly or partially, for a long time after the impression has ceased. The essential fact seems to be that the nerve element is modified as the result of its excitation, the permanency of the change being dependent upon the strength or frequency of repetition of its stimulus. Obviously, with the many thousands of stimulations that are perpetually conveyed to the brain, means must be provided to store the necessary and useful ones, and to remove them temporarily from the pathway of fresh impressions incessantly entering; and equally important, they must be stored in such a manner that they may be readily available for use whenever needed. This phenomenon is regulated by the phase called reproduction. Functional and organic derangements of the cerebral centres, and cerebral anemia, all are potent agents in the destruction of reproduction. There remains a distinguishing characteristic which is possessed only by memory, and that is the third phase—recognition. Recognition is that phenomenon whereby we recognize or identify an image that is reproduced. Without recognition, memory is impossible.

Medical treatment of forgetfulness involves the measures required in children of neurotic tendencies and includes plenty of fresh air and sunshine, abundant and wholesome food, and congenial and invigorating environment. Educationally, the treatment rests upon proper identification of the particular phase which disturbs memory—the retention, the reproduction, or the recognition phase. Forgetful children usually manifest a faulty retention phase. This is the result of improper exercise of the senses due to the combined influence of inattention on the part of the child and to injudicious application of the exciting stimuli. A useful and beneficial corrective lies in changing the "learning type" of the child. Every child assimilates best those impressions which are transmitted, 1, through the visionary centres, when he is known as a visile type; 2, through the auditory centres, when he is known as an audile type; 3, through the kinesthetic senses, when he is known as a motile type. A forgetful child of the motile type acquires an acute memory if his images are impressed in a new manner, say either through the auditory or visual senses. The change from one type to another creates a desire for learning, a keener and more vigorous attention, and establishes a new and more stimulating interest—all cogent influences that make for persistent memory.

In treatment of bad spelling here again the faulty element is generally the retentive one. To improve the retention phase, the strength of the exciting stimulus must be augmented, or the stimulus often repeated. The strength of the exciting stimulus may be strengthened directly or indirectly: directly by objectively presenting the stimulus to attract attention and interest; indirectly by subjectively rendering the child more susceptible to the retention of mental imprints. Deep is the stamp of the impression cast on the mind attentively prepared to receive it. The basic principle in regard to retention then is deeply and accurately to engrave the images—in this case, spelled words. Reproduction is less tangible than retention. It is accessible, however, through the channel of imagination. Spelled words given in sequence so as to form material for abundant ideation, clearly and distinctly to impart their definition, and to assume an aspect other than drudgery, are necessary to stimulate imagination and to liven the phase of reproduction.

Correct spelling is acquired as the knowledge of the word becomes perfect. To be perfect, knowledge must be implanted clearly, distinctly, adequately, and intuitively rather than symbolically. When so imparted, knowledge of spelling correctly is gained and memory becomes vigilant and tenacious.

Medicine and Surgery in the Army and Navy

THE MEDICAL DEPARTMENT OF THE UNITED STATES ARMY.*

Third Communication: General Organization of the Army.

By William W. Reno, A. M., M. D.,
Fort Riley, Kan.,
Lieutenant Colonel, Medical Corps, U. S. Army.

RANK AND PRECEDENCE IN THE ARMY.

Military rank is that character or quality bestowed on military persons which marks their station and confers eligibility to exercise command or authority in the military service within the limits prescribed by law. It is divided into degrees or grades which mark the relative positions and powers of the different classes of persons possessing it. Rank is generally held by virtue of office in an arm of the service, corps, or department, but may be conferred independently of office as in the case of retired officers and of those holding it by brevet. The following are the grades of rank of officers and noncommissioned officers: 1, lieutenant general; 2, *major general,* insignia on shoulder or shoulder strap, two silver stars; 3, brigadier general, one silver star; 4, *colonel,* a silver eagle; 5, *lieutenant colonel,* a silver oak leaf; 6, *major,* a gold oak leaf; 7, *captain,* two silver bars; 8, *first lieutenant,* one silver bar; 9, second lieutenant, nothing. His only officer mark is his gilt and black officer's hat cord. 11, cadet; 12, (a) sergeant major, regimental; sergeant major, senior grade, Coast Artillery Corps; (b) quartermaster sergeant, senior grade, Corps of Engineers; master electrician, Coast Artillery Corps; master signal electrician; band leader; (c) *hospital sergeant, Medical Department;* master engineer, junior grade, Corps of Engineers; engineer, Coast Artillery Corps; 13, ordnance sergeant; quartermaster sergeant, Quartermaster Corps; supply sergeant, regimental; 14, sergeant major, squadron and battalion; sergeant major, junior grade, Coast Artillery Corps; supply sergeant, battalion, Corps of Engineers; 15, (a) first sergeant; (b) *sergeant, first class, Medical Department;* sergeant, first class, Quartermaster Corps; sergeant, first class, Corps of Engineers; sergeant, first class, Signal Corps; electrician, sergeant, first class, Coast Artillery Corps; electrician sergeant, Artillery Detachment, United States Military Academy; assistant engineer, Coast Artillery Corps; (c) master gunner, Coast Artillery Corps; master gunner, Artillery Detachment, United States Military Academy; band sergeant and assistant band leader, United States Military Academy band; assistant band leader; sergeant bugler; electrician sergeant, second class, Coast Artillery Corps; electrician sergeant, second class, Artillery Detachment, United States Military Academy; radio sergeant; 16, color sergeant; 17, *sergeant;* supply sergeant, company; *mess sergeant;* stable sergeant; fireman, Coast Artillery Corps; 18, *corporal.* In each grade and subgrade date of commission, appointment, or warrant determines the order of precedence. The grades in the Medical Department are italicized.

Officers of the same grade of the regular army, of the organized militia in the service of the United States, and of volunteers take precedence in the order named. Officers in the Marine Corps, when detached for service with the army by order of the President and while serving with the army under that order, are upon equal footing with officers of the regular army and take precedence in each grade by date of commission. Between officers of the same grade and date of appointment or commission other than through promotion by seniority or appointment of enlisted men to the grade of second lieutenant relative rank is determined by length of service, continuous or otherwise, as a commissioned officer of the United States, either in the regular army or, since April 19, 1861, in the volunteer forces. When periods of service are equal, precedence will, except when fixed by order of merit on examination, be determined, 1, by rank in service when appointed; 2, by former rank in the army or Marine Corps; 3, by lot. The relative rank between officers of the army and navy is as follows, lineal rank only being considered: general with admiral; lieutenant general with vice admiral; major general with rear admiral; brigadier general with commodore; colonel with captain; lieutenant colonel with commander; major with lieutenant commander; captain with lieutenant; first lieutenant with lieutenant, junior grade; second lieutenant with ensign.

COMMAND.

Command is exercised by virtue of office and the special assignment of officers holding military rank who are eligible by law to exercise command. Without orders from competent authority an officer cannot put himself on duty by virtue of his commission alone, except as contemplated in the twenty-fourth and 122d articles of war. The following are the commands appropriate to each grade: 1, for a captain, a company; 2, for a major, a battalion; 3, for a colonel, a regiment; 4, for a brigadier general, a brigade; 5, for a major general, a division.

The functions assigned to any officer by title of office devolve upon the officer acting in his place, except when otherwise specified. An officer in temporary command shall not, except in urgent cases, alter or annul the standing orders of the permanent commander without authority from the next higher commander. An officer who succeeds to any command or duty stands in regard to his duties in the same situation as his predecessor. The officer relieved will turn over to his successor all orders in force at the time and all the public property and funds pertaining to his command or duty. An officer of the Medical Department can not exercise command, except in his department; but any staff officer by virtue of his commission may command all enlisted men like other commissioned officers.

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APPOINTMENT AND PROMOTION OF COMMISSIONED OFFICERS.

Notices of appointments and promotions are issued by the War Department through the adjutant general of the army. Appointment to the grade of general officer is made by selection from the army. Oaths of office of officers of the army will be taken before an officer of the army authorized to administer oaths; or before an officer authorized by the laws of the United States or by the local municipal law to administer oaths. Promotions in established staff corps and departments are limited to officers holding permanent appointments therein and to include the grade of colonel will be made by seniority, subject to the examinations required by law. Promotions in the line of the army to include the grade of colonel, in each arm of the service, will be made by seniority, subject to the examinations required by law. Whenever any officer is ordered before an examining or retiring board the originals or copies of all official records affecting his character or efficiency, on file in any bureau of the War Department. are furnished to the adjutant general of the army and by him forwarded for the consideration of the board.

CHAPLAINS.

Regimental chaplains and chaplains of the Coast Artillery Corps are assigned and transferred by the Secretary of War. It is the duty of commanders of regiments, hospitals, and posts to afford to chaplains, assigned to the same for duty, such facilities as may aid them in the performance of their duties. One enlisted man is detailed on special duty by the commanding officer of any organization to which a chaplain is assigned for duty, for the purpose of assisting the chaplain in the performance of his official duties. At posts where school teachers are provided from the Quartermaster Corps, the school teacher is detailed as assistant to the chaplain in place of an enlisted man of the line. The instruction of the enlisted men in the common English branches of education is made by law one of the duties of chaplains. They are not employed on duties other than those required of them by law or pertaining to their profession, except when the exigencies of the service, a result of deficiency in number of officers present, require it.

DECEASED OFFICERS.

The death of an officer, with place, cause, day, and hour, is reported without delay, by telegraph, by his immediate commander directly to the adjutant general of the army. If the officer is on the active list of the army, the report shows whether or not his death was from wounds or disease contracted in line of duty, and whether or not his death was from wounds or disease the result of his own misconduct.

DESERTERS.

When a soldier deserts or a general prisoner escapes from a post, station, or command in the field, the commanding officer will cause copies of descriptive lists of the deserter or escaped general prisoner to be at once prepared on the prescribed form, and sent to such marshals, sheriffs, and police officers as he may deem proper; also to the officer in charge of any recruiting station at or near the place where the deserter or escaped general prisoner was accepted for enlistment, who will distribute them to the best advantage among civil officers in that vicinity authorized by existing law to summarily arrest a deserter or escaped general prisoner from the army. A reward of $50.00 will be paid to any civil officer or civilian for the apprehension and delivery, to the proper military authorities at a military post, of a deserter from the military service. The commanding officer causes an enlisted man who has been apprehended or has surrendered as a deserter and whose trial for desertion is not barred by the statute of limitations, to be examined by a medical officer at the post where he is received. If the examination shows that the man is fit for service, the commanding officer will cause charges to be forwarded to department headquarters or to be referred to a special court, or will otherwise dispose of the case, as the interests of the Government may dictate. The extreme penalty for desertion in time of war is death.

DECEASED SOLDIERS.

In case of the death of any person subject to military law, it is the duty of his immediate commanding officer to secure his effects, and immediately to notify the nearest relative of the fact of death. The following reports are required by the War Department in the case of the death of a soldier in the active service: 1. Report of death and disposal of remains, to be made by the commanding officer of the post or station or of a command in the field, and forwarded directly to the adjutant general of the army as soon as practicable after final disposition has been made of the remains. 2. Report of the surgeon or of the soldier's immediate commanding officer if there is no medical officer with the command, embodying cause of death, whether or not death occurred in line of duty, and whether death was or was not the result of the soldier's own misconduct. This report will be forwarded without delay through military channels. 3. One final statement, a statement of his financial affairs with the Government. 4. Report of board of officers in case of death of a soldier from other than natural causes. The testimony of all witnesses will be recorded and incorporated in the proceedings of the board. If the witnesses are not available to appear before the board, certificates of officers and affidavits of enlisted men and civilians will be obtained and appended to the proceedings. The finding of the board will include a statement embodying the date, place, and cause of death; the manner or circumstances under which it occurred; whether or not death was in line of duty, and whether it was or was not the result of the soldier's own misconduct. 5. Inventories of effects in duplicate, both copies properly signed. Of course, due to the exigencies of war, at many times these reports can not be made, but as much data as possible is collected in every instance.

REGIMENTS, BATTALIONS, TROOPS, BATTERIES, COMPANIES.

In the cavalry, field artillery, and infantry arms the regiment is the administrative unit. The headquarters of the regiment are at the station of the permanent regimental commander; in his absence the command of the regiment devolves upon the senior officer on duty with it wherever he may be stationed. The regiment is composed of two or three battalions which, in turn, are composed of two or four companies. The battalion in a regiment is not an administrative unit and has no separate records; it is purely a tactical unit conveniently organized for instruction or maneuver and particularly for combat, either as an integral part of the regiment to which it belongs or separated from it. It is appropriately commanded by a field officer, normally a major, regularly assigned in orders. In the absence of its regular commander the command devolves upon the senior officer of the battalion on duty with it. Whenever incomplete battalions of the same or different regiments are serving together, the commanding officer may designate provisional battalions, and similarly, in the case of incomplete regiments, he may designate provisional regiments.

A battalion commander is responsible for the instruction, tactical efficiency, and preparedness for war service of the troops of the battalion under his immediate command. Correspondence relating to the personnel, instruction, discipline, or equipment of a company, battery, or troop in battalion or squadron, will pass through the battalion or squadron commander. No official record, however, of such correspondence will be kept by the battalion or squadron commander. Each regiment has a band. The composition consisting of the words and music known as "The Star Spangled Banner" is the national anthem of the United States of America. When played no part of it should be repeated and all persons who honor it should stand at attention with the right hand at a salute throughout the time it is being played.

The units in an infantry regiment are called companies; in a regiment of artillery, batteries; in a regiment of cavalry, troops. The present infantry company consists of one captain, one first lieutenant, one second lieutenant, and 150 enlisted men. It is proposed while in France to increase the number of enlisted men in a company to 250 men. All enlisted men are armed with rifles or machine guns. Each battery has one captain, two first lieutenants, two second lieutenants, and 190 enlisted men for a battery of horse artillery or 153 enlisted men for a mountain artillery battery. Each battery has four big guns. Each troop of cavalry has one captain, one first lieutenant, one second lieutenant, and 100 enlisted men. All are mounted on horses and armed with sabres and carbines or machine guns. The commanding officer of a company troop or battery is responsible for the instruction, tactical efficiency, and preparedness for war service of his company; for its appearance and discipline; for the care and preservation of its equipment; and for the proper performance of duties connected with its subsistence, pay, clothing, accounts, reports, and returns. In the absence of its captain, the command of a company devolves upon the subaltern next in rank who is serving with it.

Noncommissioned officers are carefully selected and instructed, and always supported by company commanders in the proper performance of their duties. They are not detailed for any duty nor permitted to engage in any occupation inconsistent with their rank and position. Officers are cautious in reproving them in the presence or hearing of private soldiers. Company noncommissioned officers are appointed by regimental commanders, or temporarily appointed by battalion commanders, on the recommendation of their company commanders; but in no case does any company organization have an excess of noncommissioned officers above that allowed by law. The captain selects the first sergeant, quartermaster sergeant, and stable sergeant from the sergeants of his company. Each noncommissioned officer is furnished with a certificate or warrant of his rank, signed by the regimental commander; but a separate warrant as first sergeant, quartermaster sergeant, or stable sergeant is not given. A warrant issued to a noncommissioned officer is his personal property.

As has been stated, infantry, cavalry, artillery, signal, engineer, sanitary, and other troops, with the necessary supply trains, are organized into divisions. As has been stated, the division is the great administrative unit and the smallest force which contains every element in the military service. The usual

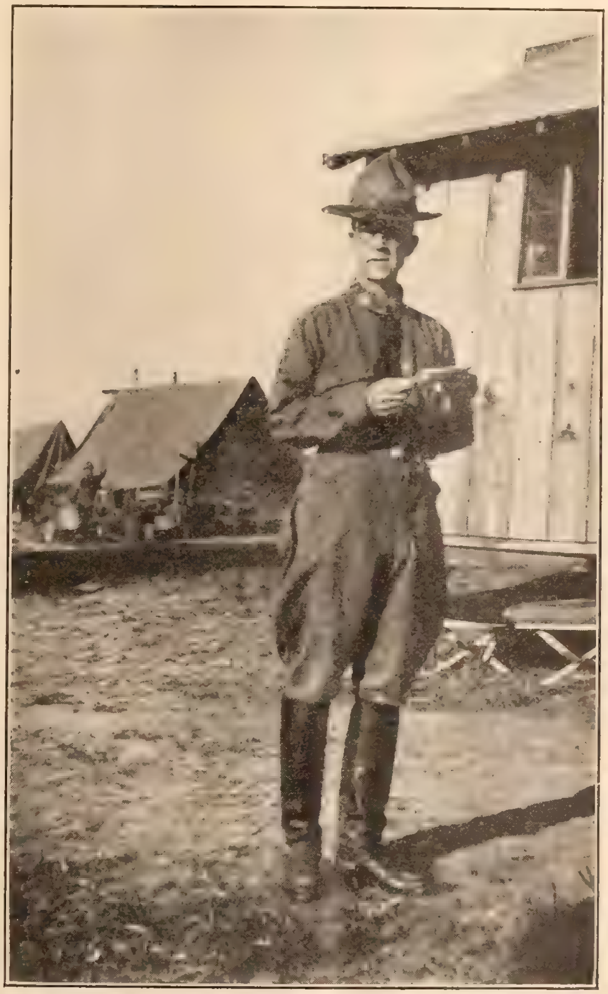
LIEUTENANT COLONEL WILLIAM W. RENO,
Medical Corps, U. S. Army, director of field hospitals. Photo taken at the Medical Officers' Training Camp at Fort Riley, Kan.

TABLE I.
INFANTRY DIVISION.
MAXIMUM STRENGTH.

Units.	Headquarters.	3 infantry brigades.	1 field artillery brigade.	1 regiment of cavalry.	1 regiment of engineers.	1 field signal battalion.	1 aero squadron.	Total division.	Aggregate division and trains—wagon.	Aggregate division and trains—motor.
Combatant	24	471	127	52	33	13	18	738	768	778
Medical Department	3	36	15	6	3	1	1	65	125	117
Chaplain	...	9	3	1	1	...	...	14	14	14
Total commissioned	27	516	145	59	37	14	19	817	907	909
Field clerk	3	3	1	....	....	...	...	3	3	3
Combatant	114	17,766	3,816	1,487	1,038	239	150	24,610	26,014	26,090
Medical Department	9	297	69	33	23	6	4	441	1,332	1,332
Total enlisted	123	18,063	3,885	1,520	1,061	245	154	25,051	27,346	27,422
Aggregate combatant	138	18,237	3,943	1,539	1,071	252	168	25,348	26,782	26,868
Aggregate	153	18,579	4,030	1,579	1,098	259	173	25,871	28,256	28,334
Combat train	...	99	....	8	16	9	...	132	518	194
Field train, ration	3	99	54	13	8	3	...	180	360	180
Field train, baggage	2	51	11	16	3	4	...	87	131	119
Total wagons	5	249	65	37	27	16	...	399	1,009	493
Guns, 3-inch field	...	.....	48	....	....	...	...	48	50	50
Guns, 3.8-inch howitzer	...	.....	24	....	....	...	...	24	25	25
Motor cars	5	.....	....	....	....	...	1	6	12	34
Motor trucks	1	.....	....	....	....	...	25	26	67	627
Motorcycles, with side cars	21	18	6	....	....	...	6	51	64	106
Aeroplanes	...	.....	....	....	....	...	12	12	12	12
Ambulances	...	.....	....	....	....	...	...	.....	48	48
Other carriages	...	.....	282	...	....	...	24	306	323	.....
Horses, riding	130	687	1,233	1,541	292	170	...	4,053	4,616	4,525
Horses, draft	...	.....	2,160	....	....	16	...	2,176	2,230	2,188
Total horses	130	687	3,393	1,541	292	186	...	6,229	6,846	6,713
Mules, riding	...	54	12	6	....	...	...	72	224	72
Mules, pack	...	225	6	29	49	17	...	326	337	337
Mules, draft	20	1,032	272	152	112	36	...	1,624	4,314	2,178
Total mules	20	1,311	290	187	161	53	...	2,022	4,875	2,587
Machine guns	...	54	....	6	....	...	12	72	92	92
Rifles	98	16,419	13	1,340	978	...	154	19,002	20,283	20,345
Pistols	130	1,818	3,936	1,504	348	251	173	8,160	8,633	8,651
Net length in column of route, yards, and miles	200	11,200	9,000	2,500	1,200	500	500	25,100 14.2	34,500 20	32,800 19

TABLE II.
TRAINS—INFANTRY DIVISION—SANITARY.
MAXIMUM STRENGTH.

Units.	Motor driven ambulance company.	Animal drawn ambulance company.	Ambulance companies.				Motor driven field hospital.	Animal drawn field hospital.	Field hospitals				4 camp infirmaries.	Aggregate.
			Headquarters.	2 motor driven.	2 animal drawn.	Total.			Headquarters.	2 motor driven.	2 animal drawn.	Total.		
Major	...	...	1	...	...	1	1	1	1	2	2	5	..	6
Captain First lieutenant	5	5	*1	10	10	21	5	5	*1	10	10	21	..	42
Veterinarian	...	...	1	...	.	1	..	..	..	...	...	...	..	1
Total commissioned	5	5	3	10	10	23	6	6	2	12	12	26	..	49
Sergeant, first class	2	2	...	4	4	8	3	3	..	6	6	12	..	20
Sergeant	11	11	1	22	22	45	6	6	1	12	12	25	4	74
Corporal	6	6	...	12	12	24	..	..	..	...	...	...	..	24
Horseshoer	...	1	...	...	2	2	..	1	..	...	2	2	..	4
Saddler	...	1	...	...	2	2	..	1	..	...	2	2	..	4
Farrier	...	1	...	...	2	2	..	1	..	...	2	2	..	4
Mechanic	1	1	...	2	2	4	1	1	..	2	2	4	..	8
Cook	3	3	...	6	6	12	2	2	..	4	4	8	..	20
Private, first class Private	96	124	5	192	248	445	68	65	5	136	130	271	4	720
Total enlisted	119	150	6	238	300	544	80	80	6	160	160	326	8	878
Aggregate	124	155	9	248	310	567	86	86	8	172	172	352	8	927
Motor ambulances	12	...	...	24	...	24	..	..	..	...	...	...	..	24
Motor trucks	3	...	...	6	...	6	11	..	..	22	...	22	..	28
Motor cars	...	...	2	...	...	2	..	.	2	...	...	2	..	4
Motorcycles	3	...	...	6	...	6	2	..	..	4	...	4	..	10
Ambulances	...	12	...	...	24	24	..	..	..	...	...	...	..	21
Wagons	...	4	...	...	8	8	..	7	..	...	14	14	4	26
Horses, riding	...	28	8	...	56	64	..	22	8	...	44	52	..	116
Mules, pack	...	4	...	...	8	8	..	..	..	...	...	...	..	8
Mules, draft	...	66	...	...	132	132	..	30	..	...	60	60	16	208
Total mules	...	70	...	...	140	140	..	30	..	...	60	60	16	216
Net length, yards	...	...	30	250	400	680	..	..	30	180	220	430	50	1,160

*An officer of the Quartermaster Corps as supply officer.

division is the infantry division, although a cavalry division is sometimes organized. Divisions are organized into corps and armies and armies into army groups. As the division is the foundation stone of the army a table will be presented giving in detail the composition of a United States Army Infantry Division.

As will be seen from Table I an infantry division is a huge aggregation of men and equipment. In general it consists of 909 commissioned officers and 26,868 men. Also numerous rifles, pistols, machine guns, guns of large calibre, wagons, motor cars, motor trucks, motor cycles, airplanes, ambulances, horses, and mules. On a single road this division is twenty miles long if the trains are drawn by mules and nineteen miles if the trains are motorized. As the section of the army of particular interest to physicians and surgeons in the Medical Department, two tables will be presented giving the complete divisional field organization of the Medical Department. The Medical Department has 117 medical officers and 1,332 enlisted men. Also many motor cycles, motor cars, motor trucks, motorized and animal drawn ambulances, wagons, riding horses, and mules. All of this is in addition to purely medical and surgical equipment. This personnel and equipment is separated into two distinct parts: 1, sanitary trains—field hospital companies, ambulance companies, and camp infirmaries; 2, Medical Department personnel attached to mobile line units such as regiments of infantry, cavalry, artillery, engineers, and signal corps battalions. Table II gives the composition of the division sanitary train.

As can be seen the sanitary train has forty-nine commissioned medical officers and 878 enlisted men, nearly all of them in four field hospital companies and four ambulance companies. The field hospital company and the ambulance company have already been described in detail in the JOURNAL. The camp infirmary is simply a wagon load of medical supplies available for the emergency treatment of the sick in one night camps and in other peaceful situations. This infirmary also furnishes surgical dressings and other medical equipment to troops on the line in time of war. The units of a sanitary train are commanded by the senior medical officer on duty with the unit. The whole sanitary train is commanded by the division surgeon. The medical personnel with regiments are under the immediate command of the colonel of the regiment, although the senior surgeon is in command of his medical personnel. The organization of the medical personnel attached to regiments and battalions is as follows:

TABLE III.

MEDICAL DEPARTMENT PERSONNEL ATTACHED TO MOBILE ORGANIZATIONS.

				Field Artillery		Engineers		Signal troops			
	Division headquarters, maximum.	Infantry regiment, maximum.	Cavalry regiment, maximum.	2-battalion regiment, maximum.	3-battalion regiment, maximum.	Regiment, maximum.	Mounted battalion, maximum.	Field battalion, maximum.	Aero squadron, maximum.	Telegraph battalion, maximum.	Train and military police, maximum.
Lieutenant colonel	2	..	..	..	..	..	..	..	..	..	..
Major	1	1	1	1	1	1	..	..	..	..	..
Captain or lieutenant	..	3	3	2	3	2	1	1	1	1	3
Veterinarian	..	..	2	2	2	..	1	..	..	..	..
Total commissioned	3	4	6	5	6	3	2	1	1	1	3
Sergeant, first class	1	1	1	1	1	1	1	.	..	..	1
Sergeant	1	3	3	2	3	2	1	1	1	1	2
Private, first class, and private	7	29	29	20	29	20	9	5	3	5	10
Total enlisted	9	33	33	23	33	23	11	6	4	6	13
Aggregate	12	37	39	28	39	26	13	7	5	7	16
Horses, riding	15	13	40	29	40	14	13	7	..	7	16
Mules, pack	..	1	2	2	2	1	1	1	..	..	3
Pistols	..	..	2	2	2	..	1	..	..	..	..

If these three tables are preserved and used occasionally in the future any reference to divisional or sanitary organization will be clearly understood. No statements, however, will be made in technical language and references as far as possible will be avoided.

MEDICAL NOTES FROM THE FRONT.

Functional Restitution After Nerve Suture.—Aneurysmal Hematomata.—Prophylaxis Against Malaria in the Army of the Orient.

GENEVA, *July 21, 1917.*

Aneurysmal hematomata have been fairly common in war surgery. The lesion really amounts to an arterial ligature from the standpoint of physiology. The circulation can only be continued in the limb by anastomoses between the collaterals situated above and below the arterial lesion when the injury takes place in a segment of a limb possessing a single arterial trunk. When it arises in a segment supplied by several arteries, those which remain intact are sufficient to keep up the circulation in most instances. Therefore it may be said that arterial ligatures can be made with impunity in the second and third segments of a limb; in other words, the forearm and hand, the leg and foot. A ligature at the thigh or arm, however, exposes the patient to a more or less extensive loss of limb according to the point at which the artery has been ligated; also the presence or absence of vascular sclerosis must be taken into account in connection with this. In aneurysmal hemotomata there is invariably a serious injury to the artery involved whose walls are torn to the extent of several centimetres. The other structures contained in the vasculoneural bundle are either also involved directly by the projectile or else become macerated in the blood contained in the pseudosac.

The diagnosis of aneurysmal hematoma is often a difficult matter. The rapid increase in the size of the sac, the absence of pulsation below it, and pulsation and expansion of the sac are symptoms which cannot allow the diagnosis of abscess to be eliminated. The patient's general condition is more important, as well as the long duration of the process, from the standpoint of diagnosis. Perimalleolar edema due to compression of the veins in the hematoma points more to the correct diagnosis.

The complications to be feared are infection of the sac, which transforms the aneurysm into an abscess, and gangrene, which will require amputation. Therefore, the treatment must not be delayed. This consists in freely incising the sac, emptying it of blood and clots, and ligating the vessel above and below the site of the injury. Often, however, the ligatures will not hold on account of the changes in the vessel walls due to maceration, and then hemostats should be applied and left *in situ* for three days, a practice which has given some excellent results.

* * * * *

It may be of interest to know what prophylactic measures have been prescribed against malaria in the army of the Orient in the neighborhood of Saloniki. In January, 1916, the directors of the Health Service of the Army of the Orient took up this important matter and instituted a number of measures operating against the foci of the infection, healthy subjects, and the mosquito. For the soldiers in hospitals, the surgeons in chief were ordered to employ a sterilizing treatment, consisting of hypodermic injections and hematological control of patients. This class of cases was isolated whenever possible and Division Surgeon Ligouzat established a sanitarium 500 metres above the village of Gradebor which was operated greatly to the advantage of the sick soldiers. Wire screens were put on all the windows of the hospital and mosquito shields efficiently protected the patients from the bite of the anopheles. All troops which had been infected previously with malaria—malaria soaked—the African regiments, for example, were encamped separately, while a special card was distributed to all impaludics upon which they inscribed the date of their initial attack and their last attack, the type of fever, and the place where the disease had been contracted. Thus it was easy to supervise these subjects and submit them to regular treatment.

The indigenous endemicized populations are looked after by both the military surgeons of the Allies and local Greek physicians. I shall take one village as an example of the medical organization. Measures of general hygiene consist in enclosing the camp and free drainage of water and latrines. Social improvement is obtained by the establishment of schools and canteens. Sterilization by quinine is an important feature. The Allies gave the Greek government large quantities of the drug for this purpose, and quinine cards were distributed to facilitate the control. The distribution is carried out as follows:

Sterilization from February 1st to April 3d.

1st week for 7 days 1 gram pro die.
2d " " 6 " 1 " " "
3d " " 5 " 1 " " "
4th " " 4 " 1 " " "

Prophylactic use from September 1st to 30th.

During five months seventy-five centigrams are given daily, three times a week. The dose of twenty-five centigrams was given to children. The Serbian refugees were submitted to the same treatment, while the Serbian regiments were treated like the allied troops. The Greek Health Service took the usual measures concerning their soldiers and population. The former are placed on a preventive quinine treatment from June 1st, and at this point I would say that in Greece the state supplies quinine in four forms, viz.: hydrochlorate and bichlorate, bisulphate, tannate, and hydrochlorate for injection.

The care of uninfected soldiers is as follows: In the first place lectures on the different aspects of malaria are given to both officers and men, while the hygienic measures are enforced as completely as possible. Work is done only during daytime. As a preventive measure quinine is administered at an early date. From January quinine is given four times a week in the dose of twenty-five centigrams, and from March 1st sterilization is continued, the hydrochlorate being given at the dose of forty centigrams, compressed tablets of twenty centigrams being used, one to be taken after the two principal meals. After a time the weekly dose can be reduced to twenty-five centigrams twice a week. Metal boxes containing twenty tablets are distributed to the men, so that they may have the drug in readiness when the necessities of the campaign prevent its usual distribution.

The mosquito can be dealt with in the larva or adult state. For the former, proper drainage of swamps and stagnant water is attended to. Indigenous workmen are employed for working the soil under the supervision of a civil engineer and a physician, in order to avoid infection of Europeans. Certain regions have been planted. Marshes and stagnant pools have been filled in, or when of small area they have been drained. *Petrolage* has been applied throughout the army to all possible hiding places of the mosquito. The petroleum is mixed with nine parts of spidolein, which renders it more volatile and, therefore, more easily sprayed. At Saloniki, for example, all wells and fountains in gardens, parks, etc., have been covered by the Greek health authorities. To deal with the adult mosquito each soldier is given a mosquito protector. There are many patterns of this useful article, each one to be used for different conditions, for men in the upright position, when lying down, for individual tents, and in hospitals. Metal wire screens are placed in the windows, doors, etc., of all hospitals. For direct destruction of the Anopheles maculipennis, which is the common agent of transmission of malaria in the Orient, the vapors of cresyl and spraying with powdered pyrethrum root are employed.

All these measures of antimalarial prophylaxis are of capital importance for protection of large bodies of men, and the results so far obtained have been more than satisfactory as may be seen from the British Health Report of July 11, 1917. In the report it is stated that "the health of the force this year [1917] compares very favorably with last.

This is particularly satisfactory in view of the fact that a large proportion of men now in the ranks suffered from malaria last year, whereas at the beginning of last summer the army was clear of the disease."

MEDICAL NEWS FROM WASHINGTON.

Health Status of the Military and Naval Personnel.—Medical Care of Employees of Contractors for Army Cantonments.—A New Gas Mask Designed in This Country.—To Reclaim Men Rejected for Military Service.—Commissions in the Army Medical Reserve Corps.

WASHINGTON, *August 27, 1917.*

Reports received from the navy yards, naval stations, ships in commission, and army training and mobilization camps indicate that the health of the military and naval personnel is remarkably good, considering the conditions with which the medical officers must cope. The difficulties that were encountered by the naval medical corps in the increase in the naval forces have about disappeared, and they are not expected to be reproduced, now that the arrangements for detention of newly enlisted men have been enlarged and improved. The trouble was created largely by the fact that so many very young men were taken into the service without opportunity for the usual segregation and were sent to ships carrying with them communicable diseases because there was not room enough to retain them at the training stations. It is not intended that there shall be any such situation at the army camps. In the first place, the men in the military force are older, being mostly between twenty-one and thirty years of age, instead of, as in the navy, as young as sixteen or seventeen years. The army men consequently will be less liable to diseases that inflict their juniors in the naval establishment. Then, again, the army has been able to obtain the services of medical officers in large numbers before concentration of the troops, and preparations have been made for a thorough observation of the men and the identification of the unfit. By this means, it is hoped to avoid anything like epidemics at the army camps.

* * * * *

A question has been raised as to extra work of the medical personnel of the military establishment, particularly as to whether there is legal authority for the treatment by the medical officers of the employees of contractors who are erecting army cantonments. The functions of the Medical Department are not defined by statute, but they necessarily are limited by the terms of the appropriations for the support of the army. The appropriations for the Medical Department appear to be available only for the medical and surgical care and treatment of persons connected with the military establishment, and, by operation of the employees' liability act of 1916, of Government employees generally who are injured in the performance of their duties as such. It is not considered that the United States is under any obligation to furnish medical care to the employees of contractors for cantonment construction. It has been suggested that the premium for compensation insurance, the expense of which is to be borne by the Government, is very heavy, and that, if provision were made for the treatment by army medical officers of such employees, the Government would be in a position to ask for a substantial reduction in the rate. It further is stated that the medical officers at every cantonment could handle the work with the possible detail of the reserve medical officers, and that the increased cost of the Medical Department would be small as compared with the considerable saving for liability insurance. The proposed plan contemplates the performance by medical officers of duties not connected with the medical department and the charging of appropriations for the medical department with expenses that, if they can be incurred legally, would pertain to the appropriations for cantonment construction. If such expenses are necessary and proper in connection with cantonment construction, they could be paid from the appropriations for such construction. By reason of the limitations of the Medical Department appropriations, the necessary expenditures involved could not be paid from such appropriations.

* * * * *

Information has been received from abroad to the effect that experiments have been conducted with various types of gas masks that were designed by experts in this country. It is understood that a satisfactory type has been tentatively adopted that promises to meet with approval. It was designed by Major Bradley Dewey, Medical Reserve Corps, a well known chemist from Cornell University, who is in charge of the sanitary corps in New York. Bids have been invited for the material that enters into the composition of the masks, of which about 1,000,000 will be made and shipped abroad. The mask designed by Major Dewey is something more than a device for protection against inhalation of gases, it having the functions also of a respirator after the manner of mine helmets.

* * * * *

To reclaim men rejected for military service and rehabilitate them through proper treatment and training is the purpose of a bill introduced by Senator Pomerene, of Ohio, which asks an appropriation of $100,000,000 for the purpose. It would provide for a reclamation camp commission, which would supervise the physical rebuilding of thousands of men drafted and then rejected because of physical disabilities that are curable. The plan was devised by Dr. John H. Quayle, of Cleveland, Ohio, who proposes a national commission to stand back of the plan. The proposed commission would be appointed by the President through the secretary of war. Drafted men passed by the examining physicians and the exemption boards, and then rejected at the cantonments on reexamination there because of defects that are apparently remedial would be required under the proposed legislation to go to the reclamation camp.

* * * * *

Commissions in the reserve branches of the army medical department have been recommended and accepted as follows: Medical Reserve Corps: Recommended for appointment, 14,451; acceptances recorded, majors, 338; captains, 1,470; first lieutenants, 7,336; total, 9,144. Dental Reserve Corps: Acceptance recorded, 892. Veterinary Reserve Corps: Acceptances recorded, 615. Sanitary Corps: Acceptances recorded, 48.

Editorial Notes and Comments

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EDITORS
CHARLES E. DE M. SAJOUS, M.D., LL.D., Sc.D.,
Philadelphia,
SMITH ELY JELLIFFE, A.M., M.D., Ph.D.,
New York

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THE GERMAN DIETETIC PROBLEM.

While we are floundering in a melange of patriotic projects, food conservation, home gardening, farm labor, and the like, it is instructive to turn to the example of our enemies and see what their much vaunted efficiency has done with the problem of national resources. The numbers of the *Deutsche medizinische Wochenschrift* for February 8th and 15th, which have recently come to hand, throw a flood of light on the German food situation during 1916. An immense amount of statistics have been collected by Professor Loewy, based largely on investigations conducted into the feeding of 1,004 families.

First of all Loewy criticises adversely Voit's 1881 estimate, that is, that a mixed diet should contain 118 grams of protein, fifty-six grams of fat, and about 500 grams of carbohydrate. Loewy is of the opinion that this is an unnecessarily large allowance of protein and that it can be reduced one third, or even to seventy, and possibly to fifty grams. During April, 1916, he conducted experiments with 858 families with a diet which yielded an average of 18.29 grams of protein a day for one person; the total caloric yield was 2,320 per capita. In Berlin in May, 1916, the official weekly ration consisted of 250 grams of meat, ninety grams of butter and margarine, two eggs, and 1,950 grams of bread. Every twelve days 250 grams of sugar and five kilos of potatoes were added and soldiers' wives, paupers, and persons out of work were given once a month an extra apportionment of three fourths of a pound of rice and a quarter of a pound of beans. This diet gives only 36.3 grams of protein a day, and a caloric value of 1,312, which is inadequate; it was supplemented, of course, by the purchase of vegetables and fruits in the open market, although it is true that these, with the exception of spinach, were not such as to be of any very great service. The supply of other articles of diet, fish, game, cheese, cereals, etc., was extremely small. Loewy's conclusions from these investigations were that the diet of the average German last year was inadequate and that a more plentiful supply of foodstuffs will have to be provided in the open markets if the people are to be kept in a condition where they can do even light work. These investigations are of course extremely interesting to us just now. It would seem that the Germans with their extreme efficiency had cut it a little too fine.

PSYCHICAL TRANSFORMATION IN THE SOLDIER.

The dull shrinking of soul which one experiences on perusal of war literature has its more extended counterpart in the psychology of the soldier himself. This constitutes the minor strain through A Psychological Study of the Soldier from the pen of Charles Bird, of Clark University, [*American Journal of Psychology*, July, 1917, xxviii, No. 3] but a major note of triumph is sounded in the spirit of progress which, unquenchable, creates in the war zone new avenues for expression. There is first a paralyzing of the usual active and wide reaching grasp which characterizes man's ordinary contact with reality today. This numbs finer intellectual activities; more primitive reactions come to the fore or are replaced by a primitive inertia toward higher activities, forming in either case an easy transition path into the display of uncontrolled emotional activity and indulgence. The key to this overpowering sensation is contained perhaps in a quotation of which Bird makes use. A member of the ambulance service says: "'The harrowing sight was repellent, antagonistic to my mind. The tortured things lying at my feet were symbols of insecurity. . . . . Fear went down into the innermost parts of me, fear for myself.'"

Man aims and strives for selfsecurity. He throws himself into any task which civilization presents to his creative instinct and seeks it vainly often on the side of life which grants no forward push, in dreams and selfindulgences in the infantile way of thought. Normally he finds it when he builds on surer foundation of reality. The frightful upheaval of society in this present, anachronous war destroys, to a greater extent than any other war has ever done, the normal platform of security. Few are the men thrown into a different state of affairs who are able, according to the writer, to withstand the sense of insecurity. It wipes out individuality and lets a man down to a new form of dependence, the absolute trust and obedience which marks the attitude of man to officer. Intellectual interest and zest become dulled and the outlook contracted to a trivial form of conversation and pursuit, allowing play to the baser, the more primitive and emotional side of the psychical life. The men are thrown back like children, unable to think and decide for themselves. The herd instinct in its original form prevails, sending them like hunted animals to shelter in the protective sense of the larger group and under the superior watchfulness and initiative of the commanding officer.

It is not, however, all a backward thrust for the men who are leaving the stimulating pathways of active cultural life to enter this strange atmosphere of another world. Well might our sense of security utterly fail were it so! The indomitable spirit which activates society on this side of the war zone enters that area also with the men. It may be stifled and shaken, but it keeps on its way. Out of it arises a fresh spirit of solidarity such as modern man at least has never known. Individuality disappears but in the words of another man in service there arises "a collective individuality of which we became increasingly proud." A new form of confidence is born, a sort of courage even "to enter upon the older racial types of behavior which characterize trench warfare." There is a calm resoluteness among the seasoned men which they have learned in their successful tests of the enemy's strength, and in their familiar facing of death.

It is that primitive selfdefensive fear to which the soldier is driven by the horrors into which he enters, that results finally in the bravery and courage which meet the tasks of war. We believe that these also, reborn into primitive conditions of conflict and the primitive reactions arising from them, will return the men to civil life with clarified vision of the actual worth of effort and of individual life and its place only as a factor in a larger cause. The shatterings are many where sublimation has not made itself sufficiently strong to withstand the change to the new life, where unconscious conflicts make the adjustment still harder and more impossible. Out of the grim experience there is coming already in the trenches a new individuality which has learned to merge itself in the will of the herd because driven by the fundamental instinct of selfpreservation; but which finds itself in a different emphasis upon the individual as a part of the social progress for which in a large way this war is the sacrifice.

ORTHOSTATIC ALBUMINURIA OF CARDIOPULMONARY ORIGIN.

In cases of orthostatic albuminuria due to cardiac or pulmonary lesions the renal epithelium is normal and the excretion of albumin is the result of either vasomotor disturbances or a purely mechanical venous stasis. In the already very numerous reported cases the albuminuria has occurred almost exclusively during infancy and adolescence, more frequently in boys according to Teissier, commoner in girls according to Schaps.

The influence of neurotic troubles and nervous heredity is manifest and it is evident that any factor producing a renal meiopragia can only become a powerful aid in the production of albuminuria. It also is clear that as soon as the cardiopulmonary apparatus becomes the seat of disease, the circulatory equilibrium being modified and accompanied by vascular hypotension, albumin should occur in the urine. Overwork and the erect position, by accentuating the trouble, will increase the quantity of albumin. The cyclical type of pretuberculous albuminuria is due, according to Bory, to a slowing of the circulation and a dilatation of the right ventricle and auricle during sleep. Baumel has pointed out the part played by the right heart in the production of venous stasis and the results of the systolic reflux of the blood of the right ventricle into its auricle. In the veins of the upper part of the body the valves offer a longer resistance to overdistention, but in the case of the veins of the lower portion it is quite another matter.

In the inferior vena cava the conditions favor regurgitation of the blood. Besides the fact that the valve which is present at the orifice of this vessel at the auricle only partially occludes its lumen, likewise that the action of gravity constantly acts on blood contained in the vein, anatomy shows that this vessel is deprived of valves in its entire extent, these being present only in the iliac veins. The principal trunk of the superior vena cava is not free from this action of the retrograde flux, but this does not apply to the veins which are given off from it. The first of their valves may be insufficient, but those following after easily compensate the defect of this function. Therefore, it is the inferior vena cava which must suffer from lesions of the right heart. Mahot has ably shown the consequences of this phenomena of regurgitation on the liver. At the time of systole the hepatic gland may increase in size to a marked extent, even as much as one third of its normal size. This is the cardiac liver. These functional disturbances finally result in the cardiac kidney of which albuminuria is, in a way, the pathognomonic symptom.

If in the history of these patients there is no evidence of a former intoxication or nervous or diathetic disturbances, the albuminuria is functional. As to ascertaining the integrity of the renal epithelium, its permeability may be explored. All the various procedures with methylene blue, potassium iodide, phloridzin, sodium salicylate, etc., have been tried. Claude and Mauté injected a solution of sodium chloride and studied the cryoscopic variations of the urine. At all events the diagnosis of nephritis is relatively easy and when all symptoms of a renal lesion are absent, the presence of a lesion of the right heart with elimination of albumin should lead one to consider the case as a functional albuminuria.

The prognosis of these functional albuminurias depends upon the lesions giving rise to them. If caused by a pulmonary affection, the prognosis depends upon the progress of the lung lesion. The complications which may arise, by aggravating the already existing lesions of the right heart, favor the production of more serious albuminuria.

OCCUPATIONAL DEATHS.

There is much food for thought in the report prepared by Louis I. Dublin upon Causes of Death by Occupation [*Bulletin of the United States Bureau of Labor Statistics,* March, 1917]. It forms a comparative study of the causes of death reported in the tables of the Metropolitan Life Insurance Company and bears directly upon the question of industrial hygiene in this country. Such a study is of great importance, presenting as it does in comparative form the causes of death, the mortality rates of the relative ages and in the various occupations from these various causes, and a comparison also with the general population mortality dependent upon the same factors. The study is based upon the white male and the white female industrial workers in the Metropolitan mortality lists for the years 1911, 1912, and 1913.

Of course certain limitations make this study only relatively complete, principally because actual death rates could not be obtained, since there was no way of knowing the number of living policy holders in each occupation. Shifting of occupations according to age and physical condition, together with other factors, also prevents absolute accuracy. However, certain conclusions are unmistakable. It cannot be disputed that there is a clear and definite connection between the occupation and the causes of death. Sometimes death is a result of direct injury due to the character or the place of work or it is indirectly due to poisoning from lead or alcohol. Again there are occupations which favor the development of certain diseases and again certain diseases are associated with or predispose to others. Any one of these causes presents its own problem of prevention and of the final responsibility of the employer. The prevalence of typhoid fever as a cause of death among farmers, trainmen, and others exposed to an uncertain water supply bespeaks a lack of education and often a wilful blindness to a danger which should become obviated in the present enlightened community and especially in localities under control of employers. The occurrence of tuberculosis manifests itself also as one largely associated with industrial conditions. This is responsible for the greatest number of deaths in all occupations combined. A question of especial interest in research is why coal miners seem to be exceptionally well protected from tuberculous infection, although conditions under which they work seem favorable to its development. Its relative mortality at different age periods and in relation to other causes operative at the same time complicates the problem.

Such a study as this present one can, as the author has explained, be only a limited and conditional one. Aside, however, from the complex factors which, he states, enter into the uncertainty and intricacy of the report, one can discover the working of the personal or psychic element. It appears here in this statistical work as a suggestion but is worthy of consideration in industrial hygiene and industrial insurance, and still more as a matter of keen and growing interest to the medical profession. It involves choice of occupation, the drifting from one occupation to another concomitantly with the onset perhaps of some deteriorating condition. It cannot be merely accident nor tradition that finds a certain class of workman, such as teamsters or bartenders, showing a high rate of mortality from alcoholism or its indirect consequence. The problem of the seeking of certain employments which expose one to alcohol or even to other elements of danger has probably a medical psychology of which the future will have more to reveal. The high incidence of tuberculosis also in certain occupations may be shown in time to have a psychical relation to the choice of occupation. This is particularly marked in following the statistics in regard to the rate of suicide in the different occupations and according to the various ages. External factors fail to explain this and it is left to a more thorough understanding of the psychical makeup of the working force and of the reason for the appearance of certain workers in any one occupation. Perhaps this too is due not so much to external factors, causing depression and the like, as to a farther reaching psychical reason which includes the original choice of occupation or the drifting into it. All these things make of a statistical outline an indication of some of the complex factors which will more and more be seen to enter into this branch of economics and medicine.

THE MEDICAL SERVICE IN THE BRITISH NAVY.

The British navy is so nearly on a war footing at all times that the transition from peace to war was not marked by those violent dislocations and reorganizations involved in the formation and training of the army. Each warship was already provided with its complement of medical officers, hospital corps, and medical and surgical supplies, while several large base hospitals were already in existence with considerable reserve equipment. The principal change necessitated by the outbreak of war was the fitting out and manning of hospital ships and additional base hospitals. For this purpose a number of private yachts and merchantmen were taken over by the navy. Many surgeons were also taken into navy and given temporary commissions.

During the last year of peace, we learn from Arthur W. May in *The British Journal of Surgery* for July, 1917, nearly 5,000 operations were performed in the naval hospitals on shore, exclusive of dental operations and injections of salvarsan. During the year 1916, 9,000 surgical operations were performed in the naval hospitals and hospital ships. Of this number over 800 were abdominal cases, including 627 cases of appendicitis and fifty-five of gastric or intestinal perforation. Operations for the relief of disabilities were numerous. Hernia was represented by 1,341 cases. Less common operations were mastoidectomy and operations on the nose and eye, on the kidneys, bladder, and prostate, and on the liver, gallbladder, and gall ducts. Many cases of bone planting and wiring are recorded. Spinal analgesia has been employed on several occasions, and local analgesia is becoming more frequently used for rib resections, varicose veins, etc.

In the British service the newcomer is first assigned to hospital duty ashore, where he can learn much about navy customs and navy routine. He is then sent abroad in a large ship as an assistant and later transferred to a smaller ship, where his experience will have taught him how to act as the sole medical officer. Many advanced medical students have served as probationary surgeons and as such have been placed in medical charge of scouts, destroyers, and other small graft with distinct advantage to the service, their work as a whole having proved most satisfactory. In the larger base hospitals research has been carried forward in spite of the war and the practical value of the Carrel-Dakin treatment of wounds has been the subject of investigation by a special commission of experts. Many experts outside the service have been called in as consultants in this and other matters, thus giving the British sailor the advantages of the highest specialized skill in every phase of medicine.

THE MEDICAL OFFICERS' TRAINING CAMPS.

The formation of four training camps for medical officers as urged in these columns last spring has turned out most successfully. These camps were opened about June 1st and the course of instruction was planned to cover approximately twelve weeks. Not only were the reserve medical officers ordered to attend these camps, but also some of the officers and men of the Medical Department of the National Guard. Here the newly made medical officers are given an intensive course of training and instruction which will go far toward fitting them for their new activities. The principal difficulty that has developed has been that of keeping the officers at the schools for their full twelve weeks' instruction. Already the demand for military surgeons for special service at home and abroad is so pressing that many medical reserve officers have been allowed only a few weeks' training before being ordered to active duty. Even these weeks of training make quite a different man of the civilian doctor, physically and mentally. The pale, frequently stout, sometimes a little pompous medical rookie emerges in a few weeks stronger, quicker, with a greater expanse of chest, with much of his selfesteem flattened out, and with, at least, an appreciation of the character of the task he has undertaken in accepting a commission. A course of training at a medical officers' training camp while not an unmixed joy, is undoubtedly a most valuable experience for the new fledged medical officer.

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News Items

Columbia War Hospital Changes Its Name.—Columbia University War Hospital, which was accepted by the Government some time ago, has been designated United States Army General Hospital No. 1. The Government will establish a number of such hospitals for the treatment of serious cases.

Designations for Field Hospitals and Ambulance Companies.—Odd numbers will be used to designate field hospitals and ambulance companies when they are motorized and even numbers when they are animal drawn. In order to conform to this system the numerical designations of field hospital and ambulance companies No. 2, No. 11, and No. 6, have been changed to No. 11, No. 2, and No. 13, respectively.

Child Welfare and the Prevention of Infant Mortality.—The United States Civil Service Commission will hold examinations on September 18th for experts in child welfare, open to both men and women, salaries ranging from $1,800 to $2,400 a year; experts in prevention of infant mortality, for both men and women, salaries ranging from $2,400 to $3,600 a year; and assistants in the prevention of infant mortality, open to women only, salaries ranging from $1,800 to $2,400. Vacancies in the Children's Bureau, Department of Labor, Washington, D. C., will be filled from these examinations. For full particulars write to the Civil Service Commission, Washington.

War Relief Work of the National Tuberculosis Association.—Dr. H. A. Pattison, of Rockford, Ill., has been added to the staff of the National Association for the Study and Prevention of Tuberculosis as medical field secretary. His immediate work will be the organization and promotion of the war program of the association. He will seek to organize effective preventive work in all of the military camps throughout the country. He will work in cooperation with various agencies in securing the lists of men who are rejected on account of tuberculosis, either before or after enlistment. He will also endeavor to establish in various States and cities programs for the adequate care of these patients and their families. Doctor Pattison assumed his new duties on August 20th.

Personal.—The President has sent to the Senate the nominations of Surgeon G. M. Magruder, Public Health Service, to be senior surgeon from August 11th, vice Senior Surgeon G. W. Stoner, placed on waiting orders, and Dr. H. E. Settle to be an assistant surgeon in that service from date of taking the oath.

Dr. Rodolpho Chapot-Prévost, of Rio de Janeiro, after visiting the leading hospitals from Rochester, Minn., to New York, is attending the surgical clinics in this city. Doctor Chapot-Prévost spent a month working in the Mayo clinics at Rochester.

Rear Admiral Charles F. Stokes, United States Navy, retired, formerly surgeon general of the navy, has resigned as medical director of the Warwick Farm for Drug Addicts, in order to devote all his time to other fields of work.

The Drafting of Medical Students.—The contention of the Provost Marshal General that the draft would not make serious inroads on the medical schools is refuted by returns received directly from twenty medical colleges by Mayor Mitchel's Committee on Hospital and Medical Facilities. The following figures, showing the proportion of medical students drafted and accepted under the first call, have been given out by Dr. S. S. Goldwater, chairman of the committee: University of Nebraska, 34 per cent.; University of Cincinnati, 32 per cent.; Western Reserve University, 31 per cent.; Atlanta Medical College, 17 per cent.; Hahnemann Medical College, Chicago, 22 per cent.; University of Wisconsin, 20 per cent.; Columbia University, 30 per cent.; University and Bellevue Hospital Medical College, 22 per cent.; Cornell University, 21 per cent.; University of Virginia, 9 per cent.; New York Homeopathic Medical College, 33 per cent.; Syracuse University, 29 per cent.; Medical College of South Carolina, 18 per cent.; University of Michigan, 23 per cent.; Jefferson Medical College, 22 per cent.; Marquette University, 20 per cent.

In some instances these figures refer to the graduating class only; in other instances they include the total student body. This in formation will be presented to Secretary Baker immediately.

Figures received from Chicago show that of 177 internes in the five leading hospitals in Chicago, forty-three have been called and accepted by the local draft boards; in addition twenty-eight have been drafted from eligible lists of sixty from which the Cook County Hospital was prepared to draw to fill its shortage. Thus of a total of one hundred and seventy-seven internes seventy-one, or forty-one per cent., have been drafted.

Health Department to Provide Treatment for Drug Habitués.—Plans have been perfected whereby drug addicts can apply to the Department of Health for treatment in one of the city institutions. Under authority of Section 249a of the public health laws, as amended by the last session of the Legislature, any local health board may receive the voluntary application of such addicts and may commit them to a hospital for treatment.

American Association of Orificial Surgery.—The annual meeting of this association will be held at the Congress Hotel, Chicago, September 27th, 28th, and 29th, under the presidency of Dr. Eugene Hubbell, of St. Paul, Minn. Surgical Clinics will be held each morning at Fort Dearborn Hospital, and the afternoons and evenings will be devoted to the reading of scientific papers and round table discussions. Dr. Bononi A. Bullock, 211 Stevens Building, Detroit, Mich., is secretary of the association, and will be glad to furnish further information regarding the meeting.

Mobile Laboratory Units.—The medical advisory committee of the American Red Cross Society are planning to equip five laboratory cars, which will be prepared for emergency work against possible outbreaks of epidemics in cantonment camps in this country. Each car will have a staff of five or more experts and will be so stationed at various cities that any cantonment can be reached with one of these laboratory cars within twenty-four hours on receipt of request from Federal or State authorities. The United States Public Health Service has such a mobile laboratory unit, and the plan has also been commended by the Surgeons General of the United States Army and Navy.

Duty of Physicians with Respect to Venereal Diseases.—In order to make certain that all persons recognized by their physicians as being infected with syphilis or gonorrhœa shall be instructed as to the nature of their infection and the measures to be taken to avoid its spread to others, an amendment to Section 88 of the Sanitary Code has just been adopted reading as follows:

> It shall be the duty of every physician to furnish and deliver to every person found by such physician to be affected with syphilis or gonorrhea a circular of instruction and advice, issued or approved by the Department of Health of the City of New York, and to instruct such person as to the precautions to be taken in order to prevent the communication of the disease to others.
>
> No person affected with syphilis or gonorrhea shall, by a negligent act, cause, contribute to, or promote the spread of such disease.

On request the Department of Health will be pleased to supply circulars of information for distribution by physicians to their patients.

A Special Commission to Examine Recruits for Heart Disease and Tuberculosis.—Surgeon General Gorgas has recently appointed a special medical commission to examine all accepted men for the new draft army in order to discover and eliminate all cases of tuberculosis and disabling forms of heart disease. The work of the commission was at once extended to include all members of the National Guard following their mustering in for foreign service. The commission is headed by Major Theodore C. Janeway and includes a large number of clinicians who have gained prominence in tuberculosis and cardiac work. The men engaged have either been appointed to commissions in the Medical Officers' Reserve, or have been made special contract surgeons. The examination of local regiments has already included the 69th, 12th, 47th, 7th, Squadron A, the 22d Engineers, etc., and is now being continued in the 71st, 23d, and 1st which are encamped at Van Cortlandt Park.

Preparing for the National Army Camps.—On August 27, some 275 officers and men were sent from the medical officers' training camp to five of the concentration camps, which are to receive the National Army of drafted men, as follows: Camp Taylor, Louisville, Ky.; Camp Brant, Rockford, Ill.; Camp Devans, Ayer, Mass.; Camp Sherman, Chillicothe, Ill., and Camp Custer, Battle Creek, Mich. Each of these detachments comprised the medical officers and about half the enlisted men required for the following organizations: Four medical detachments for infantry regiments, three field artillery regiments, one for an engineers' regiment, one for a signal battalion, one ambulance company, and one field hospital. These will be the first troops, after the engineers and the construction corps, to arrive at the camps and will see that the proper sanitary arrangements are made for receiving and examining the drafted men. The cadres will be filled up by men selected from the recruits as they arrive at each camp.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

THE TREATMENT OF PERNICIOUS ANEMIA.

By Louis T. de M. Sajous, B. S., M. D.,
Philadelphia.

Treatment of pernicious anemia in the most direct and radical manner, viz., by removal of its cause, is a matter of great difficulty since we know at present but little of the nature of this cause. This applies in particular to the classic Addison-Biermer form of chronic anemia, the type of the pernicious cases, in which for some obscure reason a progressive insufficiency of the bone marrow occurs, resulting eventually in severe blood impoverishment and death.

Increasing recognition is being given to red cell destruction by hemolysis as the process through which the cause of this disease operates. The anemia due to the fish tapeworm, Dibothriocephalus latus, in which the blood changes are similar to those of the Addison-Biermer anemia, and which has at times been classed in the pernicious group, is definitely known to arise through hemolysis. Some well known hematologists have even been led to discard the time honored classification of the red cell anemias into primary and secondary, and to substitute a division into those anemias due to increased blood loss, including the hemolytic and posthemorrhagic forms, and those anemias due to decreased or defective formation of blood, including aplastic anemia, the myelopathic anemias, and chlorosis.

Abnormal destruction of blood by hemolysis may occur not only in the general circulation, but in the spleen and liver. As to the cause of the hemolysis in pernicious anemia many theories have been propounded. According to a widely credited view, there occurs in this condition a poison which excites to pathological activity the normal phagocytic and hemolytic processes of the spleen, as well as of the lymph glands and bone marrow. The spleen in these cases, according to Cabot, usually shows evidence of hemolytic destruction or of atrophy, the number of cells in it, especially red corpuscles, being remarkably reduced, and the remaining cells consisting chiefly of large phagocytic elements and lymphocytes.

Again, the experiments of Bunting, who showed that a persistent hemolysis, with eventual changes in the bone marrow identical with those of pernicious anemia, could be produced in animals by injection of ricin in small doses, as well as the recognized hemolytic anemias induced by such chemicals as potassium chlorate, pyridin, phenylhydrazin, nitrobenzene, etc., have led to the view that the disease may be caused by hemolytic agents assumed by various authors to arise in the intestine, stomach, or mouth. According to Cedarberg, pernicious anemia is actually an anaphylactic condition the result of absorption of foreign protein from the intestine. Vogel, 1916, recognizes that hemolytic agencies causing the anemia are of varying nature, but deems the evidence rather strong that these agencies are derived from the alimentary tract and belong to the group of higher fatty substances known as lipoids. Cantelli, 1915, on the basis of experimental research, concludes that products of intestinal putrefaction, indol especially, may induce pernicious anemia.

While Hill, 1915, found no definite tendency, in pernicious or other anemias, to changes in the resisting power of the red cells to hemolysis *in vitro* by hypotonic salt solution, their resistance proving indifferently either high, normal, or low according to the case, Robertson, 1915, noted in pernicious anemia a decrease of resistance to hemolysis in red cells obtained from the splenic vein as compared to cells obtained from the peripheral circulation, and was led to suspect that the spleen in this disease so injures the red cells during their passage through it that they are more susceptible to destruction elsewhere.

The original factor exciting hemolysis is now held by many to be of infectious nature. In 1913 W. H. Wilcox, among others, attached importance to oral sepsis as the underlying cause of hemolysis. Recently, 1917, N. M. Percy has expressed himself strongly in favor of Hunter's theory, advanced in 1907, as to the infectious origin of the disease. In a considerable series of cases studied by Percy, nearly every patient revealed a focus of chronic infection, and upon removal of these foci, together with splenectomy, nearly all cases were markedly improved and over half were still in good clinical condition seven to thirty-two months after the surgical treatment. In seven out of nine cases in which bacteriological examinations were made, a hemolytic streptococcus was found; the colon bacillus, in five; the Streptococcus viridans in four, and the Staphylococcus albus in one. According to C. E. de M. Sajous, the hemolysis is due in particular to an excessive excitation of the autoprotective ferment processes in the blood by circulating toxic material, these processes as it were overshooting the mark and becoming so active as to destroy not only the noxious foreign substance but also the erythrocytes themselves.

What therapeutic procedures are available to hinder the hemolysis of pernicious anemia? Recent investigations have afforded at least a suggestion that arsenic acts in pernicious anemia by directly increasing the resisting powers of the red cells to hemolysis. Already in 1908 Gunn had observed that the immersion of red blood cells for an hour in a 1 in 10,000 solution of arsenious acid increased their resistance to hypotonic salt solution. In further experiments conducted with Feltham and published in 1911, he found that the increased resistance conferred by arsenic against hypotonic salt solution was operative also against hemolysis by a saponin like substance, cyclamin, and by sodium glycocholate, the conclusions reached being thus rendered more closely applicable to hemolytic conditions as they occur in the living body. Hill, performing similar experiments, obtained very definite results with Fowler's solution in hypotonic saline hemolysis, and was able to confirm the antihemolytic action of arsenic in actual clinical tests. Thus in a case of pernicious anemia given Fowler's solution for ten days, beginning with five drops three times a day and increasing to twelve drops, the blood showed, before treatment, commencing hemolysis in 0.475 per cent. saline solution and complete hemolysis in 0.325 per cent. saline solution, while after treatment the corresponding percentages necessary to cause hemolysis were 0.450 and 0.275. From these tests he concludes, with apparent justification, that benefit from arsenic in anemias may be the result of a prevention of hemolytic destruction of the red cells.

(*To be continued.*)

Treatment of Bacillary Dysentery.—George M. Niles (*Medical Fortnightly,* July 15, 1917) advises absolute rest. The mouth should be cleaned frequently with Dobell's solution or liquor alkalinis antisepticus (N. F.). If stomatitis is painful, diluted peroxide of hydrogen or chlorate of potash may be used, or the buccal surfaces may be swabbed with a nitrate of silver solution, twenty grains to the ounce. For the dryness of the mouth, equal parts of a pure mineral oil and a two per cent. boric acid solution with a little lemon juice will be grateful. Robust individuals should have no food for the first forty-eight hours. The diet should consist chiefly of milk, a glassful every two hours. It may be diluted with plain boiled water, lime water, or rice or barley water. After the fever has subsided and the stools have become normal the patient may take barley jelly or well boiled rice; later, toast and soft egg and a gradual return to normal diet. Castor oil or a saline should be administered at the outset. After two or three movements an astringent may be given. If the griping continues the following is useful:

Olei ricini,	ʒiiss;
Phenylis salicylatis,	gr. xxv;
Tr. opii deodorati,	♏xv.

M. et ft. capsulæ No. 15.
Sig. One capsule every two hours.

If this does not prove efficient, the following is useful:

Tr. opii,	ʒss;
Tr. opii camphoratæ,	ʒiv;
Spirits fœniculi,	ʒii;

Mist. rhei et sodii Q. S. ad. oz. ii.
Sig. One teaspoonful every two or three hours.

An extra dose of oil may be administered every second or third day. For excessive griping, hot stupes and hot poultices are indicated. For the painful tenesmus, suppositories of opium and belladonna:

Opii pulveris,	gr. i;
Ext. belladonnæ fol.,	gr. ss;
Olei theobromatis,	ʒss.

M. et ft. suppositoriæ No. 10.
Sig. One inserted in rectum every three to six hours.

If this is not satisfactory, the tincture of opium may be added to thick starch water and about two ounces of starch water with fifteen drops of the tincture may be gently injected into the rectum every three to six hours as needed. An occasional hypodermic of morphine is necessary. Of the astringents, tannigen combined with bismuth subgallate is the best. Opium should be used carefully. For intractable forms of dysentery, especially in pellagra, injections of kerosene oil have been used. In long standing cases a change of air and environment is of value.

Sinusitus.—J. G. Parsons (*Journal of Ophthalmology and Otolaryngology,* May, 1917) calls the attention of the general practitioner to the importance of infection of the accessory sinuses as a possible cause of systemic disturbance, and emphasizes the fact that in many cases the diagnosis of the common forms of sinusitis should be made by the attending physician. Infection of the sinuses is known to be a frequent cause of severe headache and neuralgia. Fever, a sense of fullness in the head, tenderness on pressure, headache, neuralgic pains, and a discharge of pus, observed on nasal examination, should arouse suspicion of impending trouble. While the presence of pus points strongly to sinus involvement, the absence of pus does not necessarily prove the absence of sinus disease. In frontal, ethmoidal, and sphenoidal infection, there is always a possibility of meningitis. Serious eye disease may result from the infection of the ethmoidal or the sphenoidal sinus through the involvement of the optic nerve or from orbital abscess; irritation and congestion may be caused by pressure on nerve and blood distribution. These various cavities are significant as focal points of infection, as the products resulting from the infection are readily retained by the labyrinthine structure of the parts. The chronic discharges are sometimes important factors in causing infections of the lower respiratory tract and the intestinal canal.

Treatment of Tuberculous Abscesses and Sinuses. — Charles W. Delany (*Pennsylvania Medical Journal,* July, 1917) concludes that evacuation of abscesses of tuberculous nature by incision should never be done, and that aspiration and injection of these abscesses is at the present time the preferable course to pursue. The injection fluid consists of:

Olive oil,	℥iiss;
Ether,	℥i-¼;
Creosote,	ʒiss;
Guaiacol,	gr. xv;
Iodoform,	ʒiiss.

Of this mixture, one fourth to one ounce is injected, depending upon the age of the patient and the size of the abscess. The abscess is aspirated and injected every ten days six times. For fistulas and sinuses the following paste is used:

Camphorated phenol,	ʒiss;
Camphorated naphthol,	ʒiss;
Guaiacol,	ʒiiss;
Iodoform,	ʒv;
Creosote,	ʒii;
Lanolin, Spermaceti,	āā ʒxiii.

The sinuses are injected every seventh day and a large sized urethral glass syringe is used. The sinuses communicating are held closed until the paste is solidified.

Bacterin Therapy.—J. G. B. Bulloch (*Western Medical Times*, July, 1917) urges caution in the adoption of this, as of other new methods of treatment. To be assured of success other remedial measures must also be instituted—general ones, looking toward advancing the entire wellbeing of the patient, and particular ones that will aid the bacteria treatment. Under the latter he includes surgical procedures, efforts to increase the lymphatic circulation by means of citrates or acetates, and applications to increase local circulation. The dangers associated with bacterin therapy are: 1, infection, for the injection of bacterins requires greater care than the ordinary hypodermic injection; 2, overwhelming the patient with additional toxic bodies; 3, producing severe constitutional reaction, which can usually be prevented by administration of the proper dose; 4, anaphylaxis, a complication which, while rare, does occur and must always be considered as a possibility.

Pituitrin in Obstetrics.—J. N. Nieweg (*Western Medical Times*, July, 1917) considers pituitrin a potent remedy which must be given cautiously. It is comparatively safe in the first stage of labor, but must not be given in too large a dose or at too frequent intervals. The safer plan is to give 0.5 c. c. at the first dose, thus establishing the patient's susceptibility, and, if the labor pains react, at least three hours should intervene before giving the second dose, unless the reaction ceases much before that time has expired. If the patient is very much under weight it is not safe to give one c. c. as the initial dose. In cases predisposed to post partum hemorrhage one is justified in giving pituitrin after the completion of the second stage for its effect in control of the hemorrhage. It should never be given when there is a narrow, contracted pelvis, when there is a deformity of either pelvis or child which would make the passage of the child through the parturient canal dubious, or when the child is in a malposition. Pituitrin produces no effect on false pains.

Treatment of Impetigo Contagiosa.—Howard Morrow (*Journal A. M. A.*, July 21, 1917) points out the shortcomings of the usually recommended methods of treatment with ointment of the white precipitate of mercury and describes his own methods which have given most favorable results in promptly curing well developed cases and in aborting the early cases. The vesicles or pustules should be ruptured with gauze and the sodden epithelium lining the wall of the vesicle removed. Where there are crusts, these should be removed by rough friction. Then the lesion should be painted thoroughly with a twenty per cent. solution of silver nitrate. Other drugs added to the silver nitrate decrease its action and none of the organic silver preparations can be used to replace the nitrate. New lesions may be aborted by thorough washing with boric acid or a weak mercuric chloride solution, but the patient must be observed often in order to discover new lesions and abort them in turn. A dusting powder containing from six to ten per cent. of ammoniated mercury and fifteen to twenty per cent. of boric acid should be applied to the lesions, whether on the covered or the uncovered skin. The powder should be applied after swabbing with the silver nitrate and ordered reapplied by the patient several times daily. Prophylactic measures should be taken to prevent the spread of the disease to other members of the family and men should not be allowed to shave or be shaved during the existence of the lesions. In infants the disease is dangerous and treatment must be undertaken at once. In these patients the heat and friction of clothing should be minimized by keeping them in a warm atmosphere with the least amount of clothing possible. Exposure to direct sunlight seems to help in curing the disease in infants.

Glycerin and Antiseptics.—Helen Pixell Goodrich (*British Medical Journal*, May 19, 1917) points out that the presence of glycerin increases the solubility in water of many antiseptics, including thymol, phenol, boric acid, and mercuric chloride. By its use it is possible to secure more concentrated solutions of these antiseptics than in water alone, but the increase in concentration is not associated with an increase in antiseptic action. On the contrary, such action is actually diminished, often to a very marked degree. Contrary to the general belief, also, glycerin is not antiseptic unless used in concentrated form, and in more or less dilute solutions it actually favors bacterial growth. The reduction in antiseptic power caused by glycerin has been thought to be due to the fact that antiseptics are more soluble in it than in the watery bacterial protoplasm, but it is also possible that the glycerin may inhibit through diminishing the dissociation of the antiseptic by virtue of its marked dielectric nature.

Fatigue and Exercise in Treatment of Infantile Paralysis.—Robert W. Lovett (*Journal A. M. A.*, July 21, 1917) draws the following conclusions from an exhaustive study of a large number of cases of infantile paralysis from New York, covering both new and old cases. Weight bearing exercise, such as walking, during the first year after an attack of infantile paralysis is risky and is often productive of a change from partial to total paralysis in the foot muscles. This is strikingly shown by the greater relative and absolute numbers of cases with complete paralysis of these muscles among the old group than among the recent cases. On the other hand, nonweight bearing exercise is decidedly beneficial, as shown by the greater degree of full or partial recovery in the right upper extremity than in the left. From these observations the suggestion is made that weight bearing use of the weakened muscles, with or without braces, is detrimental during the first year, while full therapeutic advantage should be taken of the fact that other forms of exercise hasten recovery and tend to make it more complete. Such forms of exercise should be employed in the case of partial paralysis of the leg muscles. There is much less danger of ill results following the performance of weight bearing exercise in the case of the muscles of the thigh. Special attention should be directed to the discovery of weakness or paralysis of the abdominal muscles, which was found in a very considerable proportion of the cases, since its improper treatment is prone to be followed by the development of scoliosis.

Complete Removal of Uterine Cancer with the Curette.—Palmer Findley (*Interstate Medical Journal,* April, 1917) adds two cases to the three of Ladinski and one of Boldt, making six cases in all in America where uterine scrapings showed carcinoma and where following a thorough curettement a hysterectomy revealed no remaining traces of the malignant process. This does not justify any attempt to cure cancer of the body of the uterus by the curette, but merely demonstrates that such results can and do occur. The finding of cancer in the scrapings calls for the early extirpation of the uterus in every case.

New Bone Clamp for Fractures of Long Bones.—Joseph E. Adams (*Lancet,* May 12, 1917) has perfected a simple spring steel clip, containing teeth on its inner aspect to prevent its slipping, which can be clamped about the line of fracture in long bones and which will effectively hold the two fragments in proper apposition. The clip does not completely encircle the bone, but leaves a gap over a portion of its circumference. It is very easily applied, requires no drilling or screws, demands less extensive exposure of the lesion, can be removed with ease, and does not injure the bone or lead to marked local inflammatory reaction.

Trench Fever.—J. M. A. Costello (*Practitioner,* May, 1917) discusses the clinical manifestations of trench fever in detail with the differential diagnosis, but says that its treatment is very unsatisfactory, principally because the chief causative feature is unknown. Purgation and rest in bed, with a milk diet, was routine treatment. External applications were made, and a little relief was obtained by wrapping the limbs in cotton. Hypodermics of morphine were given sometimes when the pain was very intense. Among the drugs which have been tried and found useless are sodium salicylate, quinine, potassium iodide, and arsenic. The infective nature of the fever is established by its ready transmission from one person to another, and by its clinical manifestations. Complete recovery is the rule.

Autotherapy in Abdominal Infections. — Charles H. Duncan (*Buffalo Medical Journal,* July, 1917) says that in autotherapy the physician treats the patient with the unmodified toxic substances developed within the latter's body by the action of the infecting agent on his body's tissues, against which the tissues react in a curative manner. The remedy is usually obtained by filtering the pathogenic exudate through a Duncan autotherapeutic apparatus. The filtrate contains the bacteria free, unmodified toxin complex in the same proportion and virulence in which they appear in the body. This filtrate is injected hypodermically, and the patient is immunized to his own unaltered toxins. The following method is given: Mix one dram of sputum with an ounce of distilled water. Allow it to stand for twenty-four hours—in an emergency twelve hours will often suffice—with occasional agitation. Filter and inject from one to 1.5 c. c. subcutaneously. Disperse the injected fluid through the tissues by vigorous rubbing through a sterile bandage. Usually the pains will leave within twelve hours. Do not repeat the injection for five days unless the pain returns. Then inject again. The cutaneous reaction is manifested by a pink discoloration of the skin adjacent to the point of the needle. Within wide range it may be said that the greater the cutaneous reaction the quicker will be the response and cure. The constitutional reaction is manifested at times by a slight chill, and is due to the size of the dose being larger than the local tissues can take care of. After a severe chill do not repeat the injection under ten days unless the pain returns; the return of pain is an indication for another dose. This technic is for acute conditions. In chronic conditions very much smaller doses should be employed and the intervals between them may have to be increased. The range of dose is very wide, so that fear need not be entertained if the technic is closely followed. Both cutaneous and constitutional reactions usually subside within twenty-four hours. The above technic is applicable to all infections that have their origin in infections in the respiratory tract.

Gonorrhea Treated by Electrolysis.—Charles Russ (*British Medical Journal,* May 12, 1917) finds that the use of a solution of one per cent. of sodium chloride with 0.5 per cent. of monochloracetic acid gives most satisfactory results in the electrolytic treatment of gonorrheal urethritis and has the advantage over other electrolytic solutions of not producing a marked degree of alkalinity in the fluid within the urethra. The method of employing the solution and of giving the electrolytic treatment has been described, and to secure favorable results the technic must be followed in every detail. It has given strikingly good results in the author's hands, being more rapid than other methods and very frequently preventing the spread of the infection to the posterior urethra.

Present Treatment of Fractures.—James M. Hitzrot (*New York State Journal of Medicine,* July, 1917) emphasizes the great frequency with which fractures are improperly treated and gives the following points as necessary for their proper management. Avoid all unnecessary handling in unsuitable surroundings, splint the limb in its long axis and transport at once. Give morphine for severe pain. Reduce the fracture as soon as possible, within two hours from the injury. This, together with the full examination of the fracture, should be done under an anesthetic. Have an x ray taken before reduction, if possible, without delaying it beyond two hours, and always have plates made promptly after reduction. In all fractures treated by traction the plates should be made with the traction apparatus applied and in full operation. The proximal and distal joints should always be immobilized in fractures of the long bones. The fixation apparatus employed should be simple, procurable everywhere, easily removable, and not applied too tightly. If the fracture is plainly irreducible or if not properly reduced, other treatment should be instituted as soon as possible. Operation should be done within two weeks in all cases if possible, sooner in the case of the smaller bones. Massage is an essential part of the aftertreatment and should be applied skillfully by the surgeon or under his personal supervision.

Miscellany from Home and Foreign Journals

Possibility of Typhoid Infection Through Vegetables.—Melick (*Journal of Infectious Diseases,* July, 1917) prepared two plots of ground four by six feet and planted radish and lettuce seeds. One c. c. of a mixture of fresh typhoid feces and urine was distributed on the surface of three one litre agar flasks and incubated for eighteen hours at 37° C. The growth was washed off and added to the original stool. This mixture was then diluted in about six litres of water and sprinkled on the soil with an ordinary garden sprinkler after which the soil received no further water except by natural precipitation. In another experiment radish seeds were planted in a bed that had been inoculated four days previously by a mixture of approximately one litre of excreta diluted with about six litres of water. In three outdoor experiments, extending from May to September, the Bacillus typhosus was isolated from garden soil, inoculated with typhoid excreta after forty-one, thirty-five, and thirty-four days. The organisms apparently became attached to the surface of the vegetables from their contact with the soil as there was no evidence indicating that the bacillus entered the interior of the plants. It was found that ordinary washing did not remove the bacteria.

The Severe Form of Trench Foot.—E. Chauvin (*Presse médicale,* June 4, 1917) describes a condition associated with massive gangrene, spreading inflammation above the slough, and early, severe constitutional symptoms suggestive of septicemia. Sometimes the onset is that of the ordinary mild frostbite; more frequently, however, the beginning is a massive edema of the foot, with gangrene supervening on the second to the fourth day. Any blisters noticed accompany, and do not precede, the gangrene. Pain is often less marked than in the less severe forms of trench foot. Infection above the gangrenous area, however, causes a malodorous discharge and the purulent process extends up the leg in linear fashion. Gas infection, hemorrhage, and tetanus are among the possible complications. Vigorous hot air treatment permits of removing the gangrenous tissues without anesthesia on the twelfth to the sixteenth day. An irregular stump remains, however, in which the infection continues its work, and soon operative treatment becomes imperative. Experience showed that in many instances radical treatment even earlier than this was necessary to reduce the danger to life. Waiting for separation of the dead tissues, followed by asepticization and later plastic correction of the stump, is warranted only where the gangrene does not extend beyond the metatarsus or where the entire foot is affected exactly to the tibioastragaloid joint. Where the process involves the foot to a level anywhere between the tarsometatarsal and the ankle joints, amputation of the leg on the fourth or fifth day, as soon as the line of demarcation has appeared, is indicated. A circular amputation without suture may be advisable because of the severity of the local infection and the desire to avoid a high amputation.

Status Lymphaticus.—H. C. Cameron (*British Medical Journal,* June 9, 1917) offers the suggestion, supported by case citations, that status lymphaticus is a fairly common occurrence and is not a congenital disorder, but one acquired as the result of faulty nutrition. He believes that the lymphatic enlargement which is so typical of the disease is the result of hypertrophy from a chronic form of catarrh of the corresponding mucous membranes. The condition should be called, "status catarrhalis." The catarrhal condition results from chronic infection of the mucous membranes as the result in turn of the faulty nutrition of the children. This faulty nutrition is the result of the use of an excess of carbohydrate in the dietary, usually in the form of sugar and white bread. The catarrhal state is associated with a marked accumulation of water in the tissues which gives these children the false appearance of marked robustness. In patients dying suddenly or after very short periods of illness, the hypertrophic condition of the lymphatic tissues and the waterlogged condition of the other tissues as well as the catarrhal state of the mucosæ are evident. In those dying after more prolonged diseases all of these signs disappear more or less completely and the condition is often not recognized as having existed during life. The condition, besides tending to sudden death and lowering the child's resistance to acute infections, also predisposes to rheumatism and tuberculosis.

Prognosis in the Acute Nephritis of Troops in Active Service.—E. Sorel (*Paris médical,* June 23, 1917) studied this question in the last eighteen of his cases, and divided them into three groups. The first, comprising two cases, was that of nephritis developing under war conditions in subjects already suffering from such affections as arteriosclerosis and alcoholism, with indications of liver weakness. In these cases the acute nephritis passed definitely into the chronic form. The second group of four cases is one in which recurrence of the acute nephritis, either as severe as the initial attack or in milder form, followed excessive fatigue upon return to the ranks or some slight dietary indiscretion. Of the third group of twelve cases five recovered completely from their renal attack, as shown by examination a year later upon readmission for some other reason. In the remaining seven cases, however, lumbar pains and albuminuria were observed to have reappeared upon return from a convalescence furlough, doubtless because of neglect in carrying out dietetic recommendations. Traces of albumin persisted in spite of further milk dieting and rest, and, in addition to the lumbar pains, the lids were sometimes slightly swollen, etc. In such cases one could at the time assert neither that recurrence had taken place nor that the process was running into the chronic type, either of these courses being still a possibility. Subjects belonging to the first group should be relieved from active service. In the remainder, temporary relief may be indicated. At all events, the ultimate prognosis of acute nephritis under war conditions should be guarded.

Effect of Anesthesia and Operation on Kidney Function as Shown by the Phenolsulphonephthalein Test and Urinary Analysis.—Ralph Colp (*American Journal of the Medical Sciences,* June, 1917) gives the results of his observations on a series of cases and concludes that the average case thirty-six hours after operation showed very little change in kidney function as demonstrated by the phenolsulphonephthalein test, although twenty-five per cent. showed urinary changes which in ten days were again negative. The functional activity of the kidney is depressed as the duration of anesthesia is increased, while in short anesthesias the kidney might even appear to be stimulated to a slight degree. As age increases the threshold activity of the kidney is lessened. In nervous anemic, obese, and arteriosclerotic patients as a rule some effect of the physical or psychical state shows in kidney function. Preexisting conditions of albuminuria tend to cause decreased phthalein excretion, and in the majority of cases of decreased phthalein excretion the effects of kidney depression are evidenced by careful urinary analysis, although these effects are only temporary. For long anesthesias and apparently for nervous patients, gas and oxygen as an anesthetic seems to have the least irritating effect on kidney function.

The Growth of Free Bone Transplants.—Tsuneharu Todyo (*Surgery, Gynecology, and Obstetrics,* June, 1917) concluded as to the growth of free bone transplants: The bone with its periosteum, if transplanted in the same body under favorable conditions, continues to live. While among the various components of the transplanted bone the bone cells and the marrow have changed their ability to take the nuclear stain at the end of the third week after the transplantation, the periosteum, the subperiosteal tissue, the epiphyseal cartilage, and the epiphyseal line give distinct evidences of life. Among the various components of the transplanted bone the periosteum and the subperiosteal tissue have not only lived throughout every period of the examination but have executed an active formation of new bone. Most of the epiphyseal cartilage and epiphyseal line has lived throughout every examination, as has the periosteum, and they have, moreover, carried on an active proliferation and ossification. Yet they are irregular, losing their physiological relationships. The bone cells and the marrow have lost or changed the staining power of the nucleus in a short time after the transplantation but the physiological or nearly physiological appearance returns after a certain time, being replaced by the resistant components of the transplants. The aperiosteal transplant grows and regenerates by the proliferation of cells in the subperiosteal layer. In such cases the new growth of bone is not so active as in the transplants with periosteum. The aperiosteal transplant acquires a new periosteum. The aim of the bone transplantation can be reached without the periosteum and marrow of the recipient. As to the continued life of the transplanted bone, however, he could not give a definite opinion at this time. Transplanted bone grows. The increase in thickness is marked, although the length increases but little even when transplanted with the epiphyseal line.

Metastatic Eye Infections from Dental Foci.—Joseph M. Levy, William F. C. Steinbugler, and Marshall Carleton Pease (*Journal A. M. A.,* July 21, 1917) investigated a series of fifty-seven patients suffering with some form of infective eye disease and found that a large proportion showed a direct connection between the eye condition and dental infection. The conclusion was reached that the ocular involvement was not, as usually believed, due to blood transmission, but was due to direct lymphatic spread. This was borne out by the fact that the dental lesions were found only on the same side as the affected eye in a large proportion of the cases. Further close connection between the eye and the teeth was shown by the fact that over half of the cases were cured or benefited in respect of their eye conditions by dental treatment, and in all but one of these the dental infection had been on the same side as the affected eye.

Bacteriology of Acute Epidemic Respiratory Infections Commonly Called Influenza.—Mathers (*Journal of Infectious Diseases,* July, 1917) made the bacteriological examinations of the sputum, nasal discharges, and pharyngeal mucus from sixty-one cases of acute epidemic respiratory infection during the acute stage of the disease. In forty-six instances a virulent hemolytic streptococcus was isolated from this material and in six of these the organism was found in pure culture. In thirty cases a green producing streptococcus was obtained in pure culture. Pneumococci were present in thirty of which four occurred in pure culture. The influenza bacillus was found once but not in a pure culture. The hemolytic streptococci found in the forty-six cases are similar in cultural characteristics and virulence to the streptococcus commonly found in epidemic sore throat and scarlet fever. The evidence indicates that the epidemic occuring in 1915-1916 was not due to the influenza organism, but to the above mentioned streptococcus.

Diagnosis of Scabies.—R. Sabourand (*Presse médicale* June 21, 1917) discusses this question from the standpoint of the nondermatologist, and explains certain aphorisms that have been formulated in respect to scabies. The first is that scabies is a venereal disease. While this is not strictly a fact, it is true that scabies is contracted almost exclusively in bed, the parasite having noctambulistic propensities. The view that the infection may be acquired by shaking the hand of or working next to one afflicted is false. It is acquired by sleeping with or under the unchanged bedclothes of an afflicted person. Soldiers or refugees sleeping side by side are greatly exposed to transmission of the disease. In recently acquired scabies, inquiry as to whether the subject has slept with a person who scratches is of great diagnostic importance, skin lesions being as yet few and not characteristic. An affirmative answer at once limits the diagnosis to scabies or pediculosis, and the latter, if present, is easily discovered. Favorable attention is directed to the aphorism that scabies is diagnosed on the feet in the nursling, on the penis in man, on the breast in woman, and on the hands, wrists, armpits, and gluteal folds in both sexes. Scratch marks on the face and neck exclude scabies.

Tuberculous Peritonitis in Guineapigs Exposed to X Rays.—J. J. McGrath (*Lancet*, June 9, 1917) has been able to confirm the observations of Morton and Murphy that preliminary exposure of guineapigs to the effects of x rays greatly reduces their resistance to infection with the tubercle bacillus and hastens the development of the peritoneal and other lesions in inoculated animals. Following a single exposure to the rays pigs developed definite signs of tuberculosis in the peritoneal cavity and abdominal organs within eight to twelve days after inoculation and also proved quite susceptible in the same period of time to inoculations with material in which few or no tubercle bacilli could be demonstrated by the most painstaking search with the antiformin technic.

Skin Cancer.—Samuel E. Sweitzer (*Journal A. M. A.*, July 21, 1917) emphasizes the lamentable lack of general knowledge regarding skin cancer and its prevention, and analyzes a series of forty-three cases with reference to their causation. Fourteen, or about thirty per cent., were due to seborrheic keratosis, constituting the commonest cause in the group. Some form of acute injury, single in type, such as a razor cut, scratch, etc., accounted for ten cases, or about twenty-five per cent. Warts, pimples, smoking, cold sore, scaly spots, irritation of eyeglasses, etc., each caused from two to five cases. In other words, every case was due to some form of injury or a precancerous dermatosis and all the cases except those referable to a single accidental injury were preventable. Prevention in such cases demands the recognition of the danger of skin cancer arising from the various conditions mentioned and the early and proper treatment of the condition. Thirty-four of the cases were cured by radium treatment, four more should be cured, two have been benefited, two have had recurrences and one had the growth stimulated by the use of inadequate amounts of radium.

Chylohemothorax from Wounds of Thoracic Duct.—T. R. Elliott and Herbert Henry (*Lancet*, June 9, 1917) describe two cases of military wounds which injured the thoracic duct with the production of chylous hemothorax. In both the missile passed through the upper part of the left side of the chest and did not fatally injure other structures. The important point in this condition lies in the danger of confusing it with empyema or infected hemothorax. The diagnostic features are that the effusion is in the left chest and that it tends to increase in volume steadily on the third and fourth days, producing progressive embarrassment of the heart and respiration. There is no great elevation of temperature, even if the fluid is infected. The fluid obtained seems to be heavily loaded with pus, is opaque, varies from red to pink or creamy gray, and when centrifugalized separates into a bottom layer of red cells and a supernatant opaque, milky fluid. Microscopically this layer is found to be composed of minute fat globules which dissolve in ether. Only two such cases were encountered among over 1,000 cases of chest wounds, but in one of these the fluid was mistaken for that of an infected hemothorax and the chest was drained much to the detriment of the patient.

A Diagnostic Sign of Gastroenteroptosis.—Charles D. Aaron (*Archives of Diagnosis*, April, 1917) asserts that in gastroenteroptosis deep contionous pressure in the epigastrium over the celiac plexus with the ends of the fingers will constantly induce pain. To locate the point of sensibility, which varies in different subjects, the physician applies his fingers in a series of deep pressures. When the point of greatest tenderness is found, the fingers are held at this point. An assistant then passes from behind both arms about the patient so that the hands, meeting in front, rest on the hypogastrium, and lifts the abdomen in its entirety. This relieves the epigastric pain at once, despite great pressure exerted by the physician at the point of tenderness. When, however, the abdomen is allowed to drop again, the deep pressure being kept up, the pain reappears. In organic conditions, such as gastric ulcer, cancer, etc., the pain under pressure continues even when the abdomen is lifted. Aaron ascribes the pain upon pressure in gastroenteroptosis to a tugging on the nerves in the mesenteries, due to the weight of the viscera, irritating the celiac plexus. Observation of this diagnostic sign calls therapeutically for the use of a supporting bandage.

Discrete Costodiaphragmatitis. — G. Mouriquand (*Presse médicale,* June 18, 1917) reports having encountered over 150 cases of this condition within six months in a military hospital. In many the diagnosis was reached clinically, but some were revealed only by radioscopy. The exact site at which the disturbance may occur is ascertained in the individual subject by following the last rib toward the median line with the finger until it disappears beneath the sacrolumbar muscles, usually at a point eight or nine centimetres from the spinous processes. A horizontal line joining these points on the opposite sides lies precisely over the base of the thorax posteriorly. Lung resonance, under normal conditions, generally begins four or five centimetres, or two to three fingerbreadths, above this base line on both sides of the chest, in spite of the higher diaphragmatic vault on the right. For the width of the bell of the stethoscope above the base line, the vesicular murmur is normally heard in an attenuated form, but above this with its usual distinctness. The subject with costodiaphragmatitis in some instances complains of slight dyspnea on exertion and dragging sensations in the chest, which render marching with the knapsack somewhat distressing; in other instances, frequently overlooked, there are no respiratory discomforts. In about one half the cases, the anamnesis reveals a former pleurotuberculosis. Radioscopically there is noted some opacity in the costodiaphragmatic sinus, which is partly filled with adhesions. Dullness to percussion rises two or three centimetres above that of the opposite side. Stethoscopic auscultation reveals a complete or almost complete absence of the vesicular murmur for some distance above the base line, and even above the upper line of dullness. In a few cases the evidences of costodiaphragmatitis are predominant in the infraaxillary region rather than above the base line.

Proceedings of National and Local Societies

THE NEW YORK ACADEMY OF MEDICINE.

Meeting Held December 21, 1916.

The President, Dr. Walter B. James, in the Chair.

Clinical Aspects of the Diseases of the Ductless Glands.—This paper by Dr. Joseph Sailer was published in full in the June 16th issue of the Journal.

Dr. Holmes C. Jackson, of New York, said that the question of hypersecretion or hyposecretion was only important if it were based upon the conception of the equilibrium of activities of endocrinous glands. The normal state in the body represented a perfectly balanced condition which was dynamic, not static, continuously changing, yet always the same within narrow limits; a balanced mechanism acting to produce the arithmetical mean of opposing forces. Such an equilibrium was extremely unstable. It was calculated to give with wonderful precision the ease and smoothness of adjustment not found in any other state of equilibrium. It was through disturbances of a delicately balanced mechanism of this sort that it was possible to obtain the pathological conditions spoken of by Doctor Sailer. The endocrinous glands acted together as opposing forces in a harmony of purpose for the same end—the good of the organism. When an organ became disturbed in function, it acted as a focus from which radiated other disturbances associated with alterations in processes of other integrated glands. This was the reason one never found a syndrome characteristic of any one disturbance alone, but always complicated with differences in function of other organs.

Two points would illustrate such a complex interreaction of opposing reactions working together toward the establishment of equilibrium correlated with it: The autonomic nervous system was coming into greater significance with the endocrinous glands; sympathicotonia and vagotonia represented conditions of hypersensitivenes of the sympathetic and craniosacral autonomics. For a proper conception of these abnormalities in connection with the study of the ductless glands, it was necessary to understand the equilibrium which existed in this system of peripheral nerves. The efferent autonomic system was made up of, 1, an outflow of fibres through the third, fifth, seventh, ninth, and tenth cranial nerves called the cranial autonomics; 2, an outflow through the anterior roots and white rami of the first dorsal to the fourth lumbar segments, spoken of as the thoracicoabdominal autonomic or sympathetic; and 3, an outflow from the sacral segments through the pelvic nerves, termed the sacral autonomic. The craniosacral autonomic outflow was antagonistic in function to the thoracicoabdominal or sympathetic system, and overaction of the one or underaction of the other was disturbing to the organism. The iris, for instance, was made up of circular fibres and radial fibres, the former controlled by the cranial autonomic and the latter by the sympathetic. These were in constant activity and the equilibrium of the pupil was determined by the arithmetical sum of the two. In the salivary gland one could show that the blood supply was controlled by this antagonism of vasoconstrictors and dilators, the former sympathetic, the latter cranioautonomic. This antagonism was also effective in the stomach and intestines as regarded movements, tonic conditions, and secretion. Where there was a disturbance of this equilibrium, there was alteration in the metabolism.

The other point to be brought out had to do with attempts to draw conclusions concerning the activity of a gland from the histological picture obtained by section. It was assumed that if the gland gave any indication of a decreased amount of secretion, the activity of the gland was also decreased. This, in the opinion of the speaker, was wrong; a clear conception concerning the mechanism of secretion was not always present in the minds of the investigators. It should be considered from two points: the production of the secretion in the cells and its elimination into the blood. These were separate and distinct processes. If there was a normal equilibrium the two processes took place and occurred simultaneously. If there was a tendency for the secretion to accumulate in the cell as the result of decreased permeability and at that instant the organ was sectioned, the organ would be found filled with secretion, but only because none was being eliminated. Finally, a new state of equilibrium would be established with the cell loaded with secretion, but no elimination. The filled gland under such conditions represented lack of activity and the blood would be found deficient in such substances. The reverse would also be true; e. g., an empty gland might be due to a very active cell pouring out its secretion as soon as it was formed. The amount present at any one time was small, but the quantity secreted for a given period was greater than normal. In certain conditions of thyroid disease there was a hyperplasia with decreasing iodine content which was sometimes associated with increase in function and the appearance of hyperthyroidism. The small amount of iodine present in the cell was merely the result of increasing permeability of the cell for secretion. Following this there were at times symptoms of hypothyroidism and simultaneously the colloid content greatly increased as the result of decreased permeability and hence cell accumulation.

In connection with shock, attempts had been made to show a relation between low blood pressure and disturbed function of the adrenals. The method had been to examine the adrenals during some condition of shock. The findings indicated a decreased content of chromophile substance in the cell and hence the conclusion was drawn that the glands were fatigued and not performing their normal functions. In some work done in the speaker's laboratory, it had been shown that at such times there was increased adrenal secretion into the blood and that these glands were doing more work than under normal conditions. This merely represented a reaction on the part of the organism to the low blood pressure, a line of secondary defense in an attempt to return to normal conditions.

Dr. Harlow Brooks, of New York, said that he would discuss only one aspect of the subject—the apparent adrenal deficiency following infections. The symptoms were low blood pressure, profound exhaustion, and usually also bradycardia. The evidence hitherto that these symptoms were due to adrenal deficiency was faulty, but experiments now under way seemed to show that the amount of adrenalin in the circulation was deficient. The collapse was that observed in the aggressive type of tuberculosis characterized by toxemia, in the severer forms of influenza, and in pneumonia. There had been a tendency to attribute these symptoms to myocardial degeneration, but post mortem examinations had not shown such a defect in these cases. The speaker had reported a case before the Pathological Society in which marked exhaustion had occurred following what seemed to be an ordinary attack of tonsillitis; no organism was found in the blood to account for the severe symptoms, but the adrenal bodies showed necrotic changes. In such instances it seemed that the low blood pressure and the collapse were due to a sudden withdrawal of the adrenal secretion from the circulation.

In the treatment of these cases, the action of the older drugs, digitalis, camphor, and caffeine, was much more effective if adrenalin were added. The same was true of strychnine, which was not recognized by most authorities as a true heart stimulant, but was at least a heart accelerator. If the thyroid seemed to play a part in the clinical picture, thyroid extract might be administered with the adrenalin. Kendall's preparation was now made up in such a way that it could be calorated and one could be certain of the dose. The fact that this form of collapse was accompanied by a tachycardia brought out the interrelation between the thyroid and the adrenals. It should be borne in mind that the dose should be accurately adjusted to the needs of the individual.

Dr. Robert T. Frank, of New York, touched upon phases appertaining to gynecology and obstetrics. The symptomatic criteria of genital hyperfunction and hypofunction that were known were very few in number. The uterus was the main organ on which gynecologists could concentrate their attention, and the only overt symptoms it gave of ductless gland influence were amenorrhea, menorrhagia, or metrorrhagia. The first question that interested the clinician was what types of conditions he would be apt to encounter. In infancy was found the very rare but occasional occurrence of premature maturity in consequence of ovarian or adrenal tumors, where there was general ripening, but no commensurate advance of the intelligence. At puberty there were disturbances of menstruation taking the form of menorrhagia or metrorrhagia. The uterine changes, cystic gland proliferation, could be recognized under the microscope. More varied types could be found during the years of sexual activity. In ovarian hyperactivity there was menorrhagia or metrorrhagia, the symptoms of which must be differentiated from similar bleeding due to organic conditions, e. g., inflammatory. The occurrence of fibroid tumors had also been ascribed to ovarian hypersecretion by some. In hypofunctional conditions of the female genitals such symptoms as amenorrhea due to infantilism or *ex obesitas*, or dysmenorrhea were noted, but before ascribing them to hypofunction, it was likewise necessary to exclude other causes which might produce them in a different way on some basis not ovarian. The most varied manifestations of internal secretory disturbances occurred during pregnancy; here were to be seen the minor acromegalic changes, often temporary —hypophysis; adrenal asthenia; pancreas—glycosuria; parathyroid—tetany, osteomalacia; and thyroid—myxedema and exophthalmic goitre—changes probably due to the disturbance of interaction resulting from the strain incident to pregnancy. In the menopause local symptoms of menorrhagia or metrorrhagia were seen, which must be sharply distinguished from the same symptoms produced by cancer or fibroid, and marked nervous phenomena—vasomotor.

These covered the conditions met with in gynecology and obstetrics. The question was to recognize them. In the office where ambulatory cases were seen other signs should be looked for, as changes in the uterus were hard to interpret because of the similarity of symptoms. It was, therefore, necessary to rely more on general changes in the patient, variations in the secondary sexual characteristics such as fat distribution, hair distribution, shape of the larynx, masculinity or femininity of the voice, and the psychical condition of the patient, heterosexual, neuter, or homosexual. Locally, other signs were of importance, such as increase of the clitoris and the pelvic dimensions and measurements. A shallow cone shaped fornix, small, conical cervix, marked preponderance of the length of the supravaginal part of the cervix over that of the fundus uteri, and short sacrouterine ligaments denoted infantilism. Bone changes bespoke prepuberty hypoplasia, and small atrophic fundus with well developed cervix, postpuberty hypofunction. In distinction to ambulatory diagnosis, hospital diagnosis demanded careful examination and testing of the tolerance to drugs, such as atropine and pilocarpine, to organ extracts, such as adrenalin, anterior lobe pituitary, and thyroid and study of the metabolism, basal, sugar tolerance, and cathode; and the blood picture, coagulation time, etc., etc.

In regard to corpus luteum and ovarian therapy, to which wonderful effects had been ascribed, it could be stated that corpus luteum had a specific, biological effect limited to the uterus and breasts. The speaker had never been able to find any action which promised to benefit the nervous symptoms at the time of the menopause. If an active preparation were on the market it should relieve functional amenorrhea if exhibited for a long time; but no menstruation would occur while corpus luteum was given. Menstruation would not occur until the drug was withdrawn. It would help local conditions in infantilism, but in vasomotor troubles no effect could be anticipated as far as any experiments up to the present time had shown. Caution should, therefore, be exercised in ascribing any wonderful qualities to such preparations now on the market.

Dr. David M. Kaplan said that he was pleased to hear Doctor Jackson deprecate the terms hyper and hypo. In studying the endocrinous glands one should accept the idea of their maintenance of the individual's equilibrium and their unity of purpose to this end. Another point to be remembered was the close relationship between the individual glands, such as that between the gonads and pituitary, the latter sometimes compensating for the former. The different periods of life could be said to be dominated by various glands. An old man had no use for the thymus, but he had use for the adrenals; he was an adrenal individual. Constant secretion of the adrenals, however, produced in the adult conditions which were manifested by the bloodvessels; this was due to the fact that he lived on the adrenals when the gonads no longer functioned. The baby lived on the thymus, the young man on the gonads, the old man on the adrenals. The thymus was the only gland in the body containing a trace of arsenic; witness the red cheeks of the young child. Constant changes took place in life coincident with the change from the thymus to the gonads and from the gonads to the adrenals. The first change was significant of puberty and all the stormy manifestations of adolescence; the second change, which might be designated the gonadopause, was equivalent to the cessation of function in the sex glands of man and woman. In addition to the physical changes there were mental changes. It was wrong to make conclusions based on the extirpation of a gland, for one gland compensated for another even while *in situ*. In treating patients with extracts of various glands it was not safe to give pure extract because of its uncertainty; in the speaker's opinion it was best to give the entire gland substance in as native a state as possible. No one could tell how many more substances were present in the adrenals that were of as great importance as adrenalin, or in the thyroid as thyroidin, or in the pituitary as pituitrin.

Dr. M. Allen Starr said that there was one side of the question not entirely exhausted by the speakers and that was the mental symptoms caused by defects or excess of the function of the secretory glands. Those who had seen many cases of exophthalmic goitre and hyperthyroidism found associated with it a peculiar state of mental anxiety and apprehension which was not seen in other forms of disease. The speaker had seen several cases of acute mania in connection with exophthalmic goitre which had terminated satisfactorily after the extirpation of the thyroid gland. In marked types of myxedema there were characteristic mental changes, sometimes even a condition of progressive dementia. The speaker had rescued three patients who had been condemned to asylums by discovering the fact that the dementia was due to the condition of myxedema and by prompt thyroid treatment they were cured. The effect of the secretion of the glands was manifested in mental changes as well as in the many obvious physical changes. Certain mental conditions could be produced experimentally by the administration of glandular extracts. Many cases of depression and melancholy had been benefited by thyroid gland preparations which counteracted the depression produced by the toxic agent in the blood. There was a field for investigation of mental defects associated with glandular inactivity.

Dr. Nelson W. Janney spoke of a method of investigation in relation to the value of the nitrogen balance as a means of determining the degree of metabolic involvement as well as the effect of thyroid treatment in thyroid diseases. At the Montefiore Home and Hospital they had been putting patients with thyroid diseases on a fixed diet and making a careful study of the nitrogen balance with as great accuracy as possible. Cretins as well as exophthalmic goitre patients were found to be unable to assimilate their food as well as normal individuals. In the case of exophthalmic goitre this disturbance of metabolism was not necessarily accompanied by a corresponding severity in the usual clinical symptoms. The most important part of the data was referable to the effect of thyroid therapy. The nitrogen balance was a delicate gauge of the effect of thyroid treatment. In general the principle could be established that a therapeutic effect, aside from the questionable thyroid treatment of obesity, was accompanied by an increase in the amount of nitrogen retained. Conversely, the administration of too large quantities of thyroid preparations caused a reduction in the nitrogen balance even when no other signs of toxicity were present. It might be conservatively stated that far too large doses of the preparations of this endocrine gland were usually prescribed; the therapeutic effect of active thyroid preparations was optimal when the doses were quite small.

AMERICAN ASSOCIATION OF IMMUNOLOGISTS.

Fourth Annual Meeting, Held in New York, April 6 and 7, 1917.

The President, Dr. Richard Weil, in the Chair.

(*Continued from page 385.*)

Certain Fundamental Factors in the Wassermann Reaction.—Dr. Claude P. Brown and Dr. John A. Kolmer presented the results of experiments on, 1, the influence of 0.85 per cent. sodium chloride solution upon serum hemolysis and complement fixation prepared from tap water, commercial distilled water, and single and triple distilled water with ordinary table salt and commercially pure sodium chloride; 2, the influence of acid and alkali, new and dirty glassware, pipettes prepared in various ways and washed and unwashed corpuscles upon serum hemolysis and complement fixation; 3, various means of preserving corpuscles and complement for hemolytic work, and their practical values.

Methods for Standardizing Antigen.—Dr. J. A. Kolmer and Dr. B. M. Meine emphasized the necessity of titrating and standardizing antigens and presented a review of a study of different methods with various tissue extracts and the technic of a standard method, employing standard and fixed units of measure.

Various Methods for Conducting the Reaction.—Dr. John A. Kolmer and Dr. Toitsu Matzunanni presented the results of comparative tests with different hemolytic systems and with various methods of primary incubation and comparative tests with different methods of titration and adjustment of the hemolytic systems. A standard technic was described which appeared to fulfill the requirements.

Dr. R. OTTENBERG considered Doctor Kolmer's work admirable; working independently, he had reached practically identical conclusions. As to the question regarding the hemolytic system to be used, the human system should be the best, but there were several practical difficulties, particularly in obtaining a high titre antihuman serum; another difficulty was that in using the admirable Thomas and Ivy method normal serums varied so widely in their anticomplementary effect that it was impossible to strike an average every time. The Wassermann reaction should certainly be standardized as antitoxin units had been standardized.

Doctor BRONFEN-BRENNER wished to make a few suggestions regarding the difficulty of preparing antihuman amboceptor of sufficiently high titre: 1. The human cells should be scrupulously washed free from any trace of serum. 2. Human cells being known to be more toxic to rabbits than the cells of some other animals, it was preferable not to inject too much blood. 3. To avoid difficulty in standardization of red cells for the hemolytic test, a clot of any fresh sample of blood should be broken up, filtered, and washed with saline, a sample of the suspension estimated by Sahli's hemoglobinometer and diluted to desired concentration. In regard to quantitative tests, the complement should be titrated to the constant amount of amboceptor; having found the unit of complement, an endeavor should be made to determine the smallest amount of a given serum which would fix it, in the presence of a suitable amount of antigen. Thus the amount of antibody in the serum would be expressed in terms of volume of this serum.

Miss OLMSTEAD thought the icebox temperature important in using the cold fixation method, 8° or 9° C. being the best temperature.

Dr. CLAUDE P. BROWN preferred the method of Noguchi, if the technic was followed closely, in the preparation of antihuman hemolytic amboceptor.

Dr. DAVID KALISKI agreed with Doctor Kolmer that there was urgent need for a standardized test, but it might be emphasized that great care should be exercised in the individual laboratories to prevent error due to neglect in technic, recording and reporting tests, etc. In regard to the antihuman system, it was difficult, as Doctor Bronfen-Brenner pointed out, to immunize a rabbit against human cells and obtain a titre higher than 1:400 to 1:800; however, these low titre amboceptors could be dried on filter paper and would keep their titre for a very long time, deteriorating very slowly. A great source of trouble in the test was the presence of antisheep natural hemolysin which was present in more than half the serums examined and unless detected many positive cases would be missed.

Immunological Studies in Typhus Exanthematicus.—Dr. PETER K. OLITSKY said that specific agglutinins, precipitins, opsonins, and complement fixing antibodies were regularly present in the blood, mainly after the crisis. Convalescent (immune) serum from one type (endemic) agglutinated organisms of another type (epidemic). Agglutinins were found in animals which had recovered from experimental typhus fever, except in the guineapig in which there was variability in regard to antibody formation. These agglutinins were regarded as specific, and were found to be present five or six months after the crisis. The complement fixing body formation ran parallel to that of agglutinin. The precipitin reaction corresponded in its curve of formation to that of agglutinin and complement fixing body. Immune opsonins were determined not only in the serum from typhus fever, but in animals immunized by repeated injections of the bacilli.

Serological Studies on Typhus Fever Contacts.—Dr. GEORGE BAEHR's observations were made mostly in Volhynia, Russia, during the first three months of 1916. Twenty individuals who had been in intimate contact with typhus fever patients were discovered to have developed specific antibodies for the Bacillus typhi exanthematici in their blood, though they had not shown any clinical signs of illness. Agglutinins were shown in dilutions of serum up to 1:500 and complement fixation was four plus. In controls complement fixation was not observed and agglutinins were not shown in a dilution above 1:50. The serums after contact showed specific antibodies. The general immunological principle deduced was that mild abortive forms of the disease might produce antibodies. Individuals like these, having become immune to typhus fever without actually having had the disease were a serious danger epidemiologically.

Specificity of Intracutaneous Absorption.—Dr. G. H. SMITH and Dr. M. W. COOK injected both specific and heterologous antigens into the cutaneous tissues of immunized, sensitized, and normal guineapigs. The specific antigen was absorbed from the tissues of the immunized and sensitized animals more quickly than the heterologous antigen, while the rate of absorption of both antigens from normal animals was much the same.

Cutaneous Antibodies.—Dr. W. M. COOK and Dr. G. H. SMITH demonstrated the presence of cutaneous antibodies in the skin of immunized and sensitized guineapigs by determining in the filtered emulsions of skin the content in precipitins for the specific antigen. The possibility that circulating antibodies might be responsible for the positive reactions obtained was excluded by perfusing the animals with salt solution and demonstrating the completeness of removal of circulating guineapig serum by titering the perfused skin emulsions with rabbit antiguineapig serum. While slightly positive results were obtained in these titrations, the fact that the circulating guineapig serum had been removed was confirmed by failure to find in the tissue emulsions any trace of an heterologous serum which was injected intravenously into the guineapig a short interval before death.

Classification of Strains of Meningococci.—Dr. G. H. ROBINSON explained the method by which the strains tested fell into two distinct groups: Horses were immunized against type strains of meningococci; mice were injected with the serum of these horses; and the protective value of the serum against other strains of cocci was determined. Of the groups tested, forty per cent. belonged in the first and second groups. Concordant results were obtained by actively immunizing the mice and then estimating the protective value against the strains to be tested.

Selection of Horses for the Production of Diphtheria Antitoxin by an Intrapalpebral Test.—Dr. A. Parker Hitchens and Dr. E. K. Tingley, of Glenolden, Pa., Doctor Tingley reading the paper, said that the work of Park and Zingher showing that some persons possessed natural diphtheria antitoxin had suggested that this might also be true of horses and that with a modification of the Schick test an indication could be made of the productive possibilities of horses with regard to diphtheria antitoxin. The technic was similar to that of Moussu in testing cattle with tuberculin; with a sterile one c. c. record syringe 0.2 c. c. diluted diphtheria toxin was injected as superficially as possible into the conjunctival mucous membrane of the lower lid. One eye was used for test and the other for control. After twenty-four to forty-eight hours readings were made. One plus equalled fullness of lid, tenderness, and watery discharge; two plus, lid swollen, eye half closed; three plus, lid badly swollen, eye nearly closed, painful, photophobian, profuse, purulent discharge. The reactions lasted usually several days.

Relationship of the Syndrome of Anaphylaxis to the Vegetative Nervous System.—This paper, by Dr. F. M. Pottenger, is published in full in the August 18th issue of the Journal.

Letters to the Editors.

THE SENIOR MEDICAL MAN: HOW HE CAN DO HIS BIT AND YET EARN TO LIVE.

Triton Club, Quebec, Canada, *August 27, 1917.*

To the Editors:

We are at war. Many sleepy heads or shut eyed people don't know it. They need to have a bomb dropped on their roof; they may get it too. War is the gravest situation a nation can find itself in. Every reason renders it necessary for us to forecast the cost and see what we can count upon. Every asset must be assessed and conserved, medical man power in particular. Young physicians rush recklessly to the front with the instinctive assurance that "it shall be given them in that moment what they shall say and what they shall do." Their exuberant, preponent capabilities will see them through. For those of us whose faces are turned to confront the setting sun the cost must be reckoned up more warily although our selfabnegation shall be none the less complete. For the youth who surges forth to the conflict there is also the coming back—at least for a fair majority. For the post meridianite there is none; he gives all and is effaced. How then shall these mature ones expend, to their own and the countries' best advantage, what they have to offer? To the young medical expert, those of full power, two forms of reward are open: one glory of service, of sacrifice, of achievement and the proper, though meager, consideration of a living wage.

The younger men abandon livelihoods, their practices, but a just and generous community will not let them nor their loved ones suffer; the stay at homes cheerfully offer to do their work for them and share on a liberal or equitable basis. Upon the older men, however, the real burden must fall, any way you put it. They accept the honor with pride and gladness, striving to their utmost capacity, even standing ready to die in their tracks from fatigue, though denied a dramatic ending at the cannon's mouth. Make no mistake; in war there is plenty to do at home other than by donating what we have become accustomed to regard as a full day's work. Also many remain at home perforce and for excellent reasons, among which are the filling of industrial and agricultural armies, the makers of thunderbolts and of aircraft and watercraft. There remain with us also a large and varied company of discards, of seconds, in the military sifting process. Here is thoroughly good material, quite equal in many respects to the men accepted for duty overseas.

Among this left over but fundamentally first class human material the mature physician must apply his medical training along relatively novel lines and make of his professional knowledge and experience new applications. He must turn his attention, at least half of it, to the conservation of man power as it probably never entered his head heretofore. The value of every man, and indeed of every woman equally, has leaped up, fifty or more per cent., and is still rising. Whereas heretofore most medical practioners were kept busy at playing the restorer of acutely deranged human function, now, he must add to his repertoire the thorough overhauling and restitution of diverse and sundry impaired, damaged, or, and chiefly, underdeveloped human beings. All these objects of solicitude are either fighting machines directly or indirectly, in variegated but for the most part strictly correlated and essential lines. Here is a domain while not absolutely unfamiliar to some is totally foreign to the taste, training, and experience of the majority. I speak from deep conviction based on a lifetime devoted to human conservation and reconstruction.

What are the possibilities of bringing the second class young men up to standard? Excellent, as I have stated elsewhere, for the reason that a considerable number show minor anatomical and organic defects due to original departures from the norm; underdevelopmental defects, due to faulty environmental training—often both act together; and simple retardation of development due to taste or habit or absence of incentive, in short to apathy, lack of appreciation of the value of a sound body, and absurd attitudes of mind encouraged by certain esthetes, religionists, and other zealots.

It may be interesting in this connection to take cite remarks made by President Foster at the annual meeting of the National Education Association at Portland, Ore., in July, 1917, who stated as the result of his experience that the world at large is entering on new standards. Statistics furnished by the National Collegiate Athletic Association from 143 collegiate athletic associations show that of these only seventeen per cent. of the total number of male students participated in active games of any sort and not fifty per cent. engaged in any form of systematic or organized exercise. The recommendation was made to abandon intercollegiate athletics, which develop only the picked man—the selected group—who also presumably do not need it, and to spend all available money on moderate forms of activities suitable for the majority and to win the active cooperation of those who have no impulse nor taste for energizings. In short here is a proposition for mental education in ideomotion or psychomotion to keep the average somewhere in hailing distance of fifty per cent. fit. The American boy is a physical slacker, say or believe what you please. He must be made to acquire a fairly stable physique whether he is a conscientious objector, a plain drone, or a jellyfish. Here is an ample field for the senior medical conservation practice—to himself turn over a new leaf. It is asking too much to expect him personally to go in for any form of activity and I should be hounded off the map if I advised any such proposition.

My sedentary colleagues or passive encouragers of "moderate" activities need stirring up to cogent but neglected truths. That means those of you who walk to your auto and back once a day whether you need it or not, and call it a day's work. At the least these blessed old moss backs who have for fifty years clung to the belief that man is made to dodge all muscular exertion possible, can at least admit they have made a fundamental biological error, learn something worth while and encouraging, and strongly urge upon their patients the need of becoming fully qualified men. No man is fully qualified who, be he never so brilliant and intellectual, is a mere mass of inept jelly. Do you deny it? I'll admit you might be right in piping times of peace and if you inherited limitless money. But in times of war when every man must do his bit which may at any moment include both home fortifying and home defending, I deny it.

J. Madison Taylor.

Book Reviews.

[*We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.*]

The Breast: Its Anomalies, Its Diseases, and Their Treatment. By JOHN B. DEAVER, M.D., LL.D., Sc.D., Professor of the Practice of Surgery, University of Pennsylvania; Surgeon-in-chief to the German Hospital, etc., and JOSEPH MCFARLAND, M. D., Sc. D., Professor of Pathology and Bacteriology in the Medical Department of the University of Pennsylvania; Pathologist to the Philadelphia General Hospital, etc., assisted by J. Leon Herman, B. S., M. D., Assistant Surgeon to the Methodist Hospital of Philadelphia; Instructor in Anatomy, Medical School of the University of Pennsylvania. With 8 Colored Plates and 277 Illustrations in Text. Philadelphia: P. Blakiston's Son & Co., 1917. Pp. 724. (Price $9.00.)

A monograph treating of the vitally important subject of lesions of the mammary gland cannot fail to find a place in surgical literature and particularly so when written by an author of such keen observation and wide clinical experience as Doctor Deaver. The book is based on a large number of cases that have come under his observation; they furnish most valuable data for guidance in practice. Furthermore the work of such well known authors in this field as Halstead, Warren, and Rodman is given full consideration and their methods of operating for carcinoma minutely described. The illustrations are copious and well executed. Besides being valuable as an exposition of wide personal experience the book will have a great influence in the dissemination of knowledge of the immense importance of cancerous and precancerous conditions in which the profession even today needs constant instruction. The pathological facts conform to the latest views and the principles of treatment, particularly in carcinoma, are in accord with the radical teachings of Halstead, Handley, and Rodman. The views expressed on the value of x ray in the advanced and nonoperative cases seem too optimistic, although they do not influence the author to use the rays except in inoperable cases. The work will appeal to those desiring a complete knowledge of the present status of the surgery of the breast and the technic of the various operative procedures.

Glaucoma. A Handbook for the General Practitioner. By ROBERT HENRY ELLIOT, M. D., B. S., Lond.; Sc. D., Edin.; F. R.C.S., Eng., etc.; Lieutenant Colonel I. M.S. (Retired). Late Superintendent of the Government Ophthalmic Hospital, Madras; Late Professor of Ophthalmology, Medical College, Madras; and Late Fellow of the University of Madras, etc. New York: Paul B. Hoeber, 1917. Pp. xi-60. (Price $1.50.)

The reviewer lays down this book disappointed. Colonel Elliot states that material for a much more exhaustive treatise lies on his desk, and that the world conflict has prevented its publication, so he has given us instead this epitome. He has gone much too far in trying to secure *multum in parvo*, and leaves the reader unsatisfied. The object of the book, he says, is to interest the general practitioner in glaucoma, but the latter knows that if he wishes to acquaint himself with the anatomy of the eye, the physiology of intraocular tension, the pathology and etiology of glaucoma, he must consult a larger work, so why devote eighteen out of the fifty-seven pages to these subjects? About the only original thing under diagnosis is the explanation of the appearance of the vessels in a glaucomatous cup, and this is excellent. The short description of operative measures, including even the author's own operation, refers the reader to more lengthened treatises for details. A fair criticism seems to be that such statements as "there is no such thing as acute, subacute, and chronic glaucoma," and "there is no such thing as prodromal glaucoma," are out of place in a book too small to permit the presentation of conflicting views, especially when they are not in agreement with the opinions of equally competent judges. But, after all, this is simply an epitome of a larger work and should be judged as such.

Experimental Pharmacology. By DENNIS E. JACKSON, Ph. D., M. D., Associate Professor of Pharmacology, Washington University Medical School, St. Louis. With Three Hundred and Ninety Original Illustrations, Including Twenty-four Full Page Color Plates. St. Louis: C. V. Mosby Company, 1917. Pp. 536.

Compared with other fundamental medical sciences, pharmacology is yet young, but it is rapidly coming into its own as the only basis for the rational practice of therapeutics. In physiology the laboratory phase of the subject has been well worked up and presented for the use of the student, but in pharmacology there is still a paucity of good works for the guidance of the student in the laboratory. The present volume is therefore a welcome one, the more so as it is in some respects unique. Other laboratory manuals are quite as good as this one in the character of the experiments which they contain and at least one is better, both in scope and selection. None of these, however, goes into the technical details of the construction, assemblage, and use of the various forms of apparatus. The author has also done a good service by describing and depicting many very simple forms of apparatus, many of which can be improvised with very common materials and from which quite satisfactory results can be obtained. This is a lesson which is much needed at the present time, for the modern student is so often surrounded by elaborate and costly pieces of apparatus that he tends to feel that experimentation in pharmacology is almost impossible without such equipment. Finally, another special feature of value to the student is the careful descriptions and illustrations of the various surgical operations which are essential parts of a large amount of pharmacological experimentation. As a laboratory manual to be used to supplement a good textbook of pharmacology, this volume should find a wide field of usefulness, especially in institutions where the teaching force in the laboratory is restricted. Its careful use will enable the average student to proceed with his experiments with a minimum of personal aid from his instructors.

Dangers in Neckwear. By WALTER G. WALFORD, M. D., Author of Cerebral Congestion and Tight Neck Clothing, etc. London: H. K. Lewis & Co., Ltd., 1917. Pp. xi-171. (Price 4/6.)

This little volume should undoubtedly take permanent place among the curiosities of medical literature. The author, at nearly seventy years of age, was cured of arteriosclerosis and cerebral congestion by the simple expedient of loosening his neckwear, and for the past nine years he has been engaged in spreading the glad tidings that nearly all the ills that flesh is heir to are due to tight neckwear and can be cured by loosening it. His book is filled with wonderful recoveries, a pseudoscientific statement of his thesis, and a number of "before and after" pictures. Among the ailments which have yielded to his gentle methods are headache, vertigo, rheumatism, eczema, impetigo, arteriosclerosis, cerebral congestion, apoplexy, sunstroke, tuberculosis, gout, paralysis agitans, tetany, aphasia, epistaxis, delayed healing of wounds, ununited fracture, and valvular diseases of the heart. Somewhat reminiscent of our ancient enemy, the patent medicine, but hardly likely to do as much harm.

An Index of Differential Diagnosis of Main Symptoms by Various Writers. Edited by HERBERT FRENCH, M. A., M. D., Oxon., F.R.C.P., London; Physician, Pathologist, and Lecturer, Guy's Hospital; Consulting Physician to the Radium Institute. Second Edition. With Thirty-seven Colored Plates and over Three Hundred Illustrations in the Text. New York: William Wood & Company, 1917. Pp. xx-912. (Price $10.00.)

The twenty-odd articles by well known English clinicians discuss important symptoms in alphabetical order while an index of over 150 pages gives these symptoms under the headings of the diseases in which they occur. The text is well supplied with the photographs, skiagraphs, and colored plates while the system of paragraphing with a clearly outstanding headline renders the finding of a particular symptom or disease easy. It is based upon an outstanding symptom in a certain disease, it takes up all the conditions in which this symptom is found and then goes into differential diagnosis. As a ready reference in obscure cases this work is of undisputed service; the second edition has been brought up to date.

The Small Community Hospital. A Series of Eight Papers. By JOHN ALLAN HORNSBY, M. D., Editor of *The Modern Hospital.* St. Louis: Reprinted from *The Modern Hospital,* 1917. Pp. 109.

The writer of this book begins by assuming that hospital care of the sick is the only right sort of care; he then goes on to tell how to organize a hospital in accordance with the needs of the community it will serve. The great merit of the book is that it is specific. While generalities are used, great pains are taken to discuss various possibilities in founding, financing, and organizing a hospital, and the advantages and disadvantages of each of the methods outlined. The writer does not believe on the whole in whirlwind campaigning, for example, as a method of raising funds, but he discusses it in an impartial manner. In short, he has gone into as much detail as the space he has allowed himself will permit, but at the same time expressed himself clearly and forcibly on the general principles underlying hospital management. An admirable book, and we hope it is a preliminary to a large volume by the same writer.

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After Office Hours.

The Katzenjammer Kids! What unconscious sadistic impulses do they satisfy that they still scamper their diabolic way across the polychromatous page after all these years?

* * *

The chief fault of *Vanity Fair,* it seems to us, is a meticulous striving after cleverness, its chief virtue is its fearlessness in publishing pictures in the altogether. The best things in the September number are burlesques on the *New Republic* and the *Ladies' Home Journal,* and articles by George Jean Nathan and Stephen Leacock.

* * *

Bruce Barton is one of the most stimulating editors we know. On the inside of the front cover of *Every Week* every week he has a little talk that is like a few minutes' contact with a dynamic, magnetic, helpful personality. He always finds room in his pages, too, for articles that awake ambition and dispel the blues, and features illustrations of the power of the human mind. Success to him!

* * *

Bernard Shaw's gift, say Nathan and Mencken, is simply that he states the obvious so that it sounds revolutionary. For example, he has maintained, to the delighted horror of the Harold Bell Wright school, that the female pursues the male. There is a clever little story with this motif in *Smith's* for September. It is Meeting Halfway, by Kate Taylor.

* * *

After so much suppression it is encouraging for the future of American literature to see Theodore Dreiser in a big magazine. Married, in the September number of the *Cosmopolitan,* deals with the recognition by a husband of a few months that the viewpoint of his wife differs hopelessly from his own. As is usual with the stories in this magazine, the illustrations are stereotyped, beautiful with an advertising calendar sort of beauty, and singularly inappropriate.

* * *

George Ade continues his delightful Fables in Slang in the *Cosmopolitan.* The August number has one, The Getting Together of the Lily and the Hick, which tells how the corner loafer and the tearoom hero were made into men and brothers in the army. And in the September issue is the tragedy of a country family, honest trenchermen all, who move to the city and attempt to set the same sort of a table they did back where things grow.

* * *

It would perhaps do the antivivisectionists good to read Suffering Carrots in the *Green Book* for August. In this little burlesque, Ellis Parker Butler—who must feel toward Pigs Is Pigs much as Gelett Burgess came to feel toward The Purple Cow, for no one can seem to mention his name without dragging in mention of that humorous masterpiece—tells of an ultrasentimental young matron who holds that all vegetables have feelings and hence must not be slaughtered ruthlessly.

Official News.

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending August 22, 1917:

AKIN, C. V., Assistant Surgeon. Directed to proceed with laboratory car *Wyman* to Leavenworth, Kan., on special temporary duty.

BROOKS, S. D., Senior Surgeon. Granted ten days' leave of absence from August 23, 1917.

CODY, H. C., Assistant Surgeon. Directed to proceed to Little Rock, Ark., on special temporary duty.

GIORDANO, A. A. S., Assistant Surgeon. Relieved at Philadelphia, Pa., and assigned to duty on Coast Guard cutter *Yamacraw.*

GOLDBERGER, J., Surgeon. Directed to proceed to points in the Southern and Eastern States for duty in connection with study of pellagra.

SMITH, H. P., Assistant Surgeon. Directed to proceed to New Orleans, La., for examination to determine his fitness for promotion.

SMITH, LENDON H., Assistant Surgeon. Relieved from duty on Coast Guard cutter *Yamacraw* and directed to proceed to Philadelphia, Pa.

VOGEL, C. W., Surgeon. Granted seven days' leave of absence from August 15, 1917.

WELDON, LON O., Assistant Surgeon. Ordered to report to chairman of board at Ellis Island, N. Y., for examination to determine his fitness for promotion.

WILLIAMS, L. L., Jr., Assistant Surgeon. Relieved from duty at Louisville, Ky.; directed to proceed to Hattiesburg, Miss., on special temporary duty.

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Births, Marriages, and Deaths.

Born.

DUNN.—In New Britain, Conn., on Saturday, August 18th, to Dr. George W. Dunn and Mrs. Dunn, a daughter.

Married.

DUFFY-SULLIVAN.—In Chicago, Ill., on Friday, August 17th, Dr. Hugh J. Duffy, of Chicago, and Miss Jessie Sullivan, of Denver, Colo.

RICE-MCMANUS.—In Fitchburg, Mass., on Monday, August 20th, Dr. Robert A. Rice and Miss Mary Elizabeth McManus.

Died.

ANDERSON.—In Rockville, Md., on Wednesday, August 15th, Dr. Edward Anderson, aged seventy-six years.

CALLAHAN.—In Ortiz, N. M., on Friday, August 10th, Dr. Thomas E. Callahan, of Saguache, Colo., aged forty-three years.

CLERKE.—In Green Cove Springs, Fla., on Sunday, August 12th, Dr. John W. Clerke, aged seventy-two years.

CRONIN.—In Worcester, Mass., on Monday, August 20th, Dr. Henry William Cronin, aged fifty-five years.

DAVIS.—In Hudson, Mass., on Wednesday, August 15th, Dr. Frank A. Davis, aged sixty-two years.

GRISWOLD.—In Banksville, N. Y., on Saturday, August 18th, Dr. Ralph B. Griswold, aged eighty-two years.

HARBOTTLE.—In Newark, Ohio, on Friday, August 17th, Dr. John T. Harbottle, aged forty-five years.

HART.—In Louisville, Ky., on Saturday, August 11th, Dr. Fred H. Hart, aged thirty-eight years.

HELLER.—In Easton, Pa., on Sunday, August 19th, Dr. Jacob B. Heller, aged sixty-three years.

HODGE.—In Plainfield, N. J., on Thursday, August 23d, Dr. Floyd J. Hodge, of Florence, N. J., aged thirty-three years.

JULIAN.—In Lake City, Fla., on Tuesday, August 14th, Dr. Abner J. P. Julian, aged fifty-eight years.

KAVANAGH.—In Minneapolis, Minn., on Thursday, August 16th, Dr. Katy S. Kavanagh, aged sixty-three years.

MEYER.—In Louisville, Ky., on Friday, August 17th, Dr. Samuel Meyer.

WALDORF.—In Syracuse, N. Y., on Tuesday, August 14th, Dr. Frank L. Waldorf, aged thirty years.

New York Medical Journal

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Original Communications

THE TREATMENT OF PARESIS.

Second Report.

BY BRITTON D. EVANS, M. D.,
Morris Plains, N. J.,
Medical Director, New Jersey State Hospital,
AND FREDERIC H. THORNE, M. D.,
Morris Plains, N. J.,
Pathologist, New Jersey State Hospital.

Two and a half years have elapsed since we began to treat patients suffering from paretic dementia by the intraspinous method. During this period we have treated twenty-three patients intraspinously with salvarsan, neosalvarsan, and albuminate of mercury. Fifteen of these cases were reported one year ago. At that time we had not given to each patient a sufficient number of treatments to allow us to arrive at a definite conclusion regarding their value as therapeutic agents in this disease. Our findings at that time are given briefly in the following abstract.

Abstract of preliminary report.—The patients selected for these treatments were those who unquestionably were suffering from paretic dementia. The diagnoses were based on the histories, mental symptoms, and physical signs and were confirmed by the laboratory findings. In selecting our patients we endeavored to choose those who seemed to be the least advanced in the disease and who were in the best physical and mental condition. The Wassermann reactions were positive with the blood serum and with the cerebrospinal fluid in each case and the globulin and cell content of the latter were above normal. The largest number of intraspinous treatments given to one individual was ten and the smallest number three. Three of these patients showed mental and physical improvement; two died during the course of treatment; two died ten and thirteen months respectively after treatments were discontinued; the remainder showed no improvement whatever. Of the three who showed mental and physical improvement one was discharged and still remains in good mental condition, having "returned to work and received a substantial raise in salary," over fourteen months having elapsed since the last treatment. The second showed the first signs of improvement three months after receiving the last treatment. He was taken home by friends and we have lost track of him. The third died with convulsions ten months after last treatment was given.

TECHNIC GOVERNING THE PREPARATION AND ADMINISTRATION OF ALBUMINATE OF MERCURY.

The technic governing the administration of salvarsan and neosalvarsan was described in detail in the preliminary report, and it will be unnecessary to report it in this paper. Owing to the difficulty encountered in obtaining salvarsan and neosalvarsan, we have been carrying on the treatments with albuminate of mercury. The therapeutic agent was freshly prepared immediately before its administration, and was given every two weeks. A solution of corrosive sublimate with distilled water was made so that each cubic centimetre of the solution contained 0.0013 gram. Approximately fifty c. c. of blood were withdrawn from the arm of the patient and placed in the icebox over night; the following morning the clear serum was pipetted off and centrifuged when necessary. To the resulting clear serum one c. c. of the mercury solution was added and a sufficient quantity of normal salt solution to make a total volume of fifty c. c. This was inactivated in a water bath for thirty minutes at a temperature of 56° C. The mercurialized serum being ready, a lumbar puncture was performed in the usual manner. The cerebrospinal fluid was allowed to flow until there was a considerable interval between the drops; usually fifty or sixty c. c. were withdrawn. The mercurialized serum was induced into the spinal subarachnoid space in the same manner as was the salvarsanized serum, which is described in the preliminary report on this work.

As a rule, considerably more reaction was observed following these treatments than with the salvarsanized serum. More or less pain in the back and head was observed and the temperature was usually elevated in some instances to 103° or 104° F. for a few hours. The pain was easily controlled with phenacetin or codeine. Each patient was given 0.0013 gram of corrosive sublimate for the first few doses, and if this amount was well tolerated it was increased to 0.0026 gram. This latter dose was maintained until the treatment was discontinued.

REPORT OF CASES.

The following eight histories were reported in full in our preliminary paper and it will be necessary here to give only a short résumé of each. Three others were reported in the first paper, but they have received further intraspinous treatments since that time.

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Case II.—E. K. Expansive form. This patient received six complete treatments with neosalvarsan. He showed marked mental and physical improvement, which was first noticed after the second treatment was administered. He was taken home by his friends four months after the last treatment was given. When discharged from this institution his blood serum and cerebrospinal fluid gave a positive reaction and the cell and globulin content of the latter was above normal. His pupils were stationary; speech slurring; marked Romberg, and tremors of the facial muscles and extended fingers. Some months after he was discharged from this institution he was committed to an institution in another State. At the time of his commitment to the foregoing institution he was in very poor mental and physical condition and showed well marked physical and mental symptoms of paretic dementia.

Case III.—E. T. Depressive form. This patient received seven complete treatments with salvarsan and neosalvarsan. He showed no improvement either mentally or physically following the treatments. He died with convulsions six months after the last treatment was given. At the time the last treatment was given the Wassermann reaction with the blood serum and cerebrospinal fluid was positive, and the cell and globulin content of the latter were above normal.

Case IV.—M. G. Juvenile. This patient received four complete treatments with neosalvarsan. She did not react to treatment either mentally or physically; was markedly demented; Wassermann reaction with the blood serum and cerebrospinal fluid was positive and the cell and globulin content of the latter were above normal.

Case V.—L. W. Expansive form. This patient received five complete treatments with salvarsan and neosalvarsan. There was some improvement in her mental condition three months after the last treatment was administered, and there was very slight improvement in her physical condition immediately following the last treatment. The Wassermann reaction with the blood serum remained positive, but with the cerebrospinal fluid it became negative after three treatments. She was taken home by friends, but was readmitted to the hospital seven months later in a violent and excited state. When readmitted the Wassermann reaction with the blood serum and cerebrospinal fluid was positive and the cell and globulin content of the latter were above normal.

Case VI.—F. H. received five complete treatments with salvarsan and neosalvarsan. The first and third treatments were given intracranially; the others were given intraspinously. He showed marked mental and physical improvement after two treatments. Ten months after the last treatment was administered convulsions developed and he died. The Wassermann reaction with the blood serum and cerebrospinal fluid remained positive, and the cell and globulin content of the latter remained above normal.

Case VII.—A. D. received five complete treatments with salvarsan; he showed no mental or physical improvement, grew gradually weaker, and died with convulsions three weeks after the last treatment was administered. Autopsy revealed an extensive degeneration of the basal ganglia which also extended into the subcortical white matter. The caudate and lenticular nuclei were practically all destroyed and there remained only a small portion of the optic thalami. There was an extensive endarteritis of all the cerebral vessels.

Case VIII.—E. M. received three complete treatments with salvarsan. Four months after the last treatment he showed marked improvement and was taken home one month later. Since then we have lost track of him. The Wassermann reaction with the blood serum and cerebrospinal fluid remained positive and the cell and globulin content of the latter remained above normal.

Case IX.—C. A. received five complete treatments with salvarsan. He grew gradually weaker and convulsions developed; he died one week after the last treatment was administered. The Wassermann reaction with the blood serum and cerebrospinal fluid remained positive, and the cell and globulin content of the latter remained above normal.

The following seven cases were reported in the preliminary communication, but these patients have received further treatment since its publication:

Case I.—F. R. received ten complete treatments with neosalvarsan. He showed marked physical improvement, but there was no change in his mental condition, except that he became more quiet and tractable. One year and eight months later he was given another series of treatments with albuminate of mercury. He received five of these. No change was noted in his mental or physical condition. The Wassermann reaction with the blood serum and cerebrospinal fluid remained positive and the cell and globulin content of the latter remained above normal. He died with convulsions three months after the last treatment was administered.

Case X.—J. B. received eight complete treatments with salvarsan and neosalvarsan. After three treatments he began to improve somewhat both mentally and physically and was able to do work which required considerable skill. One year later he was given another series of treatments with salvarsan and corrosive sublimate. He received twelve of these treatments. His mental and physical condition remained the same until three months after the last treatment was given, when he began to deteriorate slowly and died ten months later from cardiac exhaustion. The Wassermann reaction with the blood serum and cerebrospinal fluid remained positive and the cell and globulin content of the latter remained above normal.

Case XI.—F. C. received three complete treatments with salvarsan. Immediately following the treatment he became quiet and rational, but one week after the last treatment he became destructive and violent. He remained in this excited condition for five months; then he was taken to another hospital. He was readmitted March 3, 1916, in an exalted condition and was given seven treatments with albuminate of mercury. At present he is in good physical and fairly good mental condition, but he has no insight into his affairs and shows well marked physical signs of paretic dementia. The Wassermann reaction with the blood serum and cerebrospinal fluid remains positive, but the cell and globulin content of the latter remain above normal.

Case XII.—R. C. received twelve complete treatments with salvarsan, neosalvarsan, and corrosive sublimate. He did not show any improvement either mentally or physically. The Wassermann reaction with the cerebrospinal fluid was reduced to negative on two or three occasions, but when last analysis was made this reaction was positive with blood serum and cerebrospinal fluid and the cell and globulin content of the latter remained above normal. He died with convulsions thirteen months after last treatment was given.

Case XIII.—C. K. received twelve treatments with salvarsan, neosalvarsan, and albuminate of mercury. He gained twenty-five pounds in weight, but showed no change in his mental condition. He died from cardiac exhaustion two and a half months after the last treatment was given.

Case XIV.—J. W. received twenty treatments with salvarsan and albuminate of mercury. He showed no mental or physical improvement, became very delusional and excited, and died from cardiac exhaustion seven months after last treatment was given. The Wassermann reaction with the blood serum and cerebrospinal fluid remained positive and the cell and globulin content of the latter remained above normal.

Case XV.—F. H. received ten treatments with salvarsan and albuminate of mercury. He showed no mental or physical improvement. At present he is very delusional, excited, and resistive, and has no insight into his condition. The Wassermann reaction with the blood and cerebrospinal fluid remains positive and the cell and globulin content of the latter remains above normal.

The following eight cases were not reported in the preliminary paper, as treatments were begun after its publication:

Case XVI.—S. V. was admitted February 26, 1913; age, fifty-seven years; occupation, engineer; chancre several years ago; onset of psychosis given as several years previous to date of admission. He was fairly well nourished; pupils unequal, irregular in outline and stationary; masked expression of face; tremors of tongue and facial muscles; Wassermann reaction from blood serum and cerebrospinal fluid positive; cell content of the latter thirty per c. mm.; globulin increased; colloidal gold reaction, paretic curve. Mentally, his memory was impaired; he was excitable, restless, and euphoric; sensorium blunted; ideation fragmentary, desultory, and incoherent. This patient received ten treatments with salvarsan and neosalvarsan. The cell content of the cerebrospinal fluid was reduced to twelve per c. mm. The Wassermann reaction with the blood serum and cerebrospinal fluid remained positive throughout the course of treatment and the globulin content of the latter remained above normal. He did not show any improvement in his mental or physical condition during the course of treatment. Two days after the tenth treatment was given convulsions developed, which continued for one week. He died on May 17th with exhaustion from convulsions seven days after the last treatment was given.

CASE XVII.—H. B. was admitted June 3, 1914; age, forty-six years; occupation, electrical expert; chancre denied; onset of psychosis three months previous to date of admission. He was well nourished; pupils reacted sluggishly to light and distance; tremors of tongue, facial muscles, and extended fingers; speech and gait steady; Wassermann reaction with blood serum and cerebrospinal fluid positive; cell content of the latter twenty-nine per c. mm.; globulin content increased; colloidal gold reaction, paretic curve. Memory was good; he was oriented for time and place; there were some psychomotor activity and flight of ideas; he was expansive and euphoric, and his attention was not easily obtained. The patient had little or no insight into his condition. He received eighteen treatments with salvarsan and albuminate of mercury. The cell content of the cerebrospinal fluid was reduced to ten per c. mm. The Wassermann reaction with the blood serum and cerebrospinal fluid remained positive throughout the course of treatment; the globulin content of the latter remained above normal and the colloidal gold reaction gave a paretic curve after the last treatment. There was some slight improvement in his mental condition during the first ten treatments and he was allowed to go home for one month on a visit. Immediately following the eleventh treatment he had eight convulsions in rapid succession. He recovered from this attack, but did not regain his former mental and physical health. His memory became poor; he would bolt his food, and at times would appear more or less stupid, while at other times he was exceedingly irritable. A few days after the last treatment was administered appendicitis developed and the patient died two weeks after the last treatment was given.

RECORD OF INTRASPINOUS TREATMENT.

Record number.	Form of paresis.	Duration of mental symptoms (months).	Duration of syphilis (years).	Analysis Before Treatment: Wassermann reaction, blood serum.	Analysis Before Treatment: Cerebrosp'l fl.: Wassermann reaction.	Analysis Before Treatment: Cerebrosp'l fl.: Globulin.	Analysis Before Treatment: Cerebrosp'l fl.: Cells per c. mm.	Number of treatments.	Duration of treatments (months).	Meth. Treatm't: Salvarsan (grams).	Meth. Treatm't: Neosalvarsan (grams).	Meth. Treatm't: Mercuric chloride (grams).	Analysis After Treatment: Wassermann reaction, blood serum.	Analysis After Treatment: Cerebrosp'l fl.: Wassermann reaction.	Analysis After Treatment: Cerebrosp'l fl.: Globulin.	Analysis After Treatment: Cerebrosp'l fl.: Cells per c. mm.	Remarks.
1.	Depressed	23	14	++++	++++	++	40	11	24	...	5.40	0.0104	++++	++++	++	12	Died from exhaustion 3.6 months after last treatment.
2.	Expansive	16	17	++++	++++	++	39	6	2	...	3.60	......	++++	++++	++	15	Mentally and physically improved.
3.	Depressed	18	?	++	++++	++	114	7	6	...	4.05	......	++++	++++	++	5	Died ten months after last treatment.
4.	Juvenile	7	..	++++	++++	++	37	4	3	...	1.40	......	++++	++++	++	17	No improvement.
5.	Expansive	11	?	++++	++++	++	52	5	4	1.2	1.35	......	++++	—	+	6	Slight temporary improvement.
6.	Expansive	46	?	++++	++++	++	9	5	4	0.9	1.35	......	++++	—	+	4	Died ten months after last treatment.
7.	Depressed	7	?	++++	++++	++	80	5	4	1.8	....	......	++++	++++	++	29	Died three weeks after last treatment.
8.	Agitated	3	?	++++	++++	++	40	3	[illegible]	0.9	....	......	++++	++++	++	10	Improved.
9.	Depressed	6	?	++++	++++	++	113	5	4	2.4	....	......	—	++++	++	8	Died one week after last treatment.
10.	Depressed	14	13	++++	++++	++	56	20	20	5.1	0.9	0.0130	++++	++	+	15	Died thirteen months after last treatment.
11.	Agitated	3	10	++++	++++	++	80	10	2	1.8	....	0.0156	++++	++++	++	12	Slight improvement.
12.	Depressed	3	10	++++	—	++	36	12	12	6.0	0.9	0.0013	++++	++++	+	8	No improvement.
13.	Expansive	2	14	++++	++	++	16	12	13	4.8	1.8	0.0026	++++	++++	++	10	Died three months after last treatment.
14.	Expansive	15	15	++++	++++	++	89	20	10	3.6	....	0.0208	++++	++++	++	10	No improvement.
15.	Agitated	7	?	++++	++++	++	49	10	6	3.9	....	0.0039	++++	++++	++	13	No improvement.
16.	Depressed	?	?	++++	++++	++	20	10	5	1.2	4.50	......	++++	++++	++	12	Died eight days after last treatment.
17.	Agitated	3	?	++++	++++	++	29	18	10	1.2	....	0.0299	++++	++++	++	10	Died eight days after last treatment.
18.	Agitated	?	?	++++	++++	+	5	14	8	0.9	....	0.0195	++++	++++	+	16	No improvement.
19.	Expansive	24	10	++++	++++	++	47	18	10	0.9	....	0.0286	++++	—	++	12	No improvement.
20.	Depressed	19	?	++++	++++	++	94	18	12	0.9	....	0.0312	++++	++++	++	20	No improvement.
21.	Depressed	24	?	++++	++++	+	31	20	10	0.9	....	0.0364	++++	++++	++	8	No improvement.
22.	Depressed	4	17	++++	++++	++	145	18	9	...	....	0.0384	++++	++++	++	20	No improvement.
23.	Depressed	2	20	++++	++++	++	501	14	7	1.2	....	0.0247	++++	++++	++	5	Died eight months after last treatment.

CASE XVIII.— J. E. was admitted August 21, 1914; age, forty-eight years; brought to the institution by the police, who knew nothing about his previous history. He was fairly well nourished; pupils reacted sluggishly; tremors of protruded tongue; speech slurring; slight swaying in Romberg position; Wassermann reaction with blood serum and cerebrospinal fluid positive; cell content of latter five per c. mm.; globulin content increased. Memory was poor; he was disoriented in all spheres; he was violent, destructive, excited, and elated; his attention could not be gained; incoherent; actions clownish; had no insight into his condition. This patient received fourteen treatments with salvarsan and albuminate of mercury. The cell content of the cerebrospinal fluid was increased to sixteen per c. mm. The Wassermann reaction with the blood serum remained positive throughout the course of treatment, but the cerebrospinal fluid was reduced to negative and weakly positive on three occasions, but it always returned to a strong positive again. The globulin content of the cerebrospinal fluid was slightly above normal. He did not exhibit the slightest improvement in his mental condition and he lost fifteen pounds in weight. One year and two months have elapsed since his last treatment was given.

CASE XIX.—L. M. was admitted May 28, 1915; occupation, waiter; chancre ten years ago; onset of psychosis two years previous to date of admission. He was fairly well nourished; pupils reacted to light and distance; tremors of tongue and extended fingers; Wassermann reaction with the blood serum and cerebrospinal fluid positive; cell content of the latter forty-seven per c. mm.; globulin content increased. Memory was good; he was well oriented; excitable and unstable; delusions of grandeur and marital infidelity; no insight into his condition. This patient received eighteen treatments with salvarsan and albuminate of mercury. The cell content of the cerebrospinal fluid was reduced to fifteen per c. mm. The Wassermann reaction with the blood serum was reduced to negative on one occasion and with the cerebrospinal fluid it was reduced to negative on five different occasions, but both of them returned to positive before the treatments were discontinued. The globulin content of the cerebrospinal fluid remained above normal. He showed no improvement in his mental or physical condition during the course of treatment. He was able to do some work in the industrial department, but for the last three months there has been a decided change in his mental and physical condition. His speech and gait were very ataxic; he had marked tremors of the facial muscles and extended fingers; memory was very poor for past events and he had not worked for some time. He was regressing rapidly. Twelve months elapsed since the last treatment was given.

Case XX.—F. L. was admitted March 30, 1914; age, forty-eight years; occupation, machinist; history of syphilis unknown; onset of psychosis nineteen days before admission. The patient was very well nourished; pupils unequal, but reacted to light and distance; tremors of tongue and extended fingers; marked Romberg; ataxic gait; patellar reflexes exaggerated; Wassermann reaction with the blood serum and cerebrospinal fluid positive; cell content of the latter ninety-four per c. mm.; globulin content increased. Memory was poor; depressed and indifferent; ideas of grandeur; delusions of sight and hearing of a sexual nature; no insight into his condition. This patient received eighteen treatments with salvarsan and albuminate of mercury. The cell content of the cerebrospinal fluid was reduced to twenty cells per c. mm. The Wassermann reaction with the blood serum and cerebrospinal fluid remained positive throughout the course of treatment and the globulin content of the latter remained above normal. He showed no improvement in his mental condition. Until three months ago his mental condition remained about the same as when treatments were begun, but since that time he deteriorated rapidly and was now markedly demented. He gained considerably in weight after treatments were instituted. Twelve months have elapsed since the last treatment was given.

Case XXI.—A. B. was admitted March 26, 1914; age, forty years; occupation, laborer; syphilis denied; onset of psychosis one month previous to date of admission. He was well nourished; pupils stationary; tremors of tongue and extended fingers; knee jerks sluggish; Wassermann reaction with the blood serum and cerebrospinal fluid positive; cell content of the latter, thirty-one per c. mm.; globulin content increased. Memory was impaired; disoriented for time; unstable, euphoric, excitable, and incoherent; sensorium blunted; has no insight into his condition. This patient received twenty treatments with salvarsan and albuminate of mercury. The cell content of the cerebrospinal fluid was reduced to nine per c. mm. The Wassermann reaction with the blood serum and cerebrospinal fluid remained positive throughout the course of treatment and the globulin content of the latter remained above normal. He showed no improvement in his condition, either mentally or physically. After receiving ten treatments he became violent and excited, making it necessary to place him on a back ward. At present he is markedly demented and is unable to care for himself. Twelve months have elapsed since the last treatment was given.

Case XXII.—G. S. was admitted August 2, 1915; occupation, salesman; chancre several years ago; onset of psychosis four months previous to date of admission. He was poorly nourished; pupils irregular and reacted sluggishly; tremors of tongue, facial muscles, and extended fingers; patellar reflexes absent; Wassermann reaction with the blood serum and cerebrospinal fluid positive; cell content of the latter 145 per c. mm.; globulin content increased. His memory was good; attention easily obtained, but difficult to hold; well marked euphoria at times; periods of depression; had some insight into his condition. This patient received eighteen complete treatments with albuminate of mercury. The cell content of the cerebrospinal fluid was reduced to twenty per c. mm. The Wassermann reaction with the blood serum and cerebrospinal fluid remained positive throughout the course of treatment and the globulin content of the latter remained above normal. The patient's mental and physical condition remained about the same until the treatments were discontinued. When these were discontinued the symptoms of paretic dementia became more pronounced. At the present time he is markedly demented and is confined to his bed, being unable to walk or to care for himself in any way. Twelve months have elapsed since the last treatment was given.

Case XXIII.—J. B. was admitted September 30, 1915; age, fifty-seven years; occupation, collector; chancre forty years ago; onset of psychosis seven weeks previous to admission. Fairly well nourished; pupils irregular and do not react to light or distance; speech ataxic; tremor of tongue, facial muscles, and extended fingers; marked Romberg; Wassermann reaction with the blood serum and cerebrospinal fluid positive; cell content of the latter 501 per c. mm.; globulin content increased. Memory fair; illusions that insects and lice were crawling over his head and into his mouth; also that there was oil running out of his scalp into his eyes and mouth; had little or no insight into his condition; well oriented in all spheres. This patient received fourteen treatments with salvarsan and albuminate of mercury. The cell content of the cerebrospinal fluid was reduced to five per c. mm. The Wassermann reaction with the blood serum and cerebrospinal fluid remained positive throughout the course of treatment and the globulin content of the latter remained above normal. This patient showed no signs of improvement at any time during the course of treatment. His illusions and delusions gradually increased; his speech and gait became more ataxic, until finally he was confined to his bed, where he remained until he died from cardiac exhaustion, eight months after the last treatment was given.

SUMMARY AND CONCLUSIONS.

Twenty-three patients were subjected to a series of intraspinous treatments with salvarsan, neosalvarsan, and albuminate of mercury. The smallest number of injections given to one patient was three and the largest number twenty. The Wassermann reaction was temporarily reduced to negative with the blood serum of one patient and with the cerebrospinal fluid of three. Three patients showed some mental and physical improvement; ten died, four during the course of treatment and six several months after the treatments were discontinued; ten are living and are markedly demented. We have found that the intraspinous method of treating paretic dementia has had little or no therapeutic value in our series of cases.

THE IMPERFECT SIGHT OF THE NORMAL EYE.

By William H. Bates, M. D.,
New York.

OCCURRENCE.

It is generally believed that the normal eye has perfect sight all the time. It has been compared to a perfect machine which is always in good working order. We have been taught that the normal eye is always normal and that the sight is always perfect, no matter what the object regarded may be, whether new, strange, or familiar, whether the light is good or imperfect, or whether the surroundings are pleasant or disagreeable. Even under conditions of nerve strain and bodily disease, the normal eye is expected to have perfect sight always.

A scientific study of the facts has convinced me that this impression so generally believed and taken for granted is far from the truth. After thirty years special study of the refraction of the eye under different conditions I am convinced that the normal eye has imperfect sight most of the time. It is unusual to find persons who can maintain perfect sight continuously longer than a few minutes under the most favorable conditions. Of 20,000 school children studied by me, more than one half had normal eyes with perfect sight. Not one of them had perfect sight in each eye every day. The sight of many of them might be good in the morning and imperfect in the afternoon, while many with imperfect sight in the morning would have frequently perfect sight in the afternoon. Many children with normal eyes would read one Snellen test card with perfect sight, a second and different one with imperfect sight. Many children could read some letters of the alphabet with perfect sight but were unable to distinguish other letters of the same size under similar conditions. The amount or the degree of the imperfect sight varied within wide limits from one third of the normal to one tenth or less. The duration of the imperfect sight of the normal eye was also variable. Under some conditions in the classroom the imperfect sight might continue for only a few minutes or less. Under other conditions, however, a small number of pupils, sometimes all the pupils with normal eyes would have sufficient loss of sight to prevent them from seeing writing on the blackboard for days, weeks, or longer.

Adults with normal eyes do not have perfect sight all the time and what has been said of the normal eyes of school children is also true of them. Age is no exception. Persons over seventy years of age with normal eyes have had attacks of loss of sight variable in degree and duration. The retinoscope always indicated an error of refraction when the sight of the normal eye was imperfect. A man eighty years old with normal eyes and perfect sight had periods of imperfect sight which would last from a few minutes to several hours or longer. Retinoscopy always indicated myopia, sometimes 4D or more. Many adults with normal eyes, as well as children have attacks of color blindness. One patient with normal eyes with perfect sight and perfect color perception in the daytime has always been color blind at night. He had no perception of colors after sunset. It is true that all persons with normal eyes are always less able to distinguish colors correctly during the time that their sight was imperfect. Accidents on railroads, collisions, and other accidents at sea, trolley car accidents, automobiles with their high daily death list, occur usually because the normal eyes of the responsible persons for a time had imperfect sight. Accidents occur when nervous children or adults cross the street. They become confused, blinded, and are struck by automobiles, trolley cars, are injured because, although they had normal eyes, their sight was lost.

CAUSE.

There is but one cause of functional imperfect sight, a strain or effort to see. The normal eye with good sight is at rest, but, with imperfect sight, the retinoscope always indicates an error of refraction sufficient to account for the defect in the vision. The strain may be an unconscious strain or it may produce results on the eyes, pain, discomfort, fatigue, of which the individual may be conscious. Quite often the strain may be a conscious effort without the production of discomfort. In all cases of strain it can be demonstrated that the eyes do not see best the point fixed but some other point to one side—the eyes do not see best where they are looking. If one letter or one word of a line is regarded, other letters or words on the same or other lines will be seen as well or better when the eyes are straining or making an effort to see.

The normal eye can be made to strain consciously by making an effort to see a letter or word better than the one regarded. The vision is always lowered for the letter or word regarded and an error of refraction is always produced. Unfamiliar objects cause eye strain and are never seen perfectly. School children with normal eyes who can read with normal sight small letters one quarter of an inch high at ten feet always have trouble in reading strange writing on the blackboard although the letters may be two inches high. Myopia, temporary or permanent, is always produced. Strange maps always produce imperfect sight in the normal eye because they cause a strain or effort to see.

When the eyes are used for near work the normal eye is seldom properly focussed. The retinoscope has always demonstrated that when an effort or strain is made to see more clearly at twelve inches, twenty inches, or less than twelve inches, the eyes are always focussed at a greater distance with the production of astigmatism, usually temporary, but which has been observed to become permanent. Of course with the eyes not properly focussed the vision is defective. School children and adults learning to read, write, draw, sew, or to do mechanical work suffer from defective vision although they have normal eyes. This matter is of such practical importance that the attention of teachers should be called to the facts. Many children lose interest in their school work, become truants, incorrigibles, and chronic sufferers from headaches and other neuroses who might have been relieved by proper treatment. I have described the relief obtained by school children when the teachers understood the problem (1).

Light has a very important effect on the vision of the normal eye. An unexpected strong light always produced defective vision. The vision of all persons is imperfect when the eyes are first exposed to the strong light of the sun or to strong artificial light. Rapid or sudden changes in the intensity of the light always produce defective vision, not always sufficiently great to be manifest to the individual but which can always be demonstrated by careful tests of the vision and by use of the retinoscope. The defective vision produced by strong light may be temporary but it has been observed to continue in many cases for a number of weeks or months. It is never a permanent disability. Persistence in regarding a strong light after a time becomes a benefit. Some persons have become able to look directly at the strong light of the sun without any loss of vision whatever. When the light is dim or at night, the vision of the normal eye is usually good; but, when an effort is made to see, the vision becomes imperfect and the retinoscope indicates always an error of refraction.

Noise is a frequent cause of defective vision of the normal eye. All persons see imperfectly when they hear an unexpected loud sound. Familiar noises do not lower the vision usually, but unfamiliar, new, or strange noises always do with the production of a temporary error of refraction

Country children from quiet schools, after moving to a noisy city, may suffer from the effects of defective vision for long periods of time, weeks, months. In the classroom they do not do well in their work because their sight is impaired. It is a gross injustice for teachers and others to criticize, scold, punish, or humiliate them.

Moving pictures usually produce defective vision which is always temporary. Some of my patients have complained that they always suffered with pain and had poor sight whenever they regarded the screen with its flickering light. I believe that some years ago when photography was less perfect than it is now the pictures produced a great deal of eye strain, much greater then than at the present time. I always advised my patients under treatment for the cure of defective vision without glasses, to go to the movies frequently, practice central fixation (2), and become accustomed to the flickering light. They soon became able to stand the strain without loss or impairment of their vision. Other lights and reflections from smooth surfaces became less annoying and it seemed true that after the movies were unable to produce a relapse other lights were unable to lower the vision after they were relieved of errors of refraction, myopia, hypermetropia, and astigmatism by treatment.

TREATMENT.

Eye training with the aid of a Snellen test card at ten feet or farther is very successful in correcting and in preventing the imperfect sight of the normal eye. One may use a distant calendar, a sign with small letters, or one small letter for daily practice. The normal eye is readily trained to read the Snellen test card with normal vision or to see other letters or figures or one known small letter at a distance of ten feet or farther. The vision always improves and becomes better than that of the average normal eye. The practice of reading known or familiar letters once daily or more frequently with normal sight by the normal eye is a decided benefit and lessens the tendency to strain when regarding unfamiliar letters or objects.

RESULTS.

On my recommendation more than 20,000 school children have practised eye training daily with the aid of the Snellen test card. The results were of great practical importance. The vision of the normal eye was always improved when the teachers used the method properly. Because the sight was always improved, myopia was always prevented. This is the first published method for the prevention of myopia which was successful. Many children wearing glasses to benefit imperfect sight, pain and fatigue of the eyes, and headaches were relieved so completely that they became able to discard their glasses and obtained more perfect sight and a greater relief to their eye pain and headaches. The eye training demonstrated by the good results obtained that many thousands of children in the schools are wearing glasses that they do not need because their eyes are normal.

Artists, bookkeepers, lawyers, physicians, writers, mechanics, and others found their efficiency increased many times with the aid of eye training. Many recruits for the army and navy were found to have imperfect sight and were rejected, although their eyes were normal. Eye training improved their sight. Later they read the Snellen card with perfect sight and were accepted.

CONCLUSIONS.

1. All persons with normal eyes and perfect sight do not have normal eyes and perfect sight continuously.
2. The cause is always an effort or strain to see.
3. Treatment by eye training is successful when distant, small, familiar letters, are read a few moments at least every day.
4. The good results obtained justify the use of the method in all schools, the army, the navy, the merchant marine, on all railroads, in short by everybody who desires or needs continuous perfect sight.

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40 East Forty-first Street.

PSYCHOTHERAPY AND THE DRAMA.

The Therapeutic Message of Peter Ibbetson.

By Smith Ely Jelliffe, M. D.,
New York,
Adjunct Professor of Diseases of the Mind and Nervous System, Post-Graduate Medical School and Hospital.

Every one who enters upon life is an artist with his material to make or mar. Success lies in making it something of beauty and value. Failure is illness in which the artisan has lost his way. It is illness because it is the retreat of the creative energy into paths which are out of touch with this activity, and in a greater or less degree, as the energy has retreated, there is weakness, pain, or ineffectuality. Pain is sometimes spared, weakness and ineffectuality disguised by a secondary art, which serves reality only indirectly, if at all. If severance with reality is complete an utterly helpless psychosis is the result. The break with reality is, however, rarely so entire. Human nature is too plastic not to allow of some sort of compromise by which art patches up, conceals, and even magnificently justifies its failures.

The mechanisms are many by which individuals in all degrees of success and failure hide from themselves and largely from the world the measure and the nature of the latter. This serves the useful purpose of preserving one's own sense of existence and selfimportance, the foundation on which alone all effort and effectualness is possible, relieving one of that overwhelming sense of one's own shortcomings and disabilities which would seriously hinder true progress by keeping one bowed under an impossible burden. Man is yet too ignorant of all the impulses and emotional content which make up his history to be granted a clear scientific control over these difficulties. Therefore a certain amount of animistic projection is still permissible to maintain this sense of security. Civilized man does not drop his weariness, as does the savage, along with a stick or a stone as he ascends a hill, but he still kicks the table which he has banged and thus saves his decorum and dignity in the face of the defenseless furniture. He has, however, far higher and greater refinements whereby he casts from himself the inner burdens and conflicts and the tragic failures which have resulted from these. They constitute sometimes mental disturbances which cause society endless pain and trouble; at other times they pass over into exquisite dreams both of pleasure and of pain.

Just here is opportunity for a special race of artists. Ordinary man attempts unwittingly these matters of artistic substitution and projection. His success is ugly or beautiful in varying degrees. Here, however, is the place of the true creative artist who can take this material from the mill of human experience, which is both individual and common experience, and so deal with it and reconstruct it that it becomes of saving health to the multitude. His art takes these elements which lie deepest in the human psyche and offers some solution of universal problems which will help also the individual soul in its unconscious struggle with them. It may through symbolism offer a direct substitute for impulses which have no other mode of satisfaction. It may solve problems by some happy optimistic ideal and thus transport unsatisfied humanity to a world of wish gratification. Again, it may express in tragic form the struggle as it rationalizes and disguises itself under the inevitableness of fate or a wiser Providence. Art accomplishes all this through its beauty and its intuitive insight into the buried life of the unconscious. Its beauty and success, moreover, are actual only because it is based upon the truth which is universal, truth of the inner conflict and of the essentially human means of solution. This truth may even lie in the artistic portrayal of a solution which fails to meet reality or it may point the ideal effectual solution. In either case it is because art is able to bridge the chasm between successful or unsuccessful solution that it grants the unconscious libido an avenue of safety and release.

Its beauty and intuition carry its message into the heart of the human conflict and afford that contact with dreams without which the psyche cannot entirely dispense, but it does not remain there. It subtly touches only the unconscious by the reality of the problem presented, but it also with equal subtlety and skill leads the way back to the reality of conscious thinking and the evaluation of the problems in the light of this. Thus it both reveals the way out from a false and dangerous phantasy absorption in the inner struggle and illumines the falsely projected defense. It so utilizes the latter, moreover, that it safely bridges the gap between dreaming false and dreaming true.

The drama is the work of art which has most adapted itself to this sort of therapy. The intricacy with which its thought may be developed as well as the complexity of its staging make it peculiarly fitted to represent the complexity of the unconscious process with its more obvious external results. The novel, as well as the older saga or epic, bears evidence of the same adaptability to the theme, since it serves as the basis of the dramatic production. Therefore the story of Peter Ibbetson, whether as Du Maurier first presented it in his romance, or as Raphael has placed the drama before the public, has committed itself, more or less unwittingly on the part of the author and the dramatist, but none the less truly, to the study of the development of a definite form of defense reaction out of a tragic inner struggle.

It is its truly artistic character that has made possible this reaching down into the crushing prospect of a lifelong imprisonment to draw from it the marvelous phantasy formation which changed Peter's despair and loneliness into a veritable heaven of love and bliss, childhood joy, and lovers' constant meeting. The drama takes its audience into the inner phantasy of a prison psychosis and illuminates the content of such a pathological formation. The prison psychosis is frequent enough and much labor and time have been expended upon its possible cause and meaning. These remained, however, obscure and inexplicable until this principle of defense reaction against an inner conflict shed its interpretative light. This explains also the reason for its frequency and its common occurrence in the early period of imprisonment. This has already been noted as a universal mechanism, guarding humanity from that selfdepreciation and discouragement which would surely condition further failure. It assumes, however, all too often pathological proportions as it separates the individual more and more from the reality which he would gladly deny in the face of his inadequacy. In the prison, further separated from the corrective influences of active life and social comparisons, the pathology becomes uppermost. And still there is the refuge and the beauty of it which not only bring back the lost peace and happiness, but make of the otherwise depressed prisoner the cheerful worker, whose keepers marvel at the willing accomplishment of his tasks. Such a faithful inmate Du Maurier has pictured Peter. The drama has apparently utilized as its chief theme such happy aspects of the dreaming. Yet we believe that unconsciously the novelist and dramatist have touched also the deeper theme which is a universal one, and by thus bridging the way from the tragic inner conflict to this its compromise solution, have shown us how much or how little we may trust such a solution, how far it holds one to one's place in the real world, and how far it forms the dangerous cutting loose. It touches the inner conflict with just enough intuitive understanding to quicken each auditor's unconscious appreciation of it; it grants him then both warning and relief through this artistic channel. We can never get away from the fact that human life with its trial and error consists of so much compromise adjustment that we can ask for nothing more than a constantly but only gradually increasing light upon the usefulness or danger of the mechanisms we employ. No one can set himself apart in a class of complete success, for all share the disabilities, all make use of the same means either to evade or overcome them. We all seek by dream to compensate for reality. Therefore these artistic creations find their greatest value in teaching us how to dream true rather than to dream false. They help us to that clearer knowledge of what it is we really are about in these defense reactions and so deliver us from the bondage to them which makes of them an end in themselves and thus a more complete disguise of reality. It leads on, therefore, to that clearer knowledge of our inner selves and the outer projections of that self, which means more perfect health in actual working adjustment to the things of the real external world.

There is a message, then, in this drama which grants deeper, truer insight to all. It carries a particular message of illumination to the physician who first and most of all must deal with these profound and complicated problems of health and disease. It spreads out in attractive form the very content of the so called prison psychosis and may therefore carry him a long way into the obscurity of that form of illness and its reason for appearance. Moreover, it shows the universal problem at the heart of it and the universal mechanism of escape. It grants through this therefore that appreciation and understanding on the part of the physician which will enable him to recognize a prison psychosis in the struggle of each patient, which makes him a prisoner in just the proportion that he is not freed for a life of active constructivity upon reality. A study of Peter Ibbetson should therefore better equip the physician to prevent and to cure such an unreality in its more limited form with the ordinary patient, or change the medical and social attitude toward the problems of the actual prisoner who is the subject of the extreme pathological phantasy production.

What, therefore, is the kernel of Peter's problem, the conflict and the phantastic construction which finally solved this? For the prison psychosis can probably no more be separated from the whole of the patient's life than Peter's later dreams with their pleasure giving outcome from the earlier dreams and doubts which intermingled themselves to his undoing. The conflict seems indeed to have been that fundamental one which lies beneath each life fabric. Long, long ago when the world was still very young men apparently groped in the dark with the same problem. He had not made this problem. It had come to him from the long slow ages of building before man arose, when life was learning to emerge, here, there, everywhere, now at this flashing moment, now that, to start upon an individual career. Plant and animal life experienced a sudden thrill of something new. An individual was making a fresh start out from the parental stream of immortality which had felt the impetus to grant a new birth.

The parent hold of this greater immortal stream, strengthening and intensifying itself as time went on, continued to exert a powerful influence upon the life it had brought forth. Its fullness, the security and peace of its greater stream glowed with an attraction from which the individual, with its own forward purpose to pursue, only reluctantly and partially broke away. And still his incompleteness of separation afforded the individual life a rich share of the greater, fuller life behind, of which it was a part, even while it pursued its solitary way of achievement of something higher. The dawning of intellect and consciousness marked the rise of a new being into this mystery of ancient dream on the one hand and individual struggle to rise out of it on the other. His ability to think and reason gave man a responsibility toward the problem, the keenness of which had no place when only feeling and impulse were involved. Man first began to face the problem with the power of interpretation and control.

The racial child of long ago is, however, still the individual child of today. His perplexity, deeply grounded in the feeling and impulse which reach far behind his span of history, is still consciously, intellectually unsolved. Each individual man and woman and the whole race together are still in a life and death grapple with the things that embrace desire and the outer world of opportunity which summons the creative impulse. The parent complex those psychiatrists call it who have sought to understand and guide the progressive urge in its conflict with the regressive instinct within. Early man in his simple totemic clan set himself rigid laws for its control. Society of today contemplates with the greatest horror any flagrant breach of the biological barrier between parent and child, the marked overstepping of the separation which has grown up to save the child from complete return to the parent love. Yet rigid taboo and cultural repression have not wiped away the old problem nor solved the conflict. They have served rather to push it deeper and ever deeper into the soul of man. There it broods as an unconscious disturbance constantly active and therefore demanding of the cultural forces of consciousness ceaseless vigilance and control. Sometimes the solution is attained by that successful adaptation of hidden energy to these same cultural purposes which is designated useful sublimation. Then a healthy balance is maintained and life is free. Often, more often than we know, the darkness and obscurity of the problem form a menacing influence which overthrows the peace and effectualness of the life and the cause is not understood. Crime itself results, as with the hero of our play, and further drifting into the power of the unconscious follows upon this in the added struggle to get away from the consequences of the misdeed.

Whole nations have cried out under the burden of this life old conflict, and such tragedies as that of Œdipus the King have become the national tragic theme. Hamlet vacillated under it until he destroyed himself and all his house. Brutus slew Cæsar, his probable father. It established the "Ordeal" through which Richard Feveral wrecked his life and Lucy's happiness. It inspired Du Maurier in turn to set Peter Ibbetson to write his autobiography in the light of his own projected defense, and led finally to the dramatization of this story of illsuccess, tragic failure, and refuge in dreams. The crowding of the theatre night after night with an audience tense in its interest has testified to the appeal of this play, which strikes deep in the heart of man. Probably few are aware of the real note of unison with which this hero's story awakens response in each spectator. No one in fact can see deeply enough and clearly enough into this ancient darkness to understand what it is that has stirred him so. That hesitating restraint which marks comment and discussion of the play bears witness that the most profound problem has been touched. The complexity of the machinery of presentation with the skill and strength and sympathy that one feels in the acting, give suitable setting and expression to the ultimate reality of the drama and enhance its profound mystery and truth.

Ophelia's cry over Hamlet might find echo in the ruin of a character so innately noble as that of Peter. Gogo, the boy, grown to manhood in Peter Ibbetson, gives promise of all that is ideal, lovable, and admirable. One thing, however, and that the one thing needful, is lacking to save this man from himself and for the world. The great purpose of life which surmounts all difficulties, because its glance is free beyond them all, was conspicuously absent. Social diffidence, business mediocrity, full employment of none of his faculties were all the manifestations of a spirit in bondage. Ability even to tower over the uncle's foppery and cowardly licentiousness reserved itself for that last supreme act of passion, which cut him off finally from the world of real men and women. How little even this was an act of freedom from inner doubt and conflict is evidenced by the cry in the face of the uncle's craven lie, "Oh, God! what shall I believe! My mother!"

Where is the promise of the lad Gogo at play with Mimsey and their friends, bending over Gray's Elegy or spouting for Mimsey their favorite poem:

All day thy wings have fanned,
At that far height, the cold, thin atmosphere,
Yet stoop not, weary, to the welcome land,
Though the dark night be near.

Why did he, young man that he was, rich with the heritage of his birth and confronted with a future of opportunity, so soon stop, weary, seeking in vain for the "summer home" of rest? The message which as a happy child he had taken from the poem had failed to lead him "through . . . rosy depths" to pursue the solitary way of progressive achievement where the creative soul must often soar alone. He had not read aright. His solitary way led rather back into the dreams of the past where "glow the heavens with the last steps of day." Frail little Mimsey's life force had found the way for her. She the successful, strong woman, unlimited in her service to her fellowmen, must needs be the support and guide of her one time protector and willing slave. Thus say the dreams, recognizing in her the success and the strength which the dreamer himself had missed. She had grown free of the garden loveliness and peace. Only at the end of a busy day in the brief time she could steal from waking life's active duties could she return to the heart's desire. In this she knew the secret of "dreaming true." Poor Peter emerged from the garden home in a bondage more fettering than poverty, absence of friends, or the unsympathetic scorn of a heartless uncle could ever impose upon him.

The invisible web which has entangled so many a life in the unsuspecting years of childhood had bound him fast. The very shelter and sweetness of the idyllic home, the tender love of father and mother and admiring friends imprinted upon these tender impressionable years the weakness from which he was never afterward to escape. It strengthened that fixation in the old problematic strife between the love which finds all its satisfaction in dependence upon the past, and that freedom which finds its salvation out in the world. The very precipitation of that unconscious struggle into such a fixed snare to the libido reveals its cause in the dream, which in the drama just precedes Peter's projection of the whole struggle out into the murder of the uncle. Long before this Peter had confided to Mrs. Deane that the first drop of hatred had been distilled into him from the way in which the uncle had spoken of the Major, when he came to fetch the boy Gogo away. "I hate him; I think he hates me," Peter had sought to justify himself at that interview with Mrs. Deane. The dream at Passy on the hot Sunday afternoon tells a different tale. It reveals a rising something in the child's mind much earlier than that which crystallized then into the bitter poison of suspicion. The boy Gogo sits at his translation under the trees. He appears utterly absorbed in childish struggle with the difficulties of his task. He must finish putting into French, "And leaves the world to darkness and to me." Just here the uncle enters and holds interview with the mother. Gogo, flushed and engrossed with the arduousness of the translation, apparently does not hear. Suddenly he looks up more than startled. He seems to have an unconscious intuition or perception of the turn the conversation is taking. It has not yet needed the uncle's sneering reference to the possible jealousy on the part of the husband or his mother's sudden cry to Gogo to go find his father, to attract the boy's frightened attention. He is up and alert before the fatal word "jealousy" was uttered. That only fixes the doubt which has arisen from a flash of selfrevelation that has entered his soul.

Indeed, those familiar with the vagaries of the unconscious phantasies, as they group themselves about the central complex with an absolute disregard for the sequence of conscious logic or time, will be ready to accede to this phantasy picture its possible place merely in the later psychosis erected by Peter both before and after the deed and transferred in his defense to this earlier period to account for the closely following murder. The picturing of the play makes this dream vision a curious turning point upon which Peter decides to return to the uncle, lay aside his long animosity, and enter upon relations of friendship and peace. Is this a palliative resolve against the suspicion at work in the dream?

The resolve is rudely shattered, however, by the uncle himself. The letter handed Peter by the two women and his uncle's subsequent conduct precipitate instead the violent murder, nevertheless not without the cry of doubt and despair before the blow finally is given. Once the deed is committed, Peter seems to have attained a new sense of freedom. There are throughout the psychotic dreams which present themselves through the long term of years no longer such scenes as those in which the boy Gogo participated in the previous dream. All is sweet and fair and desirable. There is even the separation of the child from the mother through the woman in the dreams, who now becomes leader and guide and sympathetic friend. After the first call of loneliness and need toward the mother who does not hear, Peter wanders satisfied with the woman Mary, the normal, adult object of love, who at last, though only in the dream, has rightfully taken the mother's place. Even at death the greeting with the mother turns quickly to a revival of the dream existence with Mary.

It is as if Peter attained freedom at last when the murder had been committed, the freedom he had never in his unimprisoned days been able to find. But, alas, it is now only in the dream, the psychosis, when he can no longer make it of service to the world in which he should have lived. He has bought his inner freedom at the price of his place out there; nevertheless he has killed the dark thing within himself. The yielding of even the child to the inner unconscious attraction of dependence upon the mother, and gratification within that love, had led him all these years in the opposite direction from life. It had held him hesitating, timid, afraid, pursuing his solitary way in dreams of his own making. It led him finally into the agony of doubt and horror and pain to the point where he actually faced the darker side of this mother worship, the side which is death to the creative life and against which all nature and nature's laws have set their flaming sword.

The unbearableness of this darker side to conscious recognition must fling it outside himself. As with Hamlet, there is an uncle at hand. Let the guilt and shame be upon him through his shameless torture of the young man as through his cowardly accusations of the women involved. Hamlet, too distraught with his own doubts and fears, could not bring himself to the deed of retribution. Peter, slaying his uncle in a storm of contempt and anger, frees himself from the horror within himself. Now he can laugh in the face of death. There is no repentance for the thing he has done. Freedom to go and come is lost, but peace within himself is attained. Henceforth he will live only in his dreams, but he has learned now to "dream true." He calls it dreaming true, because the conflict is now wiped out of his life. It grants him forty years of peace and happiness in which he faithfully fulfills the limited prison tasks. That is all. He has paid a price for this, the price of complete withdrawal from the greater sphere of activity, where creative achievement had awaited him. It is in reality the price of his childish fixation for which he had given in part his earlier ineffectual years but which has now demanded full payment. Was this price first set upon him by the too loving parents who made of the garden home so dreamlike an existence that the child could never break away? Had a too sheltering tenderness established the fixation upon the mother so strong that it formed an indissoluble bond which had fettered his whole life? It is dissolved by this act, which was the culmination of the "bitter drop" instilled within the mother love. It barred him forever from that happiness which lies in the world, where one attains it by freedom both to love and to work. It substitutes for this only the goal of dreams and finally "the abyss of heaven," the "zone to zone" of the "boundless sky," to which the dreams finally converge.

Herein lies the lesson of understanding for all who witness this play. Here also is the value for a therapeutic understanding of the reason for the form and content of the psychosis of selfdefense and substitution. This offers not only a way of approach into the clinical appreciation and treatment of such individuals who have thus separated themselves from actual affairs. It brings also a new measure of prophylaxis which must have the widest social bearings upon the underlying meaning and hidden purpose of crime. It must work, moreover, through each individual life as society comes more clearly to appreciate the source and reason for such a result of the inner conflict, which finds expression in criminal conduct. These are known through the mechanisms also which grow up later, as in the psychosis, as means of defense against the unbearable recognition of the inner unconscious content and the conflict which this conditions. The prophylaxis, however, reaches still further, touching the lives of the children and those who have the task of thrusting them out to face the sterner things, hard enough for the adult himself, still harder for him to choose for the child.

It belongs also in this sense peculiarly to the physician, whose task is the guiding of the patient back out of such an earlier fixation into the wholesome adjustment of life. He may thus aid in preventing such fixation, and may also cure one already established.

Dream is not denied us by the reality in which we live. The latter realizes its own true worth, builds and strives toward its ideal because the never failing glow of the dream life cannot be obliterated. Dream life nevertheless spends itself to its own enjoyment and reaches bewilderment when it turns its attention only upon itself. It gropes confused in insatiable desire, unsatisfied yet cloying with the satiety of its endless phantasies. It is alone through healthful action that one learns to "dream true." The constant alternation between wholesome, useful activity which delights in the difficulties as well as the rewards of the outside world, and the deep, silent life of pleasure within, gives life its precious worth. This makes it deep and true in the heart of things, but keeps it at the same time always rebounding toward the height of achievement, even shifting this height with the growing outlook which action must continually prepare for itself. Such dreaming true fans indeed "that far height, the cold, thin atmosphere," but finds no less "the summer home where reeds shall bend, soon o'er thy sheltered nest." That solitary way loses itself neither in heaven nor on earth, but knows them both in the true dreams that live.

It is such dreaming which lies in the very art of the playhouse. To such a spirit of dreams it leads its audience, so that they find veiled beneath its artistic forms the reality of human struggle, its source, and the success or failure of its solution. Thus more of a true knowledge of human nature, better understanding and full grasp of its ceaseless conflict, which ends in success or failure, health or disease, comes to the earnest physician, who finds in the evening recreation more than rest and amusement or even deeper emotional response. There is a clear intellectual gain in the presentation of these human reactions and efforts at adjustment and a fresh insight into certain definite clinical problems.

For these are interpreted in the language of the energy which strives beneath the tragedies of life and the emotion which gives life its individual value and setting. Actual psychoses are set in a new and truer light through this rich and varied coloring. They take their place in the one great drama of human effort and compromise success. All problems of health and disease find also a new significance in such a conception. For practical clinical affairs find their place also among human dreams. The art of the drama has found and shown the way between the false dreams and the true.

64 West Fifty-sixth Street.

DRUGLESS HEALING CULTS.

Their Bane and Antidote.

By J. Madison Taylor, M. D.,
Philadelphia, Pa.,
Professor of Applied Therapeutics, Medical Department, Temple University.

Inroads upon the peace and prerogatives of clinicians, caused by the boastings and undeniable successes of some drugless healers and other irregulars, can be ended by adopting one or both of two courses of action. 1. Let clinicians investigate and learn for themselves whatever may be found really valuable, acceptable, and applicable in the principles and methods so successfully employed by those extramural healers, and then appropriate it for their own use. 2. Let them take action whereby all State medical teaching organizations shall compel through legislation standardizations of all instruction in manutherapy, balneotherapy, electrotherapy, *et id omne genus*. Of course many of these healers would resent this latter measure, but it is only fair to all, and especially to the regular profession of medicine, that it shall be done.

Let me ask how can we clinicians do our full and honest duty to our clients if we collect into little selfapplauding and mutually commendatory groups and affirm in chorus: "The other fellows only try to fool the public all the time," and assert that we, you and I, are the only real healers to whom alone truth is vouchsafed by special advices from the primary source of all wisdom and good? All forms of belief when organized and out for conquest thrive in proportion as they invite and can sustain persecution. Assertions, in order that they shall attain their full significance to author as well as to audience, need denial or detraction in order to arouse latent capabilities for survival and dissemination. So obvious is this statement, so regularly do illustrative incidents recur, you would scarcely suspect a body so intelligent as the proponents of medical science would "fall for" the controversial bait drugless healers dangle before their eyes. It is a childish, though natural and pardonable, attitude to deny what you do not wish to become established as a fact; also to declare false that about which you know nothing and which fails to coincide with your experience or taste. Especially is it vexing to the consciousness, inviting denial, when these invasions of privilege fall upon one's own craftmanship or one's preempted domain. The temptation is thereupon to characterize all such unwelcome statements as nonsense or worse.

When these outlandish claimants succeed in obtaining such excellent results in certain directions as you and I certainly do not get, an element of suspicion intrudes which may increase to fear. The temptation then is to dispose of these results by ascribing the whole to imagination or nowadays to "suggestion" only. It is therefore plain that the one practical method of disposing of so many bewildering, anxiety producing stings to our vanity is to determine honestly their scope and nature; to go and find out just how much fire there is to so much smoke; to learn what there is to learn or to ascertain by personal investigation whether the whole thing is smoke and smoke only. If there should be found some promising facts, reputable principles, or useful and economic methods of getting remedial effects you know very well you or I cannot or do not get, why not learn and appropriate these for yourself and the good of your patients? Why stand afar off and deny, equivocate, or disparage like some feeble, pestiferous, old weakling?

In an editorial in a leading medical journal some weeks ago these misleading statements in effect appeared: "When will the profession of medicine learn that the basis of all these claims [of osteopaths, chiropractors, mechanoneural therapists, *et id omne genus*] rest on states of mind only, or on suggestion?" Let it be clearly understood that only a doleful ignoramus would make so sweeping a statement. Now, the repair of damaged human goods, organisms, complexes, or blends of body and mind depends in chief, if not entire, measure on eliciting the force and puissance of the inherent natural body defenses, to learn how these may be conceived of as divisible, for purposes of comparison, into two means of approach: 1, from within by means of drugs, medicaments and bacteriological and other preparations and, 2, from without, enlisting the forces of biophysics, or physicodynamics, through the reflexes, the central nerve ganglia, or other avenues of percepts, and to produce reactions in strict accord with physiology normal and morbid.

Why are drugless healers so cordially welcomed nowadays? There are several excellent reasons for this, explainable upon the basis of cherished beliefs, the ebb and flow of feeling tone currents, the wishful thought and the like phases of ethnopsychological evolution. One reason is that there is thus shown a phase of reaction from the era of fatuous drug swallowing customs of the middle of the nineteenth century. This culminated in a period of widespread wonder working specific, nostrum or patent medicine popularity. The delusion of specific medication having subsided, the pendulum of public approbation swung equally far in the opposite direction, reaching an extreme point in Eddyism, the denial not only of disease and suffering, but even of death. Another reason is the inevitably recurring revolt of small natures against constituted authority in any form or manifestation This is seen among the more petty actions of the profession, large numbers of whom sniff, spit at, and execrate any remedial measure which smells of "irregularity"; but who delight in endorsing the most absurdly devised or fancifully approved drugs and some methods which happen to secure the endorsement of learned German and other European authorities or organizations. This same tendency is observable in its opposite phase, the approbation and delight shown by the public at any assaults on the acts or integrity of the medical profession.

No school of healing, it is well to bear in mind, can attain any definite standing unless there is some basic, dynamic, efficacious element of truth underlying it. The mere fact that many members of schools and cults of medicine find such ready welcome and thrive so on American soil is testimony to the effect that uncertainties, vagaries, and destructive controversies exist among the dominant schools. If our cherished principles of medicine were adequately established, systematized, simplified, our principles demonstrated, these extramural cults would find increasing difficulty in surviving.

1504 Pine Street.

PROSTATIC HYPERTROPHY WITH TABES.

Its Diagnosis and Management from the Standpoint of Urinary Obstruction.

By Ernest M. Watson, A. M., M. D.,
Buffalo, N. Y.

Prostatic hypertrophy in an individual presenting the usual symptoms of frequency and difficulty of urination is at the present time pretty generally recognized. Not infrequently the condition is complicated by tabes dorsalis which may or may not be recognized, and the presence of this complicating factor alters in a considerable degree the method of treatment to be followed. The early tabes with its frequent absence of any definite clinical signs, particularly when the pupillary, superficial, and deep reflexes are not materially impaired is frequently overlooked. The presence of residual urine, frequency, difficulty in starting the stream, dysuria with some dribbling after voiding, and even more or less incontinence is a picture commonly presented by either disease and also by the two together. In these cases the history of an early luetic infection may or may not be elicited and in either instance the Wassermann reaction in the blood is usually negative or doubtful. In all cases where there is the least suspicion as to the correct diagnosis a careful neurological and serological examination should be made.

The problem of diagnosis is not always an easy one, but there are often and, I might say, usually certain suggestive findings that guide one in the course of study to the more definite signs and laboratory data necessary for the correct understanding of the case. The presenting symptoms in these cases are practically always of a urinary nature. They usually have their onset some years, one or two to five or ten, before the individual consults a urologist. The first thing noticed by the patient is perhaps a diminution in the size and force of the urinary stream and later difficulty in starting the stream, when several attempts are necessary before he completes the act of urination and feels that his bladder is empty. Later an increased frequency of urination occurs both day and night. This may be due to an irritability about the neck of the bladder for there is usually a cystitis, but is more often caused by the residual urine present for these patients practically never empty the bladder. Incontinence may never be present, but when it is it is first nocturnal in type, though there is usually some dribbling after urination which may have been present for years. A complete retention or a hematuria practically never occurs. Strangury and painful urination are very seldom noted. The diminution and later a complete loss of sexual powers, usually for years, are complained of in practically every case.

The cardinal points in the recognition of this clinical entity are to be found in the rectal, cystoscopic, and neurological examinations. When the prostate is not much enlarged per rectum, and particularly when there are very few adhesions about it and the seminal vesicles and only a moderate amount of induration, this finding, supplemented by a definite laxness and great mobility of the structures about the neck of the bladder and a relaxed condition of the rectal sphincter, is very suggestive of a spinal lesion, especially when the examination is practically painless. A cystoscopic examination should then be made. In this there are certain helpful points. The character of the trabeculations, despite the reports of many authors, is of practically no diagnostic aid. The general tone of the bladder as evidenced by its power to expel fluid through a catheter is important, for in spinal involvement this is very much reduced. The loss of tone in the musculature about the ureteral orifices as shown by their inability to contract on functioning is significant but of still greater importance is the condition of the internal vesical sphincter. If this is dilated, as shown by the ability of the examiner to withdraw the cystoscope into the posterior urethra and view the verumontanum, a spinal cord lesion is highly probable. In addition to the foregoing findings, which point to a cord involvement, the amount of intravesical prostatic hypertrophy can of course be noted. With a cord lesion the intravesical hypertrophy is never great. It may involve the two lateral lobes and also the middle lobe, but more frequently the middle lobe or occasionally the subcervical or Albarran group of glands is the offending portion.

If the foregoing suggestive points have been observed a careful neurological examination should be made recording the alertness of the pupillary reflexes, for in these cases the typical Argyll-Robertson pupil is not always present, with also a careful study of the biceps, triceps, and periosteal radial reflexes of the upper extremity and the abdominal reflexes. These are often increased in their power of response. The cremasteric reflexes, the knee jerks, and the reflexes on plantar stimulation may be very much reduced or absent. The presence or absence of a Romberg sign should also be noted. If after the above observations one is in doubt the more accurate methods of the laboratory should be utilized. This means a Wassermann reaction in the blood serum. If this finding is reported negative or doubtful and particularly if it is positive, a lumbar puncture should be made. Very frequently with the blood Wassermann negative due to long and effective systemic treatment in early years the spinal fluid Wassermann will still remain positive. There is additional corroborative evidence in finding an increased spinal pressure, increased cell count, and globulin content and very important also is the presence of a luetic or a paretic curve in the colloidal gold test. Not until all of these studies have been made is one justified in excluding tabes in these clinically suggestive cases.

With the diagnosis established the question arises: What is the proper form of treatment for these patients? The important point to determine is in what degree is the prostatic hypertrophy responsible for the bladder symptoms. This requires the judgment of experience with both the prostatic and the spinal bladders. With a definite middle or lateral lobe hypertrophy prostatectomy may be considered if the circulatory and kidney condition warrants it. In this step the choice between a suprapubic and a perineal operation will have to be made. If there is incontinence with considerable residual urine for which the prostatic hypertrophy seems responsible, the perineal method is the route of choice. This method means an operation of less shock, better drainage, and a shorter period in bed, and there is nothing to be lost in the matter of urinary control, for the patient has incontinence and the operation is undertaken to relieve residual urine with its attendant effects of back pressure on the kidneys and the consequent systemic symptoms. Young (1) reports two cases of this type with complete incontinence, treated by perineal prostatectomy. Both of the patients were improved by the operation and one completely cured of both residual urine and incontinence. If there is no incontinence or very little the suprapubic should be the route of choice for with this the chances of urinary control are better. In a suprapubic enucleation the internal sphincter is usually destroyed or rendered useless as shown by the work of Leedham-Greene (2), Wallace and Page (3), Hyman (4), and others, and urinary control is maintained by the intrinsic muscles (involuntary) of the posterior urethra and the external sphincter. In the suprapubic operation properly performed there should be very little damage to the intrinsic muscles of the posterior urethra, and with these muscles normally innervated incontinence should never occur. In cases where the innervation of the internal sphincter has been impaired by the process in the cord, but the muscles of the posterior urethra are normally innervated as shown by cystoscopic examination and thorium cystograms of the bladder, every effort should be made to preserve them. The perineal operation with its attendant urethrotomy in the membranous urethra, cutting across many of the circular involuntary muscle fibres of the posterior urethra should be avoided in this particular type of case.

Another group of cases, in which the hypertrophy is in the form of a median bar without a definite lobe formation and with no appreciable hypertrophy of the lateral masses, make suitable ones to be treated by the "punch operation" as described and used by Young. This operation, done under novocaine entirely through the urethra, necessitating only two or three days in bed and in competent hands having no mortality, is ideal when these small rounded elevations seem to play a definite rôle in the formation of the residual urine. In his first series of punch operations Young (5) reports the results of the procedure in three cases of tabes, two showing no improvement and one being completely cured of both residual and incontinence. The important element in the success of the above procedures is to choose the suitable method for the case at hand and this is accomplished only by an individual study of each patient.

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606-607 ELECTRIC BUILDING.

A PLEA FOR THE EARLY DIAGNOSIS OF PULMONARY TUBERCULOSIS.

With Special Reference to Sanatorium Treatment.

BY S. A. SILK, PH. G., M. D.,
Washington, D. C.,

Formerly Assistant Physician, Pennsylvania State Sanatorium, Mont Alto, Pa.; Medical Superintendent J. C. R. A., Sanatorium, Los Angeles, California.

The campaign against pulmonary tuberculosis during the last decade and a half has been conducted principally along two lines: 1. Prevention, by educating the public by means of lectures, public exhibits, visiting nurses, and the press as to the ways and means through which this disease is disseminated and the various precautions necessary to observe against contracting it. 2. Cure, by establishing free and private sanatoriums, especially municipal and state sanatoriums. That a great deal has been accomplished in the direction of prevention is being recognized by every practical worker in the field of tuberculosis.

When the results of sanatorium treatment, however, are considered they are found to be far less gratifying. When the active campaign for the establishment of free public, municipal, and state sanatoriums was begun, great results were expected from this line of treatment. Some enthusiasts went so far as to declare that by means of two or three free sanatoriums an entire state could be rid of tuberculosis within a period of a few years. But while excellent results were and are being obtained by this method of treatment, it has as yet failed to bring that measure of relief which was expected of it.

Tuberculosis still claims more deaths than any other disease, and if some small reduction of mortality has been achieved it must be ascribed rather to the method of prevention than to the sanatorium treatment directly. Before going into the causes as to the meagre results from this form of treatment, the question, whether sanatorium treatment is the right method of combating pulmonary tuberculosis, may arise. To this we do not hesitate to answer very decidedly in the affirmative.

Sanatorium treatment is based on a very sound principle and is specially adapted to the treatment of pulmonary tuberculosis. In tuberculosis the disease does not come on acutely, it does not in the early stages manifest itself by serious subjective or objective symptoms, nor does it run a short course like typhoid fever or pneumonia. It is essentially a chronic disease. It begins as a chronic inflammation caused by irritation by tubercle bacilli implanted in the tissues and toxins liberated by them. This chronic inflammation remains in a semiquiescent condition over prolonged periods of time, and only now and then do bacilli in some particular area become specially active, quickly multiply, and cause necrosis and caseation of tissues, producing general toxic symptoms.

The disease process is present just the same, however, as when the acute toxic symptoms are prominent. There is a constant fight going on between the natural resisting forces of the individual and the invading microorganisms and while the invading microorganisms may defeat the protective forces in a certain area, the neighboring area may successfully resist invasion, putting, so to speak, a barrier around the disease focus.

When large areas of lung tissue, however, are invaded, the resistant forces become weaker and break down, and the process of disease goes on often unchecked, until death results. But even when large areas are involved the body may in some cases make an extraordinary effort, calling out all its reserve forces and even here be able to defeat the enemy and rid the system of the disease. These are the so called far advanced cases resulting in cures. Usually, however, all the body can do in such cases is to resist or even check the activity of the invading organisms for a certain length of time, and finally because of exhaustion of the resisting forces or because of increased strength of the enemy, succumb in the end. These are the far advanced cases discharged from sanatoriums as apparently cured, but where death results after various periods of time, due to relapse, though we cannot really speak of relapse as the disease was at no time cured.

So we see that from the nature of the disease the treatment must resolve itself into placing the individual affected with pulmonary tuberculosis in the early stages of the disease under such conditions that not only will the present invasion be defeated, but sufficient resisting forces will remain in the system to guard the individual against any further infections by the same microorganism. Sanatorium treatment offers the ideal conditions for such a purpose. The individual whose natural resistance has broken down, because of poor hygienic surroundings, overwork, worry, irregular living, or poor food, thus allowing infection to take place, by being placed in a sanatorium is removed from the unhealthful atmosphere responsible for the disease and placed in surroundings most favorable to fight it. There he is under the constant observation of competent physicians, able to interpret every sign appearing during the course of the disease, regulating the life of the individual, and establishing a daily régime most suitable to bring up his resistance to the highest possible point.

The meagre results of sanatorium treatment are then not due to deficiency of the method proper, but to the most deplorable fact that the sanatoriums do not get the cases suitable for the method of treatment. Most of the cases referred to sanatoriums are at a stage where the disease process has made such inroads into the lungs of the individual that the most we can hope for is temporary improvement or prolongation of life for a few years, a very poor result, indeed, considering the outlay of the state or municipality in conducting the sanatorium and the inconvenience the patient is subjected to. Sanatorium treatment must produce cures, otherwise it fails to attain the results it sets out to accomplish.

What are the reasons for such deplorable conditions. Why are most of the sanatoriums filled with far advanced cases, few moderately advanced, and only very few incipient ones? Two reasons may be given to explain this condition: 1, the failure of the individual patient to consult a physician while the disease is still in the early stages; 2, the failure of the physician consulted to diagnose the disease in its early stages when the cure is possible. While the first reason is surely responsible for a certain number of cases remaining undiagnosed until too late, my experience has been, and those engaged in sanatorium work will probably agree with me, that the fault is largely with the general practitioner, or the so called family physician. He is the one who comes in contact with the case in its very early stages when the subjective symptoms are so slight that the patient easily accepts a negative diagnosis and so the most valuable time is lost. The object of this paper is to bring to the attention of the general practitioner the seriousness of this situation, and his part of the responsiblity. The negligence and lack of responsibility which the general practitioner shows regarding this disease often approaches the criminal.

No reputable physician would think of prescribing for or diagnosing the condition of a patient complaining of sore throat without asking the patient to open his mouth and carefully examining the throat. Yet quite a number of reputable physicians enjoying lucrative practices in their respective communities do not hesitate to prescribe for and diagnose the condition when a patient complains of a cough, tired feeling, loss of weight, etc., without examining his chest. If they do perform an examination the stethoscope is placed over the anterior portion of the chest, often over the shirt, especially when the patient is a female, probably more to impress the patient than to acquire actual knowledge.

James S. Ford (1) in a very careful investigation, made among 1,000 patients admitted to the Gaylord Farm Sanatorium, as to the methods used in diagnosing pulmonary tuberculosis, found that the 1,000 patients consulted 1,940 physicians and that only seven per cent. of this number made a chest examination, took the temperature, and examined the sputum. When we consider the fact that tuberculosis is most prevalent among the poor who do not consult the physician, too frequently the responsibility of the physician in such cases becomes still greater. The patient often goes to the physician because the educational campaign has scared him and impressed him with the seriousness of such symptoms as cough, fatigue, loss of weight, etc. To such a patient a negative finding is very welcome, though quite often, perhaps, he unconsciously realizes that something serious is the matter with him, but because of various circumstances he tries to suppress such thoughts. He has no time to be ill, he must toil daily to support a large family, and the diagnosis of bronchitis is so assuring—did not his uncle or grandfather live to be seventy though he had bronchitis or asthma all his life?—and so he cheerfully takes bottle after bottle of medicine prescribed by the doctor, or failing to get relief from some annoying symptoms he resorts to some patent medicine nostrum until the disease reaches a stage where he can not fool himself any longer. Upon advice of some friend or relative he consults a specialist or goes to some state tuberculosis dispensary where the real condition is diagnosed and of course sanatorium treatment is resorted to with the usual deplorable results. The most propitious time was wasted in taking cough mixtures and blood tonics. Other physicans again when some symptoms and signs suggesting pulmonary tuberculosis are quite evident, but either because the patient looks fairly well nourished or he does not cough his head off, are quite reluctant to make the proper diagnosis, to ease their own conscience request the patient to submit a sample of his sputum. This they send to some municipal or state laboratory and upon receiving a negative report pronounce the patient nontuberculous, while the patient doubly assured by such a "scientific method" of diagnosis, continues to be treated for rheumatism, stomach trouble, etc., until a pulmonary hemorrhage or other complication develops indicating the true condition. Here again sanatorium treatment is resorted to when it is too late.

Again quite often the family physician is called to the home of a patient during an acute exacerbation of a limited tuberculous process, when high fever with other accompanying constitutional symptoms are present. Either because of lack of skill but more frequently due to the failure of performing a careful chest examination, the patient is treated during a period of weeks or even months for typhoid fever or bronchial pneumonia. When, because of the rest in bed and the natural resistance of the patient, the fever subsides, the patient is pronounced cured and he returns to his former occupation and mode of life, which were perhaps directly responsible for the first breakdown, until another exacerbation with perhaps more disastrous results takes place when the proper diagnosis is made and he too is sent to a sanatorium with the same results.

The number of patients who upon admission to sanatoriums give histories of atypical attacks of "typhoid fever" of very short duration, "touches," as they call them, one, two, or more years previous, is quite amazing, and of course there seems little doubt that most of these "touches" were nothing less than acute exacerbations of a slowly progressive tuberculous focus, the symptoms of which disappeared under symptomatic treatment or in spite of the treatment. Such is the rocky road most of the tuberculous patients travel before they reach the sanatorium. Is it any wonder that sanatorium treatment accomplishes such poor results? In order to remedy such deplorable conditions we must start at the root of the trouble.

We must demand more attention to tuberculosis from our medical schools. Tuberculosis is responsible for more deaths than any other disease, and is the most common disease the general practitioner is called upon to treat, but too many of our schools absolutely neglect the teaching of this important disease. Many schools have no facilities at all for teaching tuberculosis, as the hospital, to which they have access, does not admit tuberculous patients. Their students obtain very little practical knowledge of tuberculosis and probably never see any cases in the incipient or moderately advanced stages. Every school should have some facilities to teach in a practical way the diagnosis of pulmonary tuberculosis in its early stages. Some of the schools, as the University of Pennsylvania, the Jefferson Medical College, and others, have already set a noteworthy example in that direction by establishing special departments for the teaching of tuberculosis, and it is hoped that other schools will soon follow them. State boards of licensure could help a great deal in wiping out tuberculosis by demanding of every candidate for licensure practical proof of his or her ability to perform an intelligent chest examination.

We must bring tuberculosis up to the dignity of a specialty and demand that the general practitioner refer suspicious cases to a specialist as he does with many other conditions. The serious consequences resulting from an improper diagnosis surely justify such a course. As to the actual methods in the early diagnosis of pulmonary tuberculosis, the following suggestions will be found helpful:

1. Do not neglect to take a complete history, not only regarding the patient's family, but his own personal history, which must cover his life from birth to the day of consultation. A history of hemorrhage, pleurisy, and fistula, atypical attacks of typhoid, malarial fever, bronchial pneumonia lasting for many months may be elicited. Hemorrhage from the lungs, no matter how slight, unless absolutely proved to be due to other causes, should be looked upon as a manifestation of tuberculosis. Pleurisy, with or without effusion, is in the majority of cases tuberculous, and while by itself it may not be so serious, offering a better prognosis than pulmonary tuberculosis, it is indicative of an active focus elsewhere, otherwise pleurisy, which is a metastasis from some other focus, could not occur. And a history of pleurisy is therefore as significant as a history of a previous attack of pulmonary tuberculosis.

2. Carefully inquire as to the following symptoms: cough, expectoration, loss of weight, spitting of

blood, blood streaked sputum, exertion and fatigue after light work, not experienced previously. Cough, no matter how slight, when persistent and failing to clear up in about two or three weeks, is very suggestive, and when accompanied by expectoration, the presumptive evidence becomes stronger. The patient will very seldom mention streaked sputum. Careful questioning will often reveal a history of it. It should be considered serious, as it is quite often a forerunner of a serious hemorrhage. Hemorrhage is often an early symptom, and, as mentioned above, should be considered due to a tuberculous process unless another cause is definitely established.

3. Take the temperature, pulse, and respiration of the patient and notice the ratio of one to another. A continued rise of temperature was formerly thought to be significant of tuberculosis, and great stress was laid upon this symptom. This, however, is not necessarily so. Any toxemia will produce a rise of temperature, and as infectious foci may be formed in any part of the body, we must be careful in interpreting a slight rise of temperature. Needless to say, the taking of the patient's temperature once or twice at an interval of a week or two is worthless for practical purposes. In the absence of fever a rapid pulse is of some significance. Normal temperature, pulse, and respiration do not exclude tuberculosis, though it probably signifies that the disease if present is not very active.

4. Strip the patient to the waist and perform a complete physical examination, using the following methods: *Inspection.* Look for any retraction, or depression, especially above or below clavicles; note any bulging at the bases; watch the patient's breathing; note if one side is lagging. Is the breathing deep, shallow, rhythmical, or interrupted? Always compare any finding with the opposite side. *Palpation.* Elicit tactile fremitus all over the chest—a definite increase of tactile fremitus over a localized area is suggestive of tuberculosis. A diminution or absence of tactile fremitus would suggest fluid or a thickened pleura. *Percussion.* This is a very important method. Percuss the chest in a systematic way, start on one side from above downward, or from below upward, as preferred by some, and then go over the other side; then compare suspicious areas of one side with corresponding areas on the other side and with normal areas on the same side; do this first anteriorly, then posteriorly, and in a similar way percuss each axilla. Definite impairment of resonance, no matter how slight, over any localized area, where a normal note should be present, when elicited after comparing with a symmetrical area on the other side of the chest, is quite suggestive of a tuberculous process. *Auscultation* is the most important method. Go over the chest systematically as outlined under percussion. First listen to the spoken voice while the patient says, "Ninety-nine," or "One, two, three," then listen to the whispered voice. An increase or decrease of the vocal fremitus has the same significance as the tactile fremitus. Listen to the breathing and observe the following: character of breathing, whether vesicular, vesiculobronchial, bronchovesicular, bronchial, etc. Note whether the breathing is smooth and even or interrupted and jerky, whether clear or distant. Pay special attention to the ratio of time between the respiration and expiration; normally expiration as heard is very short and occupies one third of the time of inspiration. When expiration equals inspiration in point of time it is pathological. Listen to the breathing while the patient breathes quietly or as is normal to him. You may fail to hear any breathing at all at some areas, while at others it may be rough and loud as compared with the breathing over the rest of the chest. Continue the auscultation in the same methodical manner and ask the patient to breathe deeply, first slowly and then faster; at times it is advisable to ask the patient to breathe as though panting for breath, or to breathe with his mouth open. Some patients are naturally poor breathers and their breathing must be varied in order to elicit signs present. Localized areas of abnormal breathing are strongly indicative of tuberculosis.

Listen very carefully for râles, paying special attention to any area or areas where abnormal signs were elicited by any of the above mentioned methods. Râles are quite often not elicited upon ordinary and even deep breathing, but that does not exclude their presence. Ask the patient to give a light cough at the end of expiration, following it at once with a deep inspiration, when râles will quite often be elicited when otherwise absent. Râles, be they dry, crackling, crepitant, subcrepitant, etc., when present over localized areas in one or both lungs while the rest of lung tissue is free from them, are almost by themselves pathognomonic of pulmonary tuberculosis. When elicited over an established tuberculous area they often indicate the degree of activity of the process.

Pleural friction elicited with or without cough unaccompanied by pain, while by itself suggestive of an old pleural condition, should not be disregarded for reasons mentioned above and also because it often obscures other signs present, such as rough breathing, râles, etc. Such cases should be looked upon as actively tuberculous unless after a more or less prolonged observation of the patient, with repeated physical and laboratory examinations, no other lesions are found and the patient is free from any subjective or objective symptoms.

Finally an examination of the sputum obtained from the first morning's expectoration should be made, but a negative report must never influence the diagnosis in any respect.

CONCLUSIONS.

Tuberculosis manifests itself in many ways and forms. While no diagnosis of pulmonary tuberculosis should be made on symptoms or physical signs alone, neither should be disregarded in the absence of the other. Always remember that the responsibility of the physician who fails to diagnose tuberculosis when present is as great and perhaps greater than that of the one who makes a positive diagnosis when there is none. With careful attention to the family and personal history of the patient, symptomatology, and complete physical examination, no difficulty should be encountered in making an early diagnosis. Borderline and suspicious cases should be referred to men who have had special training in this disease. When the early diagnosis of pulmonary tuberculous will become a fact sanatorium treatment will assume that rôle as a remedial agent which it justly deserves.

REFERENCE.

1. JAMES S. FORD: The National Association for the Study and Prevention of Tuberculosis.

St. Elizabeth's Hospital.

DIAGNOSIS OF EARLY AND LATE GASTRIC CANCER.*

By Harris Weinstein, M. D.,
New York.

Of all the organs of the body the stomach is the one most frequently involved in cancerous disease. Thus Lebert and Brinton found gastric carcinoma in twenty-five per cent. of their cancer cases. Reiche found the stomach involved in 49.5 per cent. In the Mayo Clinic one third of all cancers were found to occur in the stomach. The most frequent site of gastric carcinoma is the pylorus, the lesser curvature being a close second. The frequent involvement of the lesser curvature should be borne in mind, as it has an important bearing on the diagnosis. The inaccessibility of that part of the stomach to palpation, and the absence of obstructive symptoms in the earlier stage of the disease emphasize the need for examining for other evidence of malignant disease than that brought about by gastric retention. In cases occurring elsewhere than at the orifices, the disease may exist for a long time without the patient being aware of digestive disturbances. There may be no palpable tumor or evidence of motor insufficiency to point to the true cause of an existing cachexia. The records of the Mayo Clinic show that in a large series of cases confirmed by operation sixty-seven per cent. had palpable tumors and 53.3 per cent. had food remnants. Hence thirty-three per cent. had no palpable tumors and 46.7 per cent. had no food remnants to indicate obstruction. Cancer involving the fundus or even the cardia before obstructive symptoms have become manifest, may run a latent course and give rise to no symptoms indicative of the gravity of the condition. As a rule, however, there is a train of symptoms from the very onset of the disease, which do not yield to treatment. This is always a suspicious circumstance in an individual of middle or advanced age. Where the cancer is engrafted on an ulcer, the diagnosis is usually obscured by the presence of a high degree of acidity. Even when motor insufficiency is present there are no organic acids, and the disappearance of hydrochloric acid is slow.

The difficulty of early diagnosis, and as a consequence the unfavorable results of our therapy, is often due to the initial latency of the disease. In lesser curvature carcinomas even with pyloric involvement, considerable time elapses before obstructive symptoms appear; evidence of stagnation is thus long deferred. Even in the presence of considerable obstruction, the food will easily leave the stomach if liquefied by hydrochloric acid pepsin solution, in cases where the secretory function of the stomach has not become seriously impaired. In the absence of hydrochloric acid the food remains undigested, lactic acid appears, and stagnation is more easily demonstrated. The demonstration of pyloric stenosis cannot therefore be counted among the early symptoms of cancer. The presence of lactic acid in the contents may be considered as proof of carcinoma in about eighty per cent. of the cases, particularly if the feces gives a strong reaction for occult blood. Diminished motor power of the stomach, coupled with lessened hydrochloric acid, gives rise to lactic acid formation, hence it will appear in obstructive conditions of the pylorus not malignant in character, and is therefore not pathognomonic of cancer. In gallstones with adherent pylorus, in cancer of the gallbladder, and in severe chronic gastritis it is not infrequently present. It is, nevertheless, a valuable sign of cancer in association with the other more or less characteristic symptoms.

Anacidity is frequently found in carcinoma, but we must bear in mind that it is also a frequent phenomenon in benign gastric conditions. Kelling found achylia in sixteen per cent. of patients suffering with chronic dyspepsia not due to cancer. Seidlin found achylia in forty per cent. of aged individuals not suffering with gastric symptoms. In about eighty per cent. of gastric cancer cases hydrochloric acid is absent, but it is extremely difficult to prove its significance in the absence of other typical symptoms of malignant disease. Its coexistence with motor insufficiency is highly presumptive of cancer particularly in the presence of a high total acidity. It is evident that this symptom complex does not occur in nonpyloric carcinomas without obstruction. Hematemesis or melena are frequent and diagnostically important in ulcer of the stomach; in cancer hemorrhage is very exceptional. Vomiting of material resembling coffee grounds, although considered characteristic of carcinoma, occurs seldom and then only late in the disease. The fact that copious bleeding occurs but seldom in cancer despite the tendency of carcinomatous tissue to ulcerate, is due to the paucity of bloodvessels in these tissues. The few bloodvessels that are present lie among the cancer cells and are more or less compressed by them. There is, however, parenchymatous bleeding from the ulcerated surface, but the quantity of blood exuded is not sufficient to become macroscopically evident. By chemical tests for occult blood in the feces this constant bleeding is easily proved. A positive reaction for blood in the stool of cancer patients is present in about ninety per cent. of the cases and will appear on repeated examination. It does not disappear on treatment as in ulcer, in which disease it is also not nearly so frequent. The following conclusions may be drawn from our experience with this test. Negative results on repeated stool examination may be considered as evidence against the presence of cancer. Frequent positive reactions on repeated examination of the stool is strong evidence in favor of cancer. Microscopical examination of the stool for red blood cells should not be neglected in order to eliminate a possible admixture of blood from the lower colon or rectum, in which case red blood cells will be found. A secondary anemia is usually present in the more advanced stages of the disease, and is undoubtedly due to the constant bleeding from the surface of the growth, malnutrition, and toxemia. It is, of course, in no way characteristic of malignant disease only, and has therefore no bearing on the diagnosis.

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*Read at the Twentieth Annual Meeting of the American Medico-Pharmaceutical League, May 28, 1917.

Of more decided diagnostic import is pain in the gastric region, which is present in almost all cases at some time or another in the course of the disease. At the very beginning of the disease there is generally a sense of pressure or discomfort after meals, gradually increasing to a dull ache. All sense of discomfort may, however, be absent, until the disease has involved the entire stomach. Among the general tests for cancer, the Salomon test is of some aid, although it does not justify the claims originally made for it. It is based on the presence of an abuminous serum in the stomach, which constantly exudes from the ulcerating surface. If a considerable cloudy deposit is obtained with the Esbach reagent, one sixteenth to one half per mille or above twenty mgm. of nitrogen to 100 c. c. of fluid, the suspicion of carcinoma is justifiable. Opinions vary greatly as to the value of this test. While many authors have corroborated Salomon's findings, others have found the reaction in benign gastric diseases, as in ulcer or gastritis. Some have even found it in normal individuals. Another test that proved a great disappointment in gastric cancer is the glycyl tryptophan reaction in the stomach contents. The inconstancy of the test may be judged from the experience of various authorities. Hauschild found it positive in sixty-eight and negative in thirty-two per cent. of positive gastric carcinomas. In eighty-one positive cancers Smithies got thirty-one positive reactions. All authorities agree to its occurrence only in a late stage of the disease, as it depends on the presence in the contents of an autolytic ferment which is formed in the carcinomatous tissue itself. This ferment is absent while the mucosa is intact, and appears only when the ulcerated surface is being irritated mechanically and chemically by the chyme. Where there is considerable retention in advanced motor insufficiency, the dilution of the ferment is a factor in disturbing the reaction. In benign achylia the test has been found positive. A negative finding can only justify the assumption that there is no ulcerating tumor in the stomach; from its very character it is absent in early cancer and in ectasia; hence a positive finding must necessarily indicate a late stage of the disease when we are in the possession of more reliable and more positive tests. In addition it is subject to a great many errors, which seriously detract from its reliability.

In the estimation of Smithies and of Friedenwald, and Kiefer, the Wolf Junghans test is far more reliable. This test is based on the occurrence in the stomach contents of an increased quantity of albumin, due probably to the presence of a proteolytic enzyme, which is formed by the growth of cancer cells. Smithies found this test positive or suspicious in eighty per cent. of gastric cancer. In his series it was a more constant finding than achylia or the presence of lactic acid or the glycyl tryptophan reaction. It was more constant than occult blood in the stool or decreased gastric motility. In extragastric malignancy and in gastric syphilis the test was inconstant. In the differentiation between malignant and nonmalignant achylias he found it of value, when interpreted in connection with other clinical and laboratory data. Positive reactions are rarely obtained in achylias of primary anemia, simple achylia, and achlorhydrias unassociated with gastric motor insufficiency. Simple gastric or duodenal ulcers with pyloric stenosis, or gastric atony may give confusing responses to the test.

The presence of blood in the gastric extracts may be a factor in the production of atypical positive tests. Friedenwald and Kiefer's experience with the test extended over a series of 173 cases. Of these sixty-seven were benign achylias and 106 gastric cancers. Of the benign achylias 13.5 per cent. gave positive or suspicious reactions, while 86.5 per cent. gave negative reactions. Of the 106 cases of cancer, 83.5 per cent. gave positive or suspicious reactions, and 16.1 per cent. gave negative results. In the presence of free HCl the test is valueless; the presence of blood also interferes with it. Of eighteen early cases of cancer thirteen were positive and five negative. In their experience the test is of value in the diagnosis of gastric carcinoma when there is an absence of even traces of blood in the extract, of free HCl, of retained food residue, or of swallowed saliva.

Of surpassing importance as an aid in the diagnosis of gastric cancer are the röntgenological findings. According to Carman, ninety-five per cent. of gastric cancers are discovered in the Mayo Clinic by the x ray. Among the most important röntgenological manifestations of cancer are filling defects occasioned by the projection of the tumor into the lumen of the stomach. Hourglass deformity occurs in involvement of the pars media of the stomach, giving a less sharply defined contour than in hourglass due to ulcer. Filling defects may occur in many other conditions, and their differentiation should not give rise to confusion. The pyloric function may be altered by gaping or obstruction. Gaping of the pylorus is caused by infiltration and consequent stiffening of the muscular ring, interfering with sphincteric contraction. Obstruction is shown by six hour residue.

A Wassermann test should always be made in obscure gastric conditions, as there is always a possibility of luetic gastric involvement. It occurs either as a gumma, or as a diffuse infiltration of the wall of the stomach. The clinical picture is like that of the nonspecific disease, but the results from therapy are different in the two conditions. George B. Eusterman gives a symptom complex as probably indicating gastric syphilis in the combination of anacidity, subacidity, or achylia with a syndrome resembling benign ulcer in some respects and gastric carcinoma in others, and accompanied by röntgenological findings suggestive of carcinoma. Gastric syphilis very closely resembles malignant disease of the stomach in its various phases. Achlorhydria is characteristic of the disease; an ulcerating gumma will give a positive occult blood reaction in the stool; healing of the ulcer may result in cicatrization with contraction stenosis, accompanied by all the evidence of stagnation characteristic of pyloric cancer. It is evident that no reliance can be placed on the history or the clinical features of the disease in differentiating the two conditions, the deciding factor must be the serological examination.

The diagnosis of gastric cancer, despite our many methods and tests, is a problem of no mean magnitude, particularly as it relates to early cases. The insidious development of the disease is often the cause of diagnostic failure. As the best results in therapy are obtained only in the early stage of the disease, exploration must be included among the diagnostic methods in doubtful cases.

825 Lexington Avenue.

A NEW GROUP OF SYMPTOMS IN TERMINAL GASTRIC CATARRH.

By Roy Upham, M. D.,

Brooklyn, N. Y.

The ultrascientific work which is being done at the present time in the diagnosis of gastrointestinal conditions has in a great measure displaced the old time method of examining the patient's tongue, prescribing medicine, and considering the diagnosis made, but recently the occurrence of a group of symptoms in a considerable number of cases leads the writer to present these data as worthy of being considered pathognomonic of terminal gastric catarrh.

It is immaterial whether we classify the condition of the stomach where there is absolute failure of gastric juice as a distinct entity, achylia gastrica, as Einhorn is wont to call it, or whether we consider it a terminal phase of a chronic gastric catarrh. In the condition where free hydrochloric acid is absent from the stomach a group of symptoms arises in the mouth and throat which present a paresthesia characterized by abnormal dryness and burning of the mucous membranes. The first case of this character coming under the observation of the writer presented merely the symptom of an extreme burning in the roof of the mouth and on inspection no abnormality could be seen in the mucous membrane covering the hard or soft palate. On the routine examination with the stomach tube, however, the condition of terminal gastric catarrh presented itself so markedly that treatment was directed entirely to that condition, and when the physiology of the stomach was made as nearly normal as possible the sensation of burning in the roof of the mouth entirely disappeared.

The second case of this character was one with an extreme sensation of dryness and burning in the throat which led the patient to place himself under the care of a laryngologist over a protracted period. It was the opinion of the laryngologist that there was a tuberculous process present somewhere in the respiratory tract, although all methods of isolating the tubercle bacillus were unavailing. After prolonged treatment at the hands of the throat specialist, stomach symptoms, pressure after meals, made their appearance and the patient presented himself to the gastroenterologist for treatment. Again the chemistry of the stomach showed the same condition of terminal gastric catarrh, and in this case also with proper treatment for gastric catarrh, all symptoms of dryness and burning, which had been so uncomfortable that the patient had made plans to leave the city and go West, were dissipated.

Following these two cases the writer in all cases presenting symptoms of terminal gastric catarrh, has inquired closely and has seldom failed to elicit the symptom of dryness and burning either in the mouth or throat, and it is his desire to draw the attention of the profession to this symptom as calling for a competent analysis of the gastric contents to determine properly whether the throat condition is not secondary to a terminal gastric catarrh.

While the nose and throat properly belong to the rhinolaryngologist, many forms of a catarrhal condition which are present in these structures are due to autotoxemic conditions and it is almost impossible, by means of local treatment, to clear up many of these catarrhal conditions until the case has been examined for autointoxication which is usually of the protein type. Of course, this group of cases presents well defined catarrhal phases which warrant medical and surgical treatment on the nasopharyngeal mucous membranes and are quite apart from the pathological condition which the writer wishes to present in this communication. This condition is a pure paresthesia of the mouth and throat unaccompanied by any apparent changes in the mucous membrane of the mouth, nose, or throat.

300 McDonough Street.

War Heart.—Archibald E. Garrod (*Lancet*, June 30, 1917) describes a form of heart trouble in soldiers which differs from the irritable heart, or "effort syndrome," in its causation and response to treatment. The condition occurs as the result of some infection, such as malaria or dysentery, and causes shortness of breath on mild exertion and precordial pain. The physical signs are those of cardiac dilatation involving the right auricle and giving an increased area of dullness to the right of the sternum. The increased area of dullness can easily be made out by percussion or by "dipping" with the balls of the fingers, and its decrease under treatment can be followed. Graduated exercise is harmful in these cases until the heart has been reduced to its normal size for at least one week by absolute physical rest in bed. Then about ten days after the heart dullness has set in, graduated resistance exercises are begun with the patient still in bed. If these are well borne they are continued with the patient in the erect position and are then followed by carefully controlled graduated exercises of an active type. Digitalis has been used, but there is a divergence of opinion as to its value, some believing that it helps in maintaining the reduction of the dilatation. Redilatation under such a plan of treatment is uncommon and the men usually regain their fitness.

Medicine and Surgery in the Army and Navy

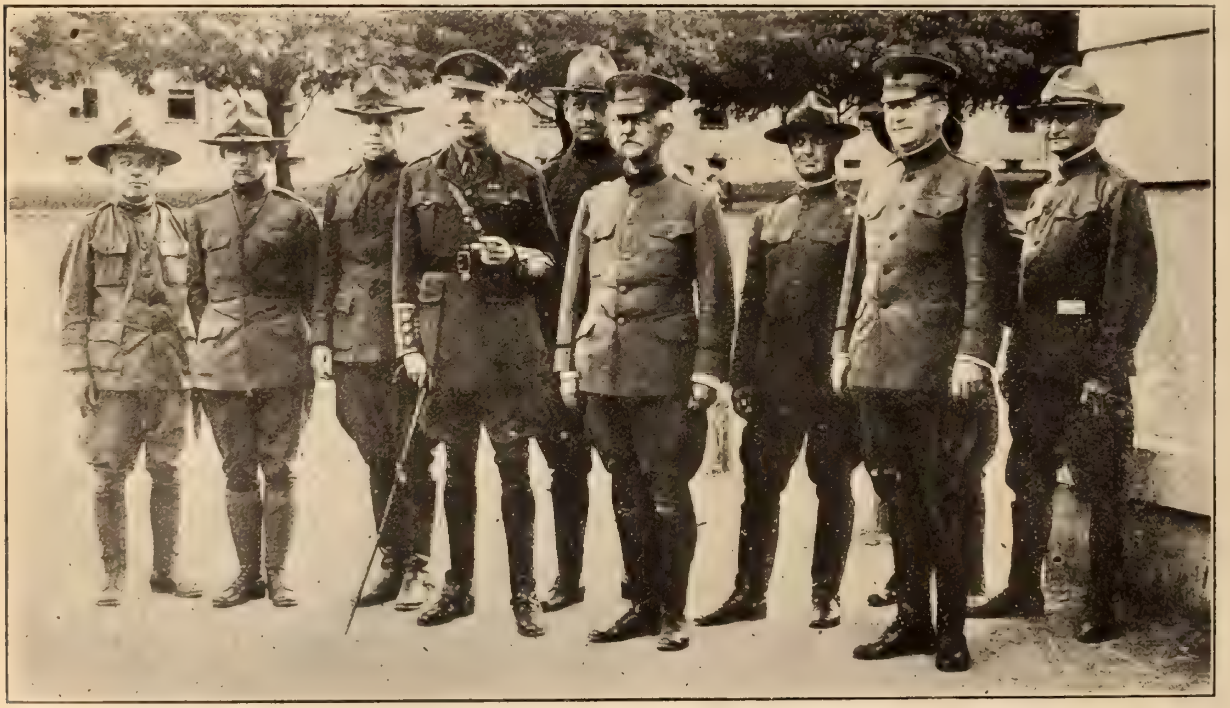
TRAINING MEN FOR THE UNITED STATES AMBULANCE CORPS.

Over Four Thousand Men in Training for Service with French Troops.—Problems of Instruction.

When the Friends of France, who comprised the volunteer American Ambulance Service on the French front, learned that the United States had also entered the great war, they began to lay plans for entering the United States service. Some of them were drafted into the French munition trains, but the majority of these young men whose humanitarian principles had caused them to enter the ambulance service preferred to remain in that service provided they could serve under the United States flag rather than under the tricolor. But the organization of the ambulance service in which they were engaged was quite different from anything provided for in the rules and regulations of the United States army. The French ambulance unit is purely a transportation unit, the officers not being medical men. We had in our service nothing that exactly corresponded to this. Our ambulance company is officered exclusively by medical men and is not divided into units corresponding to the French organization. In the British ambulance convoy, which is a compromise between the French and the American systems, half the officers and men belong to the medical corps and half to the army service corps. The need for additional ambulance service in the French army was no doubt a factor in inducing our Medical Department to take over the units already organized by the American Ambulance Service in France and to organize other units along the same line.

Major E. E. Persons, now colonel, of the Medical Corps, arrived in New York from Ancon Hospital just too late to sail with the Presbyterian Hospital unit, which he had been ordered to command, and was therefore instructed to organize and take command of an ambulance training corps. Dr. Arthur Yale, of Philadelphia, who had organized a volunteer ambulance service for the Stonemen, an organization of church clubs in Philadelphia, was invited to help enlist the men for the service as he was able to provide 700 men from his own organization. The Intercollegiate Bureau at Washington undertook to supply the remainder of the 3,600 men who were needed to make up the ambulance corps as then planned.

At the fair grounds at Allentown, Pennsylvania, where ample room, an excellent water supply, and extensive buildings were found available for the training camp, Major Persons and Major Percy L. Jones, of the regular army, set about the organization of this new departure. Within a few weeks the camp was organized, the men and material began to arrive, and the concentration camp of the United States Army Ambulance Service was in full swing. The number of men for each unit was increased from thirty-six to forty-five, and when the staff correspondent of the NEW YORK MEDICAL JOURNAL arrived at the camp there were 4,100 men and 160 officers enrolled, while nearly 1,000 had already



Courtesy of the Allentown Call.

SURGEON GENERAL GORGAS AND STAFF AT ALLENTOWN.

Left to right: Major Francis T. Metcalf, commander Battalion I; Major John R. Devereux, provost guard and commander Battalion X; Major C. P. Franklin, adjutant; Colonel T. H. Goodwin, R. A. M. C., representing the British Commission; Major Arthur W. Yale, director of ambulance companies; Surgeon General W. C. Gorgas; Colonel E. E. Persons, commandant; Major Robert E. Noble, surgeon general's staff; Major Richard Slee, sanitary officer and summary court officer.

sailed for France with complete equipment, ready for active service at the front. The grounds are admirably suited for the purpose, but afford insufficient accommodations for the entire force, and as a consequence four or five hundred men are kept out on hike all the time, one group leaving as the other returns.

COLONEL E. E. PERSONS, M. C.,
Commanding U. S. Ambulance Corps Training Camp, Allentown, Pa.

The personnel of the camp changes so rapidly that it is difficult to know who is who and what. The rapid increase in the armed force and the organization of the national army led to the rapid promotion of the senior officers in the Medical Corps, so that the titles given below may not represent those held even a week later. On August 1st there were in the camp 4,100 enlisted men and 159 officers. Of these officers 134 were first lieutenants of the Medical Reserve Corps, fifteen captains of the Medical Reserve Corps, two captains of the Quartermaster's Reserve Corps, six majors of the Medical Reserve Corps, and two lieutenant colonels of the Medical Corps of the regular army. It will thus be seen that a heavy load of responsibility rested upon the

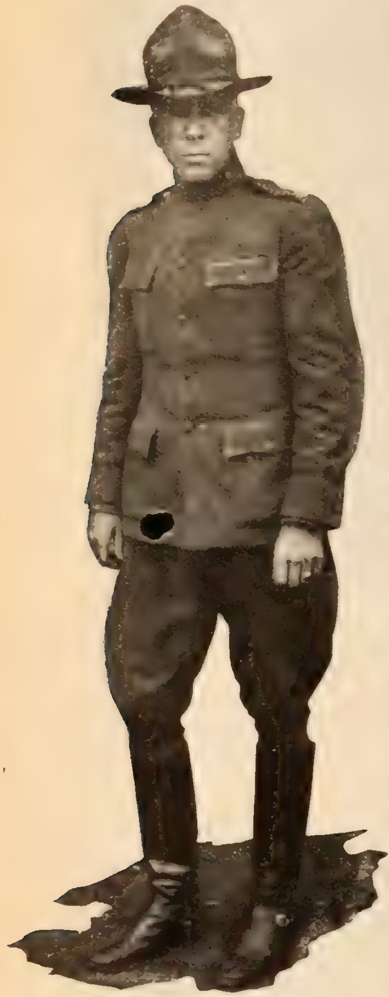
Photo by Marceau.

MAJOR ARTHUR YALE, M. R. C.,
Of Philadelphia, who was one of the active workers in the enlistment and organization of the ambulance corps.

MAJOR RICHARD SLEE, M. R. C.,
Of Swiftwater, Pa., Sanitary Officer and Summary Court Officer.

CAPTAIN CHARLES D. LOCKWOOD, M. R. C.,
Chief Surgeon, Commander Battalion XI, Chief of Pasadena Ambulance Corps, No. 1, at Allentown, Pa.

shoulders of the two regular army officers attached to the camp, since the reserve officers had to turn to the regulars for instructions on hundreds of details of the service which are only learned after long service in the regular army. Colonel Persons, the commanding officer, was fortunate, however, in having the services of several old noncommissioned officers of the regular army, whose experience proved most helpful in directing the voluminous paper work involved in enlisting and organizing this new force; while the reserve officers showed a willingness and knowledge of the service requirements which was most gratifying.


MAJOR C. P. FRANKLIN, M. R. C., Adjutant.

The staff on August 1st consisted of the commander, Colonel Elbert E. Persons, commandant; Lieutenant Colonel Percy L. Jones, instructor; Major Arthur W. Yale, director of ambulance companies; Major Richard Slee, sanitary officer, post exchange officer, police officer, and summary court officer; Captain Clarence P. Franklin, adjutant; Major John R. Devereux, in command of provost guard and commander of Battalion X; Major Francis T. Metcalf, commander, Battalion I; Captain Ora E. Stark, commander Battalion II; Lieutenant John P. Bethel, commander Battalion III; Captain John A. Hawkins, commander Battalion IV; Major Henry M. Hall, commander Battalion V; Captain Ward Brinton, commander Battalion VI; Captain Marion H. Wyman, commander Battalion VII; Lieutenant Charles D. Lockwood, commander Battalion XI; Captain David C. Hall, commander Battalion XII; Captain William H. Rockwell, commander Battalion XIII; Lieutenant Elmer R. Decker, commander Battalion XIV; Lieutenant Alexander H. Listee, commander Battalion XVI; Captain Edward Doodle, commander Battalion XVII; Captain Ernest B. Folsom, commander Battalion XVIII; Captain Cande des Pallen, commander Battalion XIX; Lieutenant Albert M. Meade, commander Battalion XX; Captain Chester F. S. Whitney, commander Battalion XXI; Captain Joseph Donnelly, commander Battalion XXII; Captain Percy O. Chaudron, commander Battalion XXIII; Lieutenant Shaler Berry, commander Battalion XXIV.

The ambulance units as stated above are organized in accordance with the French system, each unit comprising one sergeant, first class, two sergeants, one corporal, two mechanics, two cooks, twenty-six privates, first class, and eleven privates, making a total of forty-five enlisted men. A lieutenant is in command of each unit; four units constitute a company under command of a captain and five companies constitute a battalion which is in command of either a captain or major with a lieutenant as aide. Each unit has twenty Ford automobile ambulances built in accordance with the specifications of the French service, three Packard trucks, and one officer's car. A number of kitchen trailers are also provided by means of which it is possible to supply hot meals to the force when en route

Private's full equipment, United States Ambulance Corps.

Some idea of the novel problems presented to these officers may be gathered from a study of the work of the mess officer, Lieutenant Max R. Stockton, M. R. C., of Swarthmore, Pa., whose nearest view of a kitchen prior to the war was gained through the window of a rôtisserie Parisienne. Under the grandstand of the fair grounds Colonel Persons found a room capable of seating 2,500 men. There were already several gas ranges and he installed others, put in soup and coffee boilers, and constructed deal tables and benches sufficient to accommodate half of his enlisted force and all the officers. At the right of the line are the officers' tables, differing in no way from those of the men save that the meals of the officers are served to them seated while the men have a "self help" service.

When mess call is sounded half the enlisted force is marched up, and forming lines at the several doors of the restaurant and passing in single file, each man picks up his plate, knife, fork, spoon, soup bowl, and cup. Passing on he receives his portion of the meal in his cup, bowl, and plate and takes his assigned seat at the table on which is always kept an ample supply of excellent fresh baker's bread, syrup, and what I took to be excellent butter but which I was assured was oleomargarine. On concluding his meal, each soldier picks up his dishes and passes in single file before the group of refuse pails, each of which bears a label. In the

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With the United States Ambulance Corps at Allentown. Litter and ambulance drill showing the type of Ford ambulance universally used on the French front.

MENU FOR TUESDAY, AUGUST 7, 1917.

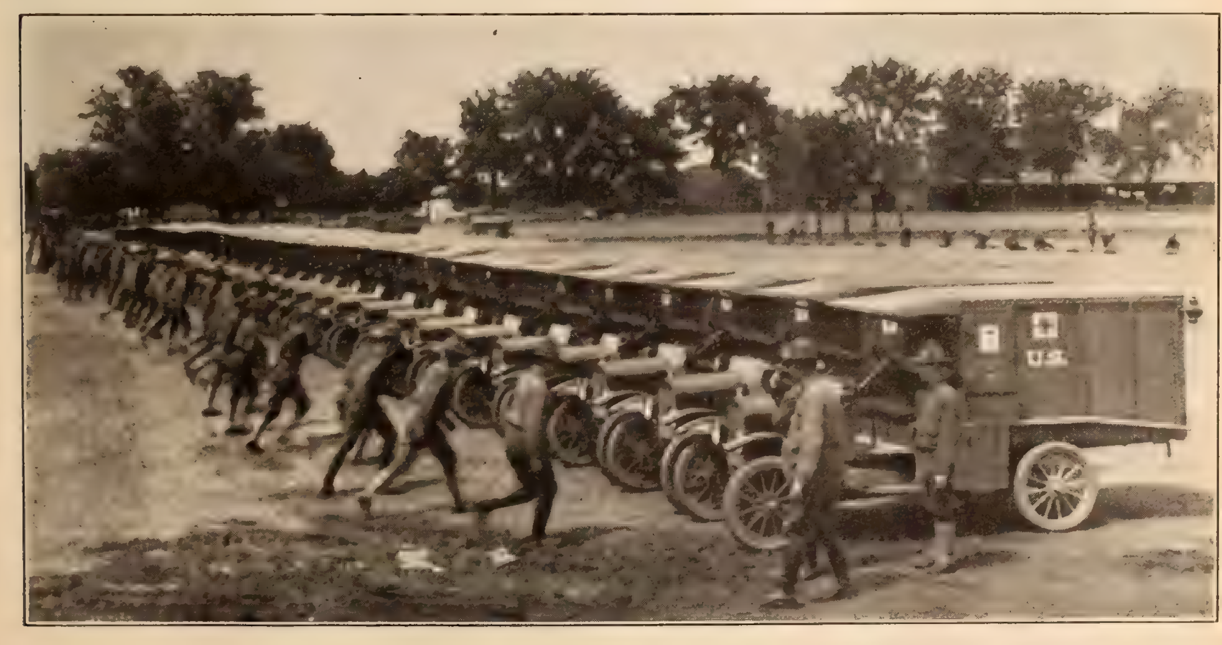
Breakfast:		
Bananas	6,080	$63.00
Scrambled eggs	10,800 eggs	324.00
Bread	500 loaves	38.75
Oleomargarine	120 lbs.	28.80
Syrup	15 gallons	10.80
Coffee	250 lbs.	42.50
Dinner:		
Roast of beef	4 steers—4,000 lbs.	680.00
Boiled potatoes	10 barrels	48.50
Peas	720 cans	110.00
Bread	200 loaves	15.50
Oleomargarine	80 lbs.	19.20
Syrup	10 gallons	7.20
Supper:		
Baked beans with pork	120 gallons	145.20
Bread	500 loaves	38.75
Oleomargarine	200 lbs.	48.00
Corn on the cob	8,000 ears	96.00
Syrup	5 gallons	3.60
		$1,719.80

first he deposits any liquids left in his cup or bowl, in the second the cup and bowl, in the third any fragments of meat or bone, in the fourth the swill, and in the fifth his plate; his knife, fork, and spoon he lays on the table. Signs were displayed

MENU FOR SUNDAY, AUGUST 12, 1917.

Breakfast:	No.	Cost.	
Oranges	4,200	$112.00	
Scrambled eggs	10,800 eggs	315.00	
Bread	600 loaves	46.50	
Oleomargarine	100 lbs.	24.00	
Syrup	10 gals.	7.50	
Coffee	150 lbs.	25.50	
Dinner:			$530.50
Stewed chicken	2,000 lbs.	$429.87	
With rice	50 lbs.	3.00	
Corn on the cob	8,000 ears	100.00	
Boiled potatoes	8 bbls.	41.00	
Bread	400 loaves	31.00	
Oleomargarine	75 lbs.	18.00	
Syrup	7 gals.	5.25	
Ice cream	200 gals.	190.00	
Cake	500 lbs.	120.00	
			$938.12
Supper:			
Brunswick stew	300 gals. ...(approx. cost)	$50.00	
Stewed tomatoes	40 cases (960 cans)	144.00	
Bread	600 loaves	46.50	
Oleomargarine	100 lbs.	24.00	
Syrup	10 gals.	7.50	
			$272.00

Total expense	$1,740.62
Total number of rations issued	4,180
Ration value, allowance for the month	$0.4188
Actual cost per ration	$0.4161
Total ration value	$1,750.58



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With the United States Ambulance Corps at Allentown. Ambulance hurry drill, teaching the men how to respond to a hurry call.

here reading "If you sort your food remnants carefully, the sale of them will revert to you as food." One result of the care in the disposal of the swill is that the mess officer receives $1,000 a month for it and this sum credited to the mess account gave just so much more money to spend on the table.

Details are made from each unit to help in the cooking and serving of meals so that the work is equally divided and is not onerous. The mess officer has as assistants Lieutenant Leon A. Fox, M. R. C., an experienced sergeant of the regular army Medical Corps, and as much clerical help as he needs. His office, which consisted merely of a cleared space in one corner of the storeroom with improvised tables and a typewriter desk built of stray boards, was neat and orderly in the extreme and at the close of the day Lieutenant Stockton was able to tell to the fourth decimal precisely how much per capita he had expended on food for the men.

The Government allowance for the mess is based upon the cost of certain specified quantities of meat, flour, etc., which of course varies from month to month The current value of the ration is calculated monthly and the mess officer is required to keep his cost within that figure. By having the mess served in large units instead of small and by careful economy in purchase and preparation, Lieutenant Stockton was able to give excellent and substantial meals at a minimum cost as is shown by a reference to the menu of the meals for Tuesday, August 7th, and Sunday, August 12th. The writer can testify to the excellence of the repast and to the amplitude of the portions served; in fact the supply of ice cream was so plentiful that the men were urged to take more in the interest of the "clean plate."

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With the United States Ambulance Corps at Allentown. The Y. M. C. A. maintains a large reading and writing room and gives frequent entertainments for the members of the corps.

Many of the young men in the service are college men and some of them, belonging to the *jeunesse dorée* apparently, wrote home to Mama when they first arrived that the food was not wholly satisfactory. This led to communications from senators and congressmen addressed to the commanding officer, but in every case a formal report of the quantity and character of the food served to show

ORDER OF THE DAY.

First call	5:30
Reveillé	5:40
Assembly	5:45
Exercises	5:50
Recall	6:05
First mess	6:30
Second mess — sick call	6:30
Second mess	7:15
First mess—sick call	7:15
Section drill	8:00— 9:30
Recall	9:30
Instructors' school	9:45—10:30
Officers' school	9:45—10:30
Recreation	9:45—10:30
Assembly	10:50
General lectures	11:00—11:45
Recall	11:45
Officers' call	11:45
First mess	12:00
Second mess	12:45
Automobile school	1:30— 4:00
Recreation	1:30— 2:45
Assembly	2:50
General lectures	3:00— 4:00
Drill	4:00
Parade assembly	4:55
Retreat	5:15
First mess	5:45
Second mess	6:30
Tattoo	9:30
Taps	11:00

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With the United States Ambulance Corps at Allentown. Every recruit is vaccinated if he has not been recently vaccinated, and is given antityphoid and antiparatyphoid inoculation on joining the service.

that there were no grounds for a complaint. As a matter of fact the table was better in the second month than in the first since the inexperienced mess officer felt compelled to guard against extravagance and so may have erred somewhat on the other side. He had nearly $20,000 balance on the right side of the ledger at the end of the first month. With this sum in reserve and with the added experience he served meals for the second month at which even the most fastidious could not cavil.

As shown by the accompanying order of the day and weekly schedule, the routine of camp life left little leisure for men or officers. From 5:30 in the morning until the last sad notes of taps are sounded at 11 at night, the men are kept busy either in studies or in drills. These drills comprise the ordinary formation drills of infantry but of course without arms, litter drills shown in the accompanying illustrations, and ambulance drills in which the remarkable celerity with which the unit could get under way is noted. The beginning of one of the ambulance drills is also shown in one of the accompanying illustrations.

Surgeon General Gorgas and his staff accompanied by Colonel T. H. Goodwin, of the British Royal Medical Corps, inspected the camp and found everything in it most commendable from every point of view.

The Allentown camp is, we believe, the only camp within the borders of any city, and the high personal character of the members of the corps is shown by the cordial relations which exist between the citizens and the soldiers. At a meeting called by the mayor, two of the leading citizens of the city became big brothers by adoption to each of the units, and these big brothers have been most faithful in the performance of this self imposed task. Each of them has invited the members of his unit to dinners and other entertainments at his home, club, and church, and makes it a rule to call regularly on the members in their own quarters and to provide social enter-

WEEKLY SCHEDULE.

Time.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.
8:00 to 9:30	Section litter drill.	Section litter drill.	Section litter drill.	Section litter drill.	Section litter drill.
9:45 to 10:45	Officers' school.	Officers' school.	Officers' school.	Officers' school.	Officers' school.
9:45 to 10:45	1st Sergeants' school.	1st Sergeants' school.	1st Sergeants' school.	1st Sergeants' school.	1st Sergeants' school.
9:45 to 10:45	Recreation.	Recreation	Recreation.	Recreation.	Recreation.
11:00 to 12:00	Drill.	Drill.	Drill.	Drill.	Drill.
			MESS.		
1:30 to 4:00	Automobile instruction.	Automobile instruction.	Automobile instruction.	Automobile instruction.	Automobile instruction.
1:30 to 3:00	Officers' school.	Officers' school.	Officers' school.	Officers' school.	Officers' school.
1:30 to 3:00	Recreation.	Recreation.	Recreation.	Recreation.	Recreation.
3:00 to 4:45	Battalion drill.	Battalion practice march.	Battalion drill.	Battalion drill.	Battalion practice march.
5:00 to 6:00	Officers' school.		Officers' school.		Officers' school.

SATURDAY SCHEDULE.

8:00 to 9:30

General inspection battalion and quarters.

NOTES ON SCHEDULE:

1st Sergeants' school: First ten minutes devoted to instruction from the adjutant's office. Remainder of period devoted to instruction on section paper work; i. e., morning reports; sick reports; requisition for quartermaster supplies; medical supplies; accountability; responsibility; map reading.

11:00 to 12:00 drill period: Monday, Wednesday, and Friday: bearer, litter, ambulance, and foot drill; Tuesday and Thursday: practical first aid, preparing a patient for transportation.

3:00 to 4:45: Monday, Wednesday, and Thursday: battalion commanders will devote at least one half hour of the period to talks on personal hygiene, camp hygiene and sanitation, communicable diseases, and topics from the noncommissioned officers' manual.

3:00 to 4:45: Tuesday and Friday: battalion marches will consist of forty-five minute march, followed by a ten minute rest and return to camp.

tainment of all kinds. The results have been that there has been no friction at all between the citizens and the members of the corps, and there has been a complete absence of that rowdyism which is apt to develop in a camp which brings together thousands of young men free for the first time from the social restraints of the home environment.

The Y. M. C. A. has also been a factor in the social life of the men, providing a library and a reading and writing room under canvas with frequent entertainments, and with the free use of a phonograph and a fine collection of records. The men are being trained to sing in concert by W. S. Clark, a member of an association which maintains singing teachers in all the training camps of the United States. Mr. Clark has lantern slides of the words and music, which are thrown on a screen in front of the grandstand at night. He stations himself in front of the stand with a megaphone and leads the singing most effectively.

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With the United States Ambulance Corps at Allentown. The Pasadena units have Belgian wolf hounds which are being trained to find wounded on the battlefield. The dog brings back some portion of the wounded man's equipment as evidence that he has found the patient and then guides the litter bearers to the soldier.

Immediately across the street from the fair grounds are the Allentown Hospital and the Allentown Nurses' Home and Training School, both of which are model institutions. Arrangements were made with the hospital under which all the serious cases in the camp were treated there, and Captain Lockwood, of Pasadena, detailed as chief surgeon of the camp, operated there when necessary. Captain Lockwood had several appendicectomies. The strenuous exercise of the training apparently tended to develop any latent appendicular trouble.

The men represent practically every walk in life. Colonel Persons said: "I am sure we can find here an expert in any line we might ask for." When the adjutant, Major Franklin, posted a notice that men who could play band instruments were asked to report for the formation of a band, forty men reported, from among whom a complete band was quickly organized. Colonel Persons mentioned that he had been instructed by the surgeon general to arrange for heating the mess hall which was to be used in winter, when one of the privates volunteered his aid, stating that he had been employed as a heating engineer by the American Radiator Company for the past fifteen years. All the stenographers needed were found among the enlisted men, several of them being expert linguists as well as stenographers. The colonel's chauffeur, a private detailed to headquarters, was in Russia as a constructing engineer when the war broke out, joined the American Ambulance Service, and drove the car of Elliott Norton, one of the directors of the Harjes-Norton unit, on the Verdun front, and is an expert air pilot. While he slept on a cot under canvas, ate off a tin plate, and acted as headquarters chauffeur, his own Cadillac car was stored in a garage and his own chauffeur put up at the best hotel in Allentown. But whether student or savant, pauper or millionaire, every one of the men seemed to throw his whole heart into the service and neither expected nor received any consideration beyond that merited by the services he could render. While a camp will be maintained at Allentown for the recruiting of the Medical Department, the remaining members of this particular group will soon be in the service on the French front, giving the best service that intelligent, unselfish, brave devotion can render. The "Usaacs"—United States Army Ambulance Corps—will carry on the work of rescue and service in our great cause which their countrymen abroad began so spontaneously, and will, beyond question, give a service of which America may well feel proud.

MEDICAL NOTES FROM THE FRONT.

Distribution of Lesions of the Peripheral Nerves.—Projectiles Causing Nerve Lesions.—Nerve Lesions in Connection with Bone Fractures.—Early Symptoms of Tetanus.

GENEVA, *August 10, 1917.*

To give an idea of the distribution of wounds and other lesions of the peripheral nerves in warfare, I shall take a total of 466 cases. Of this total the nerves of the upper limb were the seat of a lesion in 332 cases, or about seventy-one per cent., while there were 134 cases, or twenty-nine per cent., of wounds of the lower limb. The right upper limb is about as frequently involved as the left. In the lower limb the left is more commonly injured. The reason for this latter situation is largely due to the kneeling position frequently assumed while shooting; in this attitude the thigh of the left leg offers itself horizontally to the enemy's fire, while the right lower limb, with the leg resting on the earth and the thigh behind the left leg, is relatively sheltered.

As regards the nerve injured, the radial is the most commonly involved, this occurring in 144 cases out of a total of 466, or about 24.4 per cent. Then in decreasing frequency comes the ulnar nerve—seventy-one cases, the median—sixty-two cases, and the median and ulnar together—twenty-two cases. It is to be noted that, although lesions of the radial alone are by far the most frequent, if the lesions of the median and ulnar nerves are added together they give a greater proportion, or just a little over thirty-four per cent. of all traumatic nerve lesions. The cases of simultaneous lesions of the median and ulnar nerves leads to the consideration of multiple nerve lesions in the arm, which are far from uncommon, those of the median and ulnar particularly. This is readily explained by their anatomic relations. Simultaneous lesions of the radial and ulnar are much less common. Lesions of the brachial plexus are not uncommon; Morin has met with thirty-seven cases. Lesions of the nerves of the lower limb are almost exclusively those of the sciatic and its branches, and out of a total of 176 cases Morin found lesions of the sciatic trunk in thirty-three cases; of the external sciatic alone, forty-five; of the internal sciatic alone, six; and of both internal and external sciatic, twelve.

The lesions of the sciatic nerve, which is particularly exposed to projectiles at the level of the head of the fibula, are about as frequent as the trunk of the nerve itself; this incidence contrasts with the relative infrequency of injuries to the internal sciatic alone—six cases—or associated with those of the external sciatic—twelve cases. Lesions of the crural appear to be rare, Morin having met with only four cases. This infrequency is clearly due to the anatomic position of the nerve.

As to the type of projectile causing the injuries, rifle or mitrailleuse bullets caused wounds in 370 cases; bursting shell in seventy-nine cases; shrapnel in eleven cases; and bayonet in one case. Therefore, it would seem that about eighty per cent. of lesions of the peripheral nerves are the result of bullets and the remainder are caused by bursting shell, while shrapnel shot only exceptionally produces lesions in them. In textbooks on war surgery it is frequently stated that nerve injuries are rarely the result of projectiles. Such a statement may undoubtedly be true of former wars, where the initial momentum of the bullet was relatively slow, and in the present war this applies to shrapnel. The frequency of nerve lesions in wounds caused by rifle or mitrailleuse bullets is in direct relation to their great initial momentum. As to bursting shell, damage is due less to the initial momentum and more to the size of the particles and their very irregular shape and sharp edges. Bullets may directly injure a nerve or the nerve may be compressed and irritated by suppuration, which so often follows in wounds from projectiles, or retraction of the fibrous cicatricial tissue which not infrequently buries the projectile. Surgical interference far more frequently is required to free the nerve from the fibrous mass in which it is embedded than to suture a completely divided nerve, and those who have not yet had experience in the surgery of warfare will do well to remember this fact.

The nerves are frequently injured by a fractured bone and not from the projectile producing the bone lesion, but I must admit that it is often difficult to decide how far the nerve lesion is due to the bone splinters and how much the projectile comes into play in a given case. The following figures indicate the number of cases in which paralysis occurred in the presence of compound fracture or where a splinter of bone had been detached from the bone by the projectile: radial nerve, forty-seven cases; ulnar nerve, seventeen; radial and ulnar nerves, two; median nerve, six; median and ulnar nerves, five; radial and median nerves, two; radial, median, ulnar, and musculocutaneous nerves, one; brachial plexus, six; sciatic (trunk), five; external sciatic, two; external and internal sciatic, one. In the case of lesions of the radial, ulnar, and median nerves the fractured bone was for the radial nerve: humerus in thirty-nine cases; radius in six; radius and ulnar in one; epitrochlea in one. In lesions of the ulnar nerve the bone involved was ulnar in fourteen cases and humerus in three; for the median nerve, it was humerus in three cases and ulnar in three. As to the relative proportion of nerve lesions in relation to the bone fractured, fractures of the humerus were complicated with nerve lesions in fifty-five cases; ulnar, twenty-one; radius, seven; radius and ulnar, one; elbow joint, one; clavicle, two; femur, five; fibula, two; tibia, one; tibia and fibula, one; lower jaw, one. One important fact made evident by the figures is the great frequency of lesions of the radial nerve in fractures of the humerus. The long course of this nerve closely connected with the bone is the evident reason. All the other cases, particularly splinters of bone from fractures complicated by paralyses, are explained in quite the same way.

This association of lesions, and the complex lesions involving several nerves simultaneously, with cicatricial lesions, division and retraction of tendons and ankyloses which often result, show the difficulty of diagnosis and treatment of these cases. A review of operated cases throws light on their complex nature and also has given much valuable data of the pathology of the nerve lesions. The following figures of surgical interferences performed by five different surgeons for particularly serious cases of paralysis in which there was no tendency toward spontaneous recovery after being carefully watched for some time, involved the following nerves: radial, twenty-eight cases; ulnar, twenty-eight cases; median, eleven cases; ulnar and median, five cases; radial and ulnar, one case; radial, median, and ulnar, one case; brachial plexus, four cases; sciatic trunk, twelve cases; external sciatic, seven cases; internal sciatic, one case, and external and internal sciatic, two cases. In about sixty-six per cent. of all peripheral nerve injuries in warfare which required surgical interference the lesion will be found to be a mass of hard fibrous tissue enclosing the nerve; this requires a careful dissection with freeing of and transposition of the nerve trunk. In thirty-three per cent. of cases complete or partial suture of the nerve is called for. I would point out that relatively few instances of enclosure of a nerve in an exuberant callus have been reported.

* * * * *

As it is my endeavor, in these letters, to give as accurate an account of the present state of the surgery of war as possible, I would like to call particular attention to the early symptoms of tetanus, those that occur before trismus has taken place, because they are of the utmost importance, and before the war they were seldom, if ever, recognized. The very first symptoms, or, it may be more correct to say, the forerunners of the disease, are a slight feeling of contraction or tension, an insignificant pain in the facial muscles, less frequently felt in the neck, and a feeling of tension in the chest. These early symptoms are so slight that the patient may not mention them. The first prodromes may appear in the injured limb. The patient will complain of a mild sensation of contraction in the member and pain soon followed by a sudden involuntary contraction of certain groups of muscles, and it is only afterward that trismus and stiffness of the neck come on.

Local cramps may precede the trismus, and in this case the patient complains of stiffness in the injured muscles, spontaneous nervous movements, and painful tension. Soon there is a tendency to sweating with constipation, dysuria, and disturbances of sleep, proofs that the toxin is invading the nervous system. I would particularly insist on the fact that the cramps arise when the patient is startled by any noise, even of trifling nature. The cramps developing in certain muscular groups may remain limited to them throughout the course of the disease, or they may become generalized to the entire muscular system. They produce rigidity of the injured limb and are remarkable from the severity of the pain they occasion. These muscular movements are with difficulty attributed to the tetanus undergoing its early evolution, and this is particularly the case in severe injuries on account of the pain to which they naturally give rise. However, the surgeon should give close attention to all these minor symptoms complained of by the patient, because they indicate beyond any doubt the advent of this terrible disease. Two cases of tetanus have been recorded in which the trismus was preceded by cramps in the masseters and paralysis of the facial nerve has also been noted.

Difficulty in swallowing is an important early symptom of tetanus, and, from the fact that inspection of the throat shows nothing, the case is regarded as rheumatic or anything else, until the other symptoms of the infection appear. Therefore, when a wounded man complains of his throat a very guarded prognosis must be made and the patient closely watched, and it is even advisable to give an injection of antitetanic serum merely on the strength of this symptom alone. The increase of the reflexes, when it exists, is one of the most striking characters of tetanus. Babinski's reflex may appear either as a local symptom or as evidence of an increased general nervous irritability. The reflex of the lower jaw is frequently very exaggerated. A symptom of tetanus which has not been heretofore described is an increase of the mechanical excitability of the nerve trunks, such as is met with in tetany. Another fairly common symptom is pain produced by pressure behind the sternocleido muscle in the direction of the transverse apophysis of the cervical vertebra. Such, briefly, are the less known symptoms of tetanus which should never be disregarded, and if noted will put the surgeon on his guard.

MEDICAL NEWS FROM WASHINGTON.

Assignments to Red Cross Base Hospitals.—Vacancies in the Navy Medical Corps.—Status of Medical Officers Under the Compensation Act.—Furloughs for Drafted Medical Students and Hospital Interns.

WASHINGTON, *September 4, 1917.*

Officers of the regular army Medical Corps have been assigned to duty as commanding officers of Red Cross army base hospitals about ready to proceed to France as follows: No. 3, Mount Sinai Hospital, New York, Captain Michael A. Dailey; No. 24, Tulane University, New Orleans, Captain Charles E. McBryer; No. 31, Youngstown (Ohio) Hospital, Captain Adam E. Schlanser; and No. 34, Episcopal Hospital, Philadelphia.

* * * * *

It will be some weeks, and possibly months, before the naval Medical Corps attains a sufficient commissioned personnel to justify the appointment of two additional officers with the rank of rear admiral, because such appointments can be made only upon the strength of the personnel actually in the service. The delay is due to the fact that the newly appointed regular officers are widely scattered, and it will take some time to receive information in Washington of the oaths of office that must be recorded to establish the necessary strength. There are now sixty-eight vacancies in the grade of assistant surgeon in the navy Medical Corps, and examinations of candidates for these places will commence on September 17th at some eighteen stations throughout the country, the candidates being officers of the naval reserves in the grade of assistant surgeon. The papers will be marked by a central board at the Naval Medical School, Washington. Those candidates who are found qualified beyond the number required to fill existing vacancies will be recommended for temporary appointment as assistant surgeons in the navy.

* * * * *

The chairman of the United States Employees' Compensation Commission has announced a decision on the question whether or not an assistant surgeon of the navy, a contract surgeon of the army, a surgeon of the Public Health Service, and several officers of the Medical Reserve Corps of the Army are to be considered as United States medical officers. It is held that if any of the medical officers named are employed on a salary basis by the United States, whether commissioned or under contract, they are to be considered as United States medical officers within the meaning of that term, as used in Section 9 of the Compensation Act of September 7, 1916, but medical officers performing services on a fee basis or receiving no salary from the United States are not considered as United States medical officers within the meaning of the section referred to. Officers who may be classed as United States medical officers under this definition could not make a charge for their services in treating injured civil employees of the United States entitled to the benefits of the Compensation Act. Section 9 of that act provides that reasonable medical, surgical, and hospital services and supplies shall be furnished by United States medical officers and hospitals where practicable. Conferences with representatives from the offices of the surgeons general of the Army, Navy, and Public Health Service have developed the fact that there is no difference of opinion among those branches concerning the conclusion of the commission.

* * * * *

A bill has been introduced by Senator Kirby, of Arkansas, to give the Secretary of War power to grant temporary furloughs without pay to all fourth or senior year medical students and to all such students who would graduate in the regular course of study of their colleges within the next year who have been drafted and accepted for military service under the provisions of the draft act of May 18, 1917, to enable these students to complete their courses of study prescribed for graduation in accordance with the usual procedure of such institutions. It is provided, however, that all medical students shall remain otherwise subject to the provisions of the draft act and shall report upon leaving school before or upon completion of the final year's course of study for service and be assigned to duty either in the regular army or in the Medical Department thereof if their services shall be required and they shall be found fit for service therein. The President has issued regulations that will have the effect of exempting from draft, though continuing them liable for military service, all hospital interns and medical students in the second, third, and fourth years. At the same time, the President indicated that no nation wide rules would be made for the exemption of men in any special industry. It has been settled that the draft will not generally affect labor conditions, and such specialists in vital industries as cannot be spared will be exempted by the local boards. This result, while not wholly satisfactory to the medical profession, is at least a step in the right direction. The argument offered by the schools is that all medical students who are regularly matriculated should be exempted entirely, so as to encourage them to finish their studies rather than to leave the schools and apply for admission to the officers' training camps.

Bacteriology at the Front.—Bacteriological investigation in hospitals of the front line, says Sir W. P. Herringham, C. B., M. D., in the *British Medical Journal,* June 23, 1917, has been a novel feature of this war. Nothing of the kind has been practised in any of our previous campaigns. It has been rendered possible by equipping motor vans as mobile laboratories. The first, which was sent out in October, 1914, had been a pleasure caravan. It was gutted and fitted with incubators and all the other apparatus of bacteriological work, and was followed by many others of the same type. They have been attached to a clearing station or a group of clearing stations, and the officer in charge is provided with a small motorcar, so that he can go to any place in his area where his services may be wanted.

These officers perform three functions: 1. They examine all kinds of morbid products from the hospital wards, and thus aid in the diagnosis of enteric fevers and other epidemic diseases on the medical side, and of the various forms of infection that attack surgical wounds. 2. They examine contacts in cases of infectious fever and search for carriers both among the troops and in the civil population. 3. They investigate new forms of disease that appear among the troops in order to discover their causes and the means of prevention. Instances of the first class of work are the examinations made of the blood and excreta in cases suspected of enteric fever, malaria, or dysentery, and of the cerebrospinal fluid or the nasal mucus where cerebrospinal fever is in question.

The next function of these officers is to discover the source of an infection, and to stop it from spreading. In cases of enteric fever, the work was very elaborate. In the first place, a systematic search was made for recent or chronic carriers among the troops. Thus, in one regiment a carrier was discovered in the regimental kitchen. In another, which had lately received reinforcements, no less than ninety-five men had to be examined before the carrier was found. The source of infection was not always in the troops. The part of Flanders that we held was a hotbed of enteric fever, and many cases were found in the civil population. The search for these was very difficult. In one village cases of enteric fever occurred in three successive formations that were billeted there.

The conditions of warfare made it far less possible to obtain contacts of cerebrospinal fever at the front, where men are constantly moving, than it is at home, where a man may be stationary for weeks. As instances of the examination of new or little known forms of disease, I may mention trench fever, investigated by Captain McNee; spirochetal fever, by Captain Adrian Stokes; gas gun gangrene; and the histology of the prevalent nephritis, by Lieutenant Dunn.

Editorial Notes and Comments

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EDITORS
CHARLES E. DE M. SAJOUS, M.D., LL.D., Sc.D.,
Philadelphia,
SMITH ELY JELLIFFE, A.M., M.D., Ph.D.,
New York.

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DELIBERATE BATTLING WITH SEPTIC WOUNDS.

The war within the war boasts its skilled generals, its tactical leaders. No more interesting outline of plot and counterplot in attack upon an insidious foe can be found than that of Sir Almroth Wright [Colonel Sir Almroth E. Wright; Treatment of War Wounds, *Lancet,* June 23, 1917] in his carefully followed advance upon the microscopic invaders which complete the work that more obvious forces have begun. Step by step he searches out the course of the invading enemy, first in the open area of the simple, superficial wound, discovering their lodging places at the walls of the wound cavities, hunting them as they make their way into the deeper tissues during the delay caused by the inevitable postponement of thorough treatment. At each stage of this search after the enemy the tactics are the extremely reasonable ones of attacking upon their own ground and assisting the natural processes which the microbes themselves call forth. This means laying emphasis upon what Sir Almroth Wright calls the physiological treatment rather than upon antiseptic treatment. Both methods, however, he subjects to the most careful and patient scrutiny, including the minutiæ and completeness of laboratory test and proof side by side with actual clinical experience. By this he knows and presents the rationale for each step in the treatment.

This restricts, as he says in conclusion, to no one routine treatment or category of following out and removing wound infection, but rather bends the energy toward actual individual attack upon each condition which presents itself. He divides the areas to be treated at once into dead spaces and live ones. The former are those in which physiological action is no longer possible and therefore nature's defensive and healing processes cannot take place in throwing off and counteracting the action of the microbes. The first duty therefore is the reducing of all these to active live spaces by evacuating the dead spaces and opening out all buried infections. This naked tissue surface, however, whether left by the missile or the surgeon's knife, must be prevented from becoming dry and thus closed against capillary circulation or from being kept wet with such a solution as would simply allow leucocytic immigration. For the leucocytes in the ensuing struggle with the microbes present would release trypsin, which would in turn serve to feed and thus cause proliferation of the invading microbes. In either case the infection is allowed to spread and produce deep infection in the adjacent tissues. Such a setback must be prevented during the delay of transportation. For this the simple treatment with antiseptic must be so addressed that an outflow of lymph shall be stimulated and at the same time the emigration of leucocytes be checked to prevent the corruption of the wound by the setting free of trypsin. This the writer finds can be accomplished by frequent washing, according to the Carrel procedure, by a hypertonic salt solution. He proves this by his accompanying experiments fulfilling necessary conditions—keeping the wound wet and at the same time preventing the walls of the wound from becoming unwholesome to the leucocytes which have later their work to perform.

Remedial treatment, which succeeds transportation and the possible setback, demands first the obtaining of a clean surface, deep as well as superficial. Here again the physiological action is foremost, the establishment of a cleansing digestion. Hypertonic salt solution is again utilized on the one hand to stimulate the lymph stream and on the other to hasten the separation of dead from living tissue by breaking down leucocytes and setting free trypsin. The next step is to discover whether there is a buried infection or only a superficial wound. In the latter case the wound may be closed and simply kept under supervision to know that no deeper infection has after all developed. When deeper infection is plainly established or is practically certain from the history of the case, the procedure must be directed toward calling out the combative leucocytes and the restraint of the lymph flow which would serve as a medium of growth over the entire surface of the wound. Here physiological salt solution is required or zinc sulphate in 0.25 per cent. solution, or possibly some other solution. The essential point is to keep the surface free from any decomposing leucocytes in order to maintain the antitryptic power of the discharges.

Carrel's method of procedure with a partial use of Dakin's fluid the author considers such a combination of a partial antisepsis and physiological treatment which is his method of attack. It is the extreme watchfulness of his technic with readiness to alter the procedure with each change in conditions and the activity of the microscopic enemy dependent upon these that mark the reasonableness and the skillfulness of the treatment. Only a brief recognition of the value of this study can be thus recorded here. It upholds a method practically adjustable in every detail to the actual conditions in the surgery of war wounds and to the cooperation with nature in their treatment. The address deserves and needs close study to appreciate the remarkable unfolding of each step in all its clearness.

THE ETIOLOGY OF SUBACUTE TYPHOID SEPTICEMIA.

There should undoubtedly be a reason, or rather, perhaps, several reasons, why at certain times Eberth's bacillus gives rise to typhoid fever and at others to a pure septicemia. Two principal factors, which for that matter are to be found in the etiology of all human affections, preside over the genesis of the Eberthian process, viz.: predisposition and fatigue.

Eberth's bacillus is always with us. Although it is often ingested with the food, it does not necessarily result in typhoid infection, and even if typhoid should develop the intensity of the process and the manner of reaction will differ in one subject and another, even when the disease has been contracted from the same source. Therefore, it is evident that that which is symbolized as predisposition here plays a part. The fatigue factors must be understood in the most general sense. As Kelsch has rightly said, one can cultivate Eberth's bacillus when one wishes, and particularly is this the case in physical exhaustion. This condition must not be taken in a restricted sense, because by physical exhaustion we mean the result of physical and psychical activity carried beyond the limit of endurance in a given individual. When the cell resistance is forced beyond its natural limits, which should be very definite, physical exhaustion is created. For this reason it is perfectly natural that a typhoid should develop preferably among soldiers, in persons who indulge immoderately in alcohol or sexuality, and in those who overtax their cerebral functions.

Predisposition and physical exhaustion are again discovered in the special etiology of the various types of typhoid infection. There are, in fact, certain organs which, from heredity, idiosyncrasy, or an acquired pathological taint, are more prone to infection. For example, a patient who had a submaxillary tuberculous adenitis acquired typhoid and during convalescence an acute adenitis developed in the tuberculous lymph node. After incision, cultures of the pus revealed Eberth's bacillus in a pure state. The very frequent occurrence of typhoid in adolescents and adults and its relative infrequency in children prove, it would seem, the predisposition of the intestine when too much work is put upon it from overindulgence at the table, and it must be admitted that the gut is most ill used either from the abuse of food and alcohol or the imposing bacterial flora it contains.

As clinical evidence shows, beside the intestinal localization of typhoid, there is an entire series of diseases which does not offer any anatomical substratum. These are the pure septicemias, among which the subacute type merely represents a degree. In this process no organ is involved, and, as modern pathogenesis shows, a lethal septicemia of a pure type is explained experimentally by the injection of a very virulent organism and clinically by the same virulence, in which autopsy does not reveal the slightest lesion in Peyer's patches. A pure subacute septicemia of moderate intensity is due to a germ having an attenuated virulence, to the infection taking place in a partially immune organism, or to the infection invading a soil free from any pathological taint. In the latter case the septicemia assumes the subacute type when otherwise it would probably have been acute, even superacute, had these subjects been pathologically tainted.

All things considered, it may be said that subacute typhoid septicemia is distinctly differentiated from the clinical standpoint as well as from the etiological view. The two great factors which here come into play are the germ and the soil. A patient acquires a pure typhoid septicemia because his viscera, particularly the intestine, are perfectly normal and therefore offer no nidus for the specific organism. Therefore, the typhoid bacillus remains in the general circulation and only produces a general disease. The type of septicemia to which it gives rise is usually subacute, although if the bacillus possesses a high degree of virulence, an acute or even a superacute process results.

ECONOMY IN PRESCRIBING.

It does not perhaps occur immediately to our colleagues that we can join in the nation wide conservation of resources in our daily business. We are apt to regard approvingly the campaign against food pirates and applaud the efforts constantly being made to bring the prices of foodstuffs down, at the same time raving mildly against the moral obliquity uncovered. But that we can help in this campaign does not appear so obvious. "I cannot," says the general practitioner, "do much more charity work than I do at present. My fees are fixed by a rigid custom, and are certainly none too high. I am always ready to advocate less eating and drinking—and I must write prescriptions if I am going to treat disease."

We admit cheerfully all this, but it is in the last phrase that we find the vulnerable point of attack. To be sure, in spite of Christian Scientists, chiropractics, and all the vast and greasy swarm of the pseudoscientists, we still need drugs. To our mind there is nothing more fascinating in medicine than the spectacle of the skilled internist bringing all the modern diagnostic aids to bear upon the diseased human organism, searching out the failures to function and prescribing thoughtfully, intelligently. But there is another side of the picture. Rare, expensive drugs are prescribed whose therapeutic value has been disproved. There are instances of eight ounces of a costly preparation being written for and only two ounces used, and so on. Our readers who have been following Doctor Sajous's articles in the Journal on inexpensive drugs have already had their minds turned in the right direction; those who have not are advised to turn to them and learn how much can be done along these lines.

Let us merely call attention to a point which we may have heard mentioned in our student days, perhaps put into practice a few times in the early days of our practice and then neglected entirely, that is, the quantity of a drug prescribed. For example, we have to write a prescription for pain and insomnia of which we do not intend or expect that more than one or two doses will ever be taken. From force of habit we write for a four ounce mixture, directing, "One teaspoonful, repeat if necessary." Thus either fifteen sixteenths of the mixture goes to waste or, just as bad, the patient, having the mixture, uses it when it is not really necessary. Every physician knows, furthermore, that the tendency for a patient to allow partly used prescriptions to collect in his medicine closet is productive of harm. It leads to attempts at lay prescribing, mistakes in dispensing, and similar evils. Let us then not get a four ounce or a six ounce habit, but the habit of estimating how much of a given remedy the patient is likely to need or take, and ordering only that amount.

There are many other ways by which the physician can economize in his prescribing, methods which seem trivial and penny pinching enough, but which when multiplied by 140,000 give a real saving of the nation's resources. For example, the doctor can make a point of learning what the pharmacist charges and if he is extortionate or dishonest can discourage his patients from patronizing him. He can order medicines prepared in the least expensive way and he can refuse to cater to the whims of the neurasthenic who is prone to imagine that his medicine is more powerful if at least a dollar is charged for making it up.

In all these and a hundred other ways which will occur to the ingenious, the physician can help the country. Let us disabuse the public mind of the idea that illness is necessarily a time for great expense. We have too long seen the mental attitude which makes the family call in the best doctor and "hang the expense" and then when the patient has recovered make this best doctor wait months for his bill—a bill based very properly on his skill. It has been considered a sordid affair to count the pennies when there is illness—a messenger is sent for medicine, a taxicab even is used, sickroom supplies are bought recklessly for an illness which may last only a few days, and other extravagant things are done. The physician, by a display of tact and judgment, can curb this folly and hold expenses down to a minimum. By so doing he will incur the gratitude of the family when they have become reasonable again and he will be doing his bit in the conservation of resources.

THE INDEPENDENCE OF ORGANS.

The working of any one organ of the body depends on the integrity of all the rest, and these must indeed attain a certain standard or the organ which depends on them for support will suffer. The degree, however, to which an organ may be diseased and still do its part acceptably is truly astonishing, and the degree of seeming independence of an organ when supported by crippled ones is as remarkable.

The composer Weber, knowing himself a dying man from lung disease, wrote his finest work in his last half year and directed its performance two months before the rapid close of his career. The autopsy disclosed his lungs "literally riddled with tubercles." Beethoven, with a liver shrunken to half its normal dimensions and with his belly full of fluid, was freer in fancy than in his healthier days, and planned his greatest works toward the close of his life. Athletes suffering from heart leakage or from tuberculosis go daily through their accustomed stunts until near death's door. Men like Münsterberg, apparently doing the best of work, die suddenly from the failing of organs long incapable of normal strain and finally unable to keep pace with their fellows. That an organ can do fairly good work for so long and can hold its place in the system, is due in part to that wonderful scheme of nature in building each organ to meet emergencies, and on the other hand doubtless to the ability of organs to adjust themselves in some degree to the failures of their fellows.

With lungs thoroughly diseased or with liver quite deranged, it can hardly be that the blood to the other organs is normal, and if not they must have some means of selfprotection. With such a compensating arrangement we can have little to do voluntarily. We can, however, help to maintain the healthy organs of the body on an emergency basis by giving each its due exercise from day to day and by putting none of them to undue stress unnecessarily. An organism in which the power of compensation of all the organs is maintained can safely be expected to run to a good old age and then go to pieces like the one hoss shay, and not, as is so often the case, break down midway of its course from having to run on one wheel instead of on two.

CONSERVATION OF FOOD.

It has become proverbial that an American family wastes enough for a French family to live upon. Whether this is true or not, the French undoubtedly have not needed the lessons of the war to teach them frugality. It has been otherwise, however, with the English. The English workingman does not take kindly to interference with his private life, and hence their economies have been rather ungracefully accepted. Among them are the bread order, the tea order, the price of milk order, and many others. That these restrictions are real and not nominal is clearly evident in a recent case where an English householder was prosecuted because scraps of bread were found in the dustbin. To the typical American, extravagant and taking little heed of domestic details, this will seem a case of economy carried to the point of absurdity. To the before the war Briton it would have seemed an unwarranted meddling with his private affairs. Looking at it in a more reasonable light, however, we can find no fault in it. A nation at war to defend its very existence must be united in every respect. Nowadays great wars are apt to be decided in less spectacular ways than in the thunder of artillery and the charge of cavalry. The nation which can so husband its own resources that its people have enough to eat and at the same time harass the enemy's source of supply so that his people feel the pinch of want, stands a good chance of winning on that ground alone, for a people who feel privation are apt to bring pressure to bear upon their rulers to end a war which is causing their misery, even if it cannot be ended gloriously.

Each citizen, then, who is making the most of his food supply, living on as little as possible and wasting nothing, is doing his part to win the war. The citizen who wastes the food supply ever so little is a traitor. It makes no difference that he himself can afford to do it. Each such instance of waste detracts so much from the country's resources. Multiply one case by a hundred, a thousand, or a million and you have a real weakening of the nation. It would be as if a prizefighter tried to go on in a ring with a little venal bleeding away somewhere in his body exhausting his vitality. Looked at in that way, a prosecution for wasting bread does not seem an absurdity; it is the height of economy, indeed, but it sets a good example, an example which if followed throughout the land, will go far toward winning the war.

THE TYRANNY OF THE TEASPOON.

One of those active in the organization of the American Metric Association, Dr. H. V. Arny, of Columbia University School of Pharmacy, has observed, in a paper read before the American Pharmaceutical Association, that the adherence to the drop and teaspoonful dose is an important factor in preventing the general adoption of the metric system by physicians. The teaspoon is a most uncertain measure of quantity, the domestic article holding anywhere from 3.8 to 7.8 mils. Although the American Pharmaceutical Association and the Section in Pharmacy, Materia Medica, and Therapeutics of the American Medical Association adopted resolutions in 1902 and 1903 respectively declaring that a teaspoonful equals five c. c., the U. S. Pharmacopœia asserts that four c. c. is equivalent to a teaspoonful. In France, the teaspoon is fairly uniform in size and holds five mils. Since the number five fits in well with the centesimal system used in the metric measures, it is much to be hoped that this standard will be adopted here also, as it will greatly facilitate the task of writing prescriptions in the metric system.

FALSUS IN UNO, FALSUS IN OMNIBUS.

A resident of the Bronx has been indicted by the grand jury on the charge of having manufactured and sold a spurious salvarsan. The inspectors of the Board of Health of the City of New York had their suspicions aroused on June 20th of this year by the appearance in the hands of drug brokers of neosalvarsan offered from unidentified sources. Singularly enough, while the genuine article was being sold by the manufacturers at $4.50 a tube, the spurious sold readily at $9. The imitation, as to label, package, and contents, is excellent. The first lot consisted of sodium chloride, which was given the necessary yellowish tinge by the addition of an iron salt. Later lots contained some arsenic. Of course, the fraud could be detected by a competent analyst, but aside from this the weak point in the package was the use of a tin container painted to resemble aluminum. The genuine is put up in an aluminum container. While collecting evidence on this fraud the inspector of the department stumbled upon a veritable diploma mill, where diplomas for doctors of medicine and doctors of dental surgery were prepared to order and sold for prices as high as $1,500. More complete details of the operations of this diploma mill will be given in a later issue of the JOURNAL.

News Items

Scientific Assistant in Public Health Work.—On October 2d the United States Civil Service Commission will hold an examination for scientific assistant in public health work, open to men only. For full particulars address the United States Civil Service Commission, Washington.

To Standardize Hospitals.—The American College of Surgeons has established a fund of $500,000 for the purpose of conducting a ten year investigation of the hospitals of this country. A national board of physicians and surgeons has been appointed to carry on this work of standardizing hospitals.

Personal.—Dr. Hans Zinsser, professor of bacteriology at the College of Physicians and Surgeons, Columbia University, will deliver the opening address for the academic year on Wednesday, September 26th, at 10:30 a. m., in the lower lecture room of the college, his subject being Medicine, the Great Opportunity.

New Home for Chicago Lying-In Hospital.—The new home of the Chicago Lying-In Hospital, to be known as the James Hobart Moore Memorial, was opened on July 28th. It is a seven story fireproof structure, well equipped with all modern appliances, and with accommodations for 120 patients. Mrs. James Hobart Moore contributed $100,000 to the building fund.

Civil Service Examinations.—Among the positions for which examinations will be held on October 6th by the New York State Civil Service Commission are those of medical assistant in the office of the District Attorney of the County of Kings and assistant superintendent of the State Custodial Asylum for Feebleminded Women, Newark, N. Y. For full particulars and the proper application blanks address the State Civil Service Commission, Albany, N. Y.

New York Postgraduate Hospital in Europe.—The New York Postgraduate Base Hospital No. 8, with Major Samuel Lloyd as medical director, sailed some weeks ago on the *Saratoga*, but was compelled to reembark on account of that vessel having been rammed in New York harbor by the transport *Panama*. The surgeons, physicians, nurses, and stenographers of this unit lost all of their personal belongings except the clothing they wore at the time. Cables have been received showing that the unit landed in France on September 4th.

Surgeons Wanted in the Public Health Service.—The United States Civil Service Commission announces an examination, open to men only, to fill the position of acting assistant surgeons in the Public Health Service. On account of the urgent needs of the service applications will be received at any time. Surgeons are also wanted in the Coast and Geodetic Survey. For full particulars address the Civil Service Commission, Washington, D. C.

Suicides in New York.—A decrease in the number of suicides for last year compared with an increase in the first two years of the war is shown in a report issued by Dr. Shirley Wynne, Health Department statistician. According to the report, 836 persons committed suicide in New York city last year. This was against 958, in 1915; 935, in 1914; 854, in 1913, and 802, in 1912. The report further stated that the largest number of persons who took their lives were of German birth. Next in proportion came Austrians, and Russians were third.

Gifts and Bequests to Hospitals.—The residuary estate of Julian A. Hellman, who died in New York August 27th last leaving more than $150,000, is bequeathed by his will to the Mount Sinai Hospital, for research work in discovering a cancer cure. The value of the bequest has not been estimated.

By the will of Charles W. West, filed for probate in Brooklyn on August 10th, the bulk of an estate believed to exceed $100,000 will be given to the Long Island College Hospital for research in medicine and surgery.

Civil Service Examination for Pathologist.—The United States Civil Service Commission announces an examination for pathologist, open to men only, on October 3d. There is a vacancy in this position in Freedman's Hospital, Washington, D. C., at a salary of $2,400. Applicants must show that they have had at least one year's experience in a pathological laboratory after graduating from a medical college of recognized standing and that they are able to make all kinds of pathological examinations and report thereon. Candidates should apply at once for Form 1312.

The James Buchanan Brady Foundation of Urology.—Following a settlement of the contest of the will of Mr. Brady, who died last February leaving a large share of his $3,000,000 estate to charity, plans have been announced for the James Buchanan Brady Foundation of Urology which is to be established in connection with the New York Hospital. The work of the foundation will be carried on temporarily in the laboratories of the hospital, but the trustees plan to erect a new building in the near future, costing about $500,000, in which there will be chemical, physical, pathological, and bacteriological departments. The foundation will be under the direction of Dr. Oswald S. Lowsley.

Physicians Wanted in the Indian and Panama Canal Services.—The United States Civil Service Commission announces an examination, open to men only, to fill the position of physician in the Indian and Panama Canal Services. Entrance salaries in the Indian Service range from $1,000 to $1,200 a year and in the Panama Canal Service, $1,800 a year. Candidates will not be required to report for examination at any place, but will be rated on physical ability, education, training, and experience. Additional credit will be given to physicians who have had special training in tropical medicine. For full particulars communicate with the United States Civil Service Commission, Washington, D. C.

Nearly 14,000 Medical Officers in the Army.—There are now more than 13,900 officers engaged in the work of the Medical Department of the Army, including regular army officers and the four officers' reserve corps—medical, dental, veterinary, and sanitary—connected with the work under Surgeon General Gorgas. It is estimated that at least 24,000 physicians will be included in the personnel of the department when full strength is reached. Every step in caring for the physical welfare of the soldiers from the time they are sworn into service until they are discharged comes under the Medical Department. In this work is included inspection of foods to be served soldiers, sanitation, care of the sick and wounded, the operation of field, base, and convalescent hospitals, "reeducation" of the permanently crippled, handling the supplies for all this work, etc. The total number of hospital beds will be on a basis of twenty-five per cent. of the strength of the army.

Epidemics in Germany.—According to press despatches, the Swiss sanitary authorities at Basel and all along the German frontier are taking measures to prevent dysentery, typhus, and scarlatina, which are prevalent in Germany, from entering Switzerland. All travelers coming from Germany are required to undergo medical examination and neutrals crossing the frontier into Germany from Switzerland are warned to take precautions. Official reports show that in Prussia during one week in August there were 3,806 cases of dysentery, with 339 deaths.

Little Pure Zinc Oxide on the Market.—Examinations made by the Bureau of Chemistry of the United States Department of Agriculture show that very little zinc oxide on the market in the United States complies with the standards of the U S. Pharmacopœia. Nearly all of the samples examined contained an excessive amount of lead. A limited supply of U. S. P. zinc oxide is available and physicians may protect themselves and their patients from possible injury by calling for U. S. P. material on their prescriptions.

An Infant Welfare Unit Sent to France.—Dr. William P. Lucas, professor of pediatrics at the University of California, is at the head of a group of specialists in infant welfare which has been sent to France by the American Red Cross. Associated with him are Dr. J. Morris Slemons, of the Yale Medical School; Dr. Julius Parker Sedgwick, of the University of Minnesota; Dr. John C. Baldwin, of Pittsburgh, specialist in diseases of children; Dr. Clain F. Gelston, Doctor Lucas' assistant at the University of California; Dr. N. O. Pearce, of Cloverton, Minn., and a number of experts in sociology and child welfare work. They will survey the situation, studying the work already being done by the French, and will carry on a general educational campaign among French mothers in the interest of better prenatal hygiene and scientific feeding and care of the babies. Special efforts will be made to protect children from tuberculous infection.

Federal Child Labor Law Unconstitutional.—This law, which was scheduled to go into effect on September 1st, has been declared unconstitutional. Under its terms no child under fourteen years of age may work in any factory, mill, workship, or cannery whose products are subject to regulation by Congress under the interstate commerce clause of the constitution. The law also prohibits the employment of children under fifteen longer than eight hours a day, and they may not be employed between seven o'clock at night and six o'clock in the morning. Children must be more than sixteen years old to work in mines or quarries. According to press dispatches, Federal Judge James E. Boyd, sitting at Greensboro, N. C., decided that the law was unconstitutional on the ground that Congress had exceeded its powers under the interstate commerce clause of the constitution, and that under the fifth amendment a parent has the right to the services of his child, and the child has the right to work for his support.

American Pharmaceutical Association.—The sixty-fifth annual meeting of this association was held at the Claypool Hotel, Indianapolis, August 28th to September 1st. The president, Professor Frederick J. Wulling, dean of the College of Pharmacy of the University of Minnesota, in his annual address, urged the organization of a central body to represent all phases of pharmacy. The meeting was well attended and much matter of technical interest was presented and discussed. Resolutions were adopted favoring the Edmonds bill, which provides for the formation of a corps of pharmacists in the army, with commissioned rank. The following were named as nominees for the presidency, to be voted for by mail: Professor J. A. Koch, of the Pittsburgh College of Pharmacy; Professor Charles H. Lawall, of the Philadelphia College of Pharmacy, and Mr. Leonard Seltzer, of Detroit. Mr. Charles Holtzhauer, of New York, the president-elect, was installed at the close of the Indianapolis meeting and will preside until the close of the next meeting, which will be held in Chicago on a date to be determined by the council of the association. Mr. W. L. De Woody, of Pine Bluff, Ark., was elected honorary president, and the following officers were reelected: Professor W. B. Day, of Chicago University, secretary; Dr. H. Whelpley, of the St. Louis College of Pharmacy, treasurer, and Prof. E. G. Eberle, of Philadelphia, editor.

Five Hundred Thousand Dollar Gift to Red Cross.—The gift of $500,000 from the Ford Motor Company, of Detroit, Mich., to the American Red Cross is announced by the Red Cross war council. This gift is in the form of a credit on the Ford factories for half a million dollars' worth of automobiles, ambulances, parts, etc., as the Red Cross may designate. With the responsibilities assumed by the Red Cross for the support of the American Ambulance in France, the Ford gift is particularly valuable. Despite the large number of ambulances in service on the western front, many more are needed. Reports that no more machines were being accepted for this theatre of war are without foundation.

County Tuberculosis Hospitals.—Passed as a war measure so that the State will be prepared to treat all cases of tuberculosis discovered in examining men drafted for the army or who are found in the army itself, an amendment to the County Tuberculosis Hospital Law was enacted at the recent session of the New York State Legislature which provides for the establishment of a county hospital for tuberculosis in every county in the State containing a population of 35,000 or more. The new law affects twenty counties, eight of which had previously taken various steps leading to the erection of a hospital, but had not yet let contracts. The full text of the amendment appears in the September 1st issue of the *Weekly Bulletin* of the Department of Health of the City of New York.

The Board of Health to Regulate Private Laboratories.—In accordance with Section 105, recently added to the Sanitary Code of New York, no laboratory offering facilities for the diagnosis of communicable diseases shall be conducted or maintained in the city of New York without a permit therefor issued by the Board of Health or otherwise than in accordance with the regulations of said board. The regulations provide that the person in charge of such a laboratory be a duly licensed physician or a person whose qualifications are satisfactory to the Department of Health. All the specimens received must be properly numbered and so designated as to definitely establish their identity. A record must be kept showing the number and date of receipt of each specimen, the name of the physician submitting the specimen, the result of the test, and the name of the person to whom the report of the test was forwarded. In addition to this the regulations provide for adequate equipment and for the employment of approved methods. Applications for permits to conduct and maintain such laboratories shall be made by the person in charge of the laboratory on official blanks furnished by the Department of Health.

Suicide Mortality Among Wage Earners in the United States.—The Metropolitan Life Insurance Company has completed a study of suicide as a cause of death among the industrial policyholders of the company. According to this study there has been a marked decrease in the death rate from suicide during the last few years. Among four million insured white males the number of suicides in 1916 was 620, or 15.3 per 100,000. In 1915 the rate was 19.6 per 100,000. The most frequent form of suicide among these white males was by firearms, thirty-one per cent. Among nearly five million white female policyholders there were 308 suicides in 1916, or 6.3 deaths per 100,000 insured. In 1915 the rate was 7.5 per 100,000. Poisoning was the most usual method of suicide among the white females—more than one third having been so accomplished.

The death rate from suicide among negro males is a little over one half as high as among white males. In 1916 the rate was 8.2 per 100,000 insured. Negro females show the very lowest rates of any of the groups studied. The rate was 3.4 per 100,000 in 1916, the total number of suicides being only 22 among over 650,000 insured colored women.

The figures show that suicide is more than twice as frequent as a cause of death among males than among females. This is true at all periods of life except at the ages of fifteen to nineteen years. The same conditions are found to prevail among the white and the colored races. After early adolescence, the white female suicide rate remains practically stationary, never varying very much from about 11 per 100,000. On the other hand, the white male suicide rate increases with each age period. The rate is highest at the ages sixty-five to seventy-four, when it is over 80 per 100,000. Suicide is then nearly five times as prevalent as at the age period of twenty to twenty-four.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

THE TREATMENT OF PERNICIOUS ANEMIA.

By Louis T. de M. Sajous, B. S., M. D.,
Philadelphia.

The possibility that arsenic may yield benefit in pernicious anemia by hindering blood destruction through hemolytic agencies was pointed out in the preceding issue, this view having recently acquired appreciable support from Hill's experiments and clinical observations. The more classic view of the action of arsenic in this disease, however, is that of bone marrow stimulation.

While Stockman and Greig, 1903, observed in normal animals no change in the red cell count or hemoglobin percentage upon giving arsenic, they did notice increased vascularity in the bone marrow, with an augmented number of red cells and a reduction in fat cells in the narrow tissues. Charteris, 1903, on the other hand, noticed little if any change in the red cells. In the presence of anemia, the drug seems to produce a more vigorous effect, von Hoesslin, 1913, for example, finding in most instances a tendency to return of the subnormal red cell count and hemoglobin to normal. In a general way, however, the action of arsenic on the marrow appears rather uncertain. It should be borne in mind that in the average subject with pernicious anemia the bone marrow is already in a state of hyperactivity owing to the abnormal demands made on it through hemolysis. Any stimulant effect exerted on the marrow, therefore, may be merely superimposed upon a preexisting excitation, with corresponding reduction in the net results. According to C. E. de M. Sajous, who deems the hemolysis of pernicious anemia the result of an excessive defensive reaction of the body against circulating toxic material, the benefit from arsenic is due to its lowering the activity of the organs having to do with the defensive reaction, viz., those of the adrenal system.

For the oral administration of arsenic, Fowler's solution remains the favorite preparation. Recent opinion favors rather large doses, the initial dose of three minims, given two or three times a day, being augmented daily by two or three minim increments up to an ultimate dose as large as twenty or even thirty minims, providing the well known signs of beginning arsenic poisoning have not in the meantime supervened. If untoward effects appear before the maximum dose intended is reached, as is usually the case, the drug is discontinued, to be resumed in smaller dose after the toxic symptoms have disappeared. If, on the other hand, no untoward effects occur, the maximum dose may be continued for two or more weeks or indefinitely and the amount then gradually reduced; or the process of dose reduction may be begun as soon as the intended maximum amount has been attained. W. H. Wilcox, 1913, recommends that when the blood has returned nearly to normal Fowler's solution should be continued for a time in three minim doses thrice daily, to be replaced later by a pill containing 0.025 grain of arsenic taken twice daily in alternate weeks for some months.

Giving the arsenic in a rather high dose may seem especially desirable from the standpoint of the antihemolytic view of the action of this drug in pernicious anemia, sponsored by Gunn, Feltham, and Hill. Thus, while Gunn, 1908, observed protection of red cells from hypotonic hemolysis *in vitro* in the presence of an arsenical solution as weak as one in 400,000, a 1/12 grain dose of arsenic taken by mouth, if all absorbed, would afford, according to his calculations, but one in 1,000,000 of arsenic in the blood. Thus, at least 0.2 grain of arsenic, if taken in a single dose, would be required to raise the arsenic content of the blood up to the level of an antihemolytic action. It should not be forgotten, however, that arsenic is used clinically in continuously repeated rather than single doses and that it is but very slowly eliminated, being stored for a time in the tissues. While arsenic introduced in the blood stream rapidly disappears from it, and one would not expect an antihemolytic amount of arsenic to persist in the blood plasma from even repeated administration of small doses, this perhaps does not apply to the red cells themselves, for, according to Gunn, arsenic seems to attach itself so rapidly and firmly to these cells that "it is probable that the drug is largely taken up by them." At all events, it is interesting to note that in Hill's clinical experiment with Fowler's solution, in which, as mentioned in the preceding issue, a definite increase in resistance of the red cells to hemolysis was found after ten days of treatment, the dose had in that time been carried up to thirty-six drops a day.

(*To be continued.*)

Treatment of Asthma.—W. S. Syme (*British Medical Journal*, June 30, 1917) states it as his experience that the usual endonasal methods of treating bronchial asthma frequently fail to give relief, probably owing to the presence of other provoking factors, especially changes in the sensitiveness of portions of the bronchial mucosa. Eight patients have been cured by the local application of ten per cent. solution of silver nitrate to the bronchial mucosa at and in the region of the bifurcations into the secondary bronchi. The application is made with the aid of the bronchoscope passed under local anesthesia. Immediately after the application there is a brisk reaction with somewhat labored breathing which keeps the patient in bed for a few days. The treatment may have to be repeated from two to four times, though a single application may be curative. The application of silver nitrate seems to act by diminishing the sensitiveness of the mucosa and thereby breaking one of the essential links in the productive mechanism of bronchial asthma.

Treatment of Bronchial Spirochetosis.—Aldo Castellani (*Presse médicale,* July 5, 1917) asserts that this condition, due to the Spirochæta bronchialis, so termed by himself, is less uncommon in Europe than is generally thought. The disease occurs in acute, chronic, and intermediate forms, may be complicated by lobar or bronchopneumonia, and is diagnosed by examining with the ultramicroscope sputum obtained after rinsing out the mouth and gargling with sterile water. The treatment consists in the administration of arsenic or antimony or both. Antimony may be given thus:

℞ Antimonii et potassii tartratis, . . . 0.1 to 0.2 gram;
Syrupi tolutani, ... 50 grams;
Aquæ chloroformi, ... 100 grams.
M. Sig.: One tablespoonful in water four to six times a day.

The chloroform water serves to prevent emesis. In a few instances, addition of codeine in the same amount as the tartar emetic is useful. In other cases, potassium or sodium iodide may be added with advantage:

℞ Antimonii et potassii tartratis, . . . 0.1 to 0.2 gram;
Potassii iodidi, ... 2 to 4 grams;
Sodii bicarbonatis, ... 3 grams;
Glycerini, ... 30 grams;
Syrupi tolutani, ... 20 grams;
Aquæ chloroformi, ... 100 grams.
M. Sig.: One tablespoonful in water three to six times a day.

With the above specific treatment may be combined balsamics where expectoration is copious and glycerophosphates in chronic forms with loss of weight and marked general weakness.

Limitations of Vaccine Treatment.—Robert J. Rowlette (*Lancet,* June 30, 1917) points out that the place of vaccines in preventive treatment has been definitely established for the enteric group and while not so uniformly effective, they have a considerable degree of usefulness in immunizing against the recurrent catarrhs. In the latter instance we are dealing with a mixed infection and it is necessary to use a mixed vaccine in the hope of including the chief causative organism. In cases due to the influenza bacillus immunization is not promising, since these organisms do not normally confer an effective immunity. From the therapeutic aspect the problem of the value and limitations of vaccines is an altogether different one and several facts must be borne in mind if intelligent use is to be made of them. In the first place, they are not specifically curative in the sense that quinine is in malaria. They are merely aids for the stimulation of the body's natural defences. The best results from their use can be expected only when the body has not lost its natural power of resisting infection and in cases without much tissue change. Their use is limited further by the fact that it is absolutely essential to make an accurate diagnosis of the specific organism responsible for the infection. They are in general of service in every case of bacterial infection in which the causative organism can be isolated, whether acute or chronic, general or localized, so long as there is evidence that the natural resistance has not been exhausted. In every case they should be used in conjunction with all other accepted methods of treatment, medical or surgical or both.

Treatment of Aneurysms at the Root of the Thigh.—Potherat (*Presse médicale,* June 21, 1917) deems it unnecessary to resort in these cases to preliminary elastic compression with the Esmarch band or by Momburg's method. The blood flow can always be arrested beforehand by passing a strand of catgut beneath the vessels and having an assistant exert moderate upward traction on it. In none of his cases, whether of spontaneous or traumatic aneurysm, did gangrene follow quadruple ligation of the femoral artery and vein above and below the aneurysm, with extirpation of the latter. Even in a large pathological aneurysm, with removal of seventeen centimetres of the external iliac artery and of the femoral trunk, superficial as well as deep, not the least circulatory difficulty followed—probably in this case because the aneurysm was of about ten years' standing. Much delay in operating on aneurysms, especially in war practice, is inadvisable, for as time passes the aneurysm extends, and increasingly firm adhesions with the collateral veins, nerves, and neighboring organs or tissues become established, rendering dissection difficult. In fact, the operation should be performed at the earliest possible moment whenever absence of infection permits.

A Modification of Evisceration of the Eyeball.—T. J. Dimitry (*Southern Medical Journal,* July, 1917) proposes a modification of the ordinary operation for evisceration of the eyeball which, he states, eliminates many of the unsurgical principles adhered to in the simple enucleation or evisceration. After freeing the conjunctiva at the corneoscleral margin and undermining it for a distance great enough to provide for a sliding covering for the eye, the anterior quarter of the globe, with the cornea and ciliary region, is cut away, the incision being started with a knife and completed with scissors. A little V shaped piece of sclera is then cut out above and below so as to provide for better opposition of the sides and preventing puckering when the sclera is sewed up. The contents of the globe are then removed and the sclera freed from all traces of the uvea, as in evisceration, and hemorrhage is stopped by hot water and pressure. The speculum is then inserted so as to hold the lids and the edges of the scleral wound open. The posterior section of the sclera is seized with toothed forceps and a section made with scissors or knife about at least a fourth of the posterior end of the globe to which the optic nerve is attached. This flap is raised and the optic nerve cut. Hemorrhage is again controlled and the sclera sewed up, eliminating the dead spaces ignored in the simple operation. The suture is inserted into the conjunctiva two to four millimetres back of the severed edge, passed from within through the anterior edge of the sclera, made to enter again through the posterior end, passing to the outside, brought out at the anterior end catching up the conjunctiva, and is then tied. This single thread brings the walls together, though more than one may be inserted if necessary. The sutures are usually removed on the third or fourth day. The reaction is not greater than that which follows simple enucleation, and the prosthesis may be inserted in from seven to ten days.

New Method of Treating Flagellate Infection of the Intestines.—H. L. McNeil (*Southern Medical Journal,* July, 1917) recommends irrigation of the duodenum with the following solution:

℞ Methylene blue (med. pur.), ...gr. v;
Quinine sulphate, ...gr. xx;
Hydrochloric acid (conc.), ...♏xxx;
Aquæ destillatæ, q. s. ad, ...℥i.

This solution is projected directly into the duodenum through a duodenal tube to which a funnel is attached. Any form of duodenal tube will do, but it is better to have one with a small tip. The fluid is injected warm, and about ten minutes are required for the injection. As a preliminary it is advisable to keep the patient upon a liquid or semiliquid diet for two days, and to administer a saline purgative the night preceding the injection. An injection is given daily for three mornings, the last two in an adult being of double quantity. On the evening of each day an enema of methylene blue is given high up into the colon. After three such treatments the patient is allowed to go about his business and is requested to return at the end of a month for examination of his stools for parasites. This treatment has proved efficacious in four cases: three of trichonomas and one of lamblia intestinalis. A number of other patients failed to report for examination. The writer states that there is absolutely no danger to the patient from these injections.

Treatment of Pneumonia in Early Life.—L. R. DeBuys (*New Orleans Medical and Surgical Journal,* August, 1917) gives as his general plan in the treatment of pneumonia rest, proper nourishment, an adequate supply of oxygen, counterirritation, uniform temperature to the thorax, and judicious medication, the plan to be modified to meet the requirements of each individual case. Rest lessens combustion in the body, decreases the demand for oxygen, lessens the respiratory rate, diminishes the heart's action, spares the cardiac muscle, and decreases the demand for food. Carbohydrate foods are the least apt to cause additional symptoms, are easily digested, spare protein waste, and supply the needed amount of calories. Fresh air is essential, and sunlight is beneficial to all pneumonias; it is the practice of the writer to employ oxygen from the start in all cases. He finds that a tank of 250 pounds pressure will last about fifteen days if properly administered. His plan is to give it for ten minutes every hour; he allows three bubbles to the second to pass through the water bottle, the cone to be held near the patient's face, but not over the nose and mouth. His experience is that by assisting in shortening the duration of the illness and thus its cost, the oxygen does not prove an expensive remedy. For counterirritation he prefers a mixture of olive oil and turpentine applied to the chest, which is then covered by a woolen undershirt and an oiled silk jacket; this maintains a uniform temperature. Most cases of pneumonia are overmedicated. A calomel purge is usually of advantage at the onset. During the stage of congestion alkalies are of benefit, particularly the aromatic spirits of ammonia, and many cases, especially of lobar pneumonia, need no other medication. Creosote is indicated in bronchopneumonia. When there is much bronchitis large doses of sweet spirits of nitre are of distinct advantage. Fever should not be combated unless it goes too high or is accompanied by unfavorable symptoms. Infants and small children do not tolerate cold as well as they do tepid baths, which are frequently sufficient, especially when ice to the head is employed.

Nitrous Oxide Gas as an Analgesic in Labor.—G. H. Ryder (*American Journal of Obstetrics,* June, 1917), from observation of a series of 135 labor cases in which nitrous oxide was used, is convinced that the gas is a safe analgesic in childbirth. No ill effects to mother or child could be traced to its use in any case. It can be administered by the patient to herself under supervision or by any competent trained nurse with slight instruction. One or two good breaths of the gas should be taken before the full strength of the pain is felt. It gives relief in nearly all cases, and in over half the cases the relief is marked. It is not suitable for all patients, but is especially suitable in cases with severe, prolonged pains. In over eighty per cent. of the cases the uterine contractions were either not changed or strengthened by it. Weak, irregular contractions were apparently more apt to be diminished by it than strong, regular ones; but such weak contractions cause so little discomfort as not to call urgently for relief. The gas gave better results in intelligent patients than others. It proved relatively inexpensive, averaging only forty-three cents apiece in ward cases. Good results were obtained without admixture of oxygen. The nitrous oxide did not predispose to post partum hemorrhage. The average duration of labor was slightly greater in the gas cases than others, but proof that this was due to the gas is deemed insufficient. The gas did seem, however, to increase the ratio of forceps operations, which was twenty-one per cent. in both ward and private cases. The hospital average for forceps operations without gas was 12.3 per cent., though that among 369 private patients was twenty-eight per cent.

Senile Nephritis.—Malford W. Thewlis (*Medical Review of Reviews,* August, 1917) says that the issuance of a strict diet list to an aged patient is usually distressing and disagreeable, and that best results may be had in dealing with old people by letting them eat anything they wish. This does not apply to acute nephritis; if such patients are not ill in bed he thinks they should have milk, cereals, and the lighter vegetables, while if they are confined to bed he considers an absolute milk diet indispensable. Free catharsis is essential. The administration of from six to twenty tablets of the extract of the kidney of a pig seems to him to give good results clinically and to check the process of degeneration. Cabinet baths are useful, particularly in corpulent patients and in those who have much headache, but to give these baths to aged patients requires caution and the cases must be selected. The elixir of iron, quinine, and strychnine usually works well as a tonic after the eliminative treatment. Fixed habits should not be tampered with, but it is well to keep old people out of bed and to have them work. Work, he says, is by far the best remedy for old age.

Treatment of Hay Fever and Asthma with Pituitrin and Epinephrin. — Ernest Zueblin (*Medical Record,* July 7, 1917) reports that under treatment with pituitrin and epinephrin his cases showed reduction in the size of the heart, better heart sounds, and improved blood pressure findings, while symptomatically the attacks either did not return or were lessened in severity. Pollen vaccination is of importance and will give good results in many cases, but Zueblin believes that the attendant signs of vasomotor and cardiac weakness ought to be considered in any treatment outlined for hay fever patients.

Vitamines in Infant Feeding.—Louis Fischer (*Medical Record,* July 7, 1917) states that we should not wait for the appearance of rachitic symptoms in infantile development, but that some form of vitamine should be added when the infant is three months old. Three symptoms may be taken to indicate need of vitamines: 1, restlessness, irritability, loss of sleep; 2, greenish liquid stools containing curds or mucus; 3, stationary weight, or loss of weight. In addition to a proper mixed diet of fresh vegetables, fruit juices, fresh milk, fresh meat, hard boiled yolk of egg, etc., great benefit may be derived from the administration of ten to sixty drops of autolyzed yeast at each feeding.

Clinical Observations on the Treatment of Prostatic Obstruction.—H. G. Bugbee (*American Journal of Surgery,* July, 1917) emphasizes the following points in the treatment of prostatic obstruction: The aim in treating cases of prostatic obstruction is to preserve the life of the individual and to restore function. The restoration of function should be brought about as rapidly as is consistent with the individual after taking into consideration every point connected with his welfare. Prostatic obstruction of the vesical neck is mechanical and can be relieved only by removing the obstruction. The complete removal of the obstructing gland is the ideal method. Other methods of treatment must be considered as palliative; they may result in cure or be followed by radical operation. When the ideal cannot be attained, much relief can be given by painstaking treatment and complete cooperation between patient and surgeon.

Treatment of Advanced Urethral Stricture Without Perineal Section.—Frederick J. Parmenter (*Urologic and Cutaneous Review,* July, 1917) uses the McCarthy urethroscope, which is passed down to the stricture and pressed firmly against it. The stricture is divided with a urethral knife under direct vision. The divided portion is dilated by gradual pressure and the endoscope passed through until the uncut portion of the stricture is again encountered. This procedure is then repeated until the entire strictured area has been cut through. As large a retaining catheter as possible is then inserted in the urethra and fastened. It is left there from three to five days, when it is removed and dilatation is begun three days later. This is continued at three day intervals for one or two treatments, after which the periods are lengthened, depending upon the progress of the case. Patients can return to work as soon as the catheter is removed in three to five days.

Vaccine Therapy in Ozena.—S. Garcia Vicente (*Revista de ciencias medicas de Barcelona,* April, 1917) declares that fetid atrophic rhinitis is a mixed infection with the pseudodiphtheria and ozena bacilli predominating. Vaccines made with these bacteria and with the coccobacillus of Perez are of help in treatment both in typical ozena and in other cases where these microorganisms are found, even in the presence of hypertrophy of the mucous membrane. The prospect of cure is good in proportion to the early stage of atrophy at which the treatment is instituted, and, even in the absence of fetid discharge, bacteriological examination of the nose is of the greatest importance because it may permit of the employment of a specific treatment with vaccines made from the infecting bacteria.

Treatment of Trench Shin.—Graham Chambers (*Dominion Medical Monthly,* July, 1917) describes this condition as an infectious fibrositis, the principal symptoms of which are pain and tenderness in the lower limbs. Fever is practically always present in the early stages. It usually disappears within two or three days. Headache of a jumping or stabbing variety is also an early symptom. The commonest sites of the pain in the lower extremities are the shin bones and the tibiales antici. The treatment is chiefly preventive. Tight boots or puttees should be avoided. The feet and legs should be thoroughly rubbed with animal fat or animal oil. The oil should be of a high boiling point. Daily massage is of great value. In the curative treatment, rest in bed is of great value. Aspirin and phenacetin may be tried, but it is often necessary to give morphine. An incision through the periosteum of the tibia has been made with good result in some cases.

Abortive Treatment of Acute Gonorrhea.—Saul Steiner (*Urologic and Cutaneous Review,* July, 1917) states that the chances for success are best if the patient presents himself within the first twelve or twenty-four hours. A reddened meatus with swollen lips and a free discharge of pus are contraindications to this method of treatment. The treatment consists in cleansing the meatus, after preliminary emptying of the bladder, with a solution of bichloride, followed by 1:3000 permanganate. The anterior urethra is next irrigated with 500 c. c. of the permanganate solution. Then 500 c. c. are injected into the bladder. If the patient is too sensitive the entire 1,000 c. c. is used in the anterior urethra. Immediately following this, an anterior injection of five c. c. of a ten per cent. argyrol solution is made, the patient holding it in for ten to fifteen minutes. A wick of cotton three quarters of an inch long is soaked in the argyrol solution and inserted into the meatus; the glans is wrapped up in cotton and tied loosely with a bandage. A suspensory bandage is then applied with a flap which holds the penis horizontally. The patient presents himself for treatment at the end of six hours, not urinating in the meantime. The second and fourth treatments are the same; the third treatment, six hours after the second, consists of an irrigation with permanganate only. After the fourth treatment he is irrigated with permanganate twice a day. If after three days the discharge exists abortive treatment is abandoned.

Surgical Treatment of Benign Neoplasms of the Bladder.—Edwin Beer (*Surgery, Gynecology, and Obstetrics,* June, 1917) says with regard to the surgical treatment of benign neoplasms of the bladder that all benign papillomata that are suitable cases for cystoscopic high frequency cauterization —and these constitute the great majority—can be definitely cured by this method. The few cases that cannot be so treated, must be operated upon and usually will be cured definitely, if the Paquelin cautery technic is followed.

Polyvalent Vaccines in Dysentery.—Philip H. Ross and W. H. Kauntze (*Lancet,* June 23, 1917) have prepared a polyvalent dysentery vaccine from six strains, representing the Shiga, Morgan, and Flexner types of organisms. They killed their cultures by exposure to 0.4 per cent. phenol for about two days and thus obtained a vaccine which was almost nontoxic. They tried this vaccine in a large series of dysentery carriers and obtained most satisfactory results. Equally good results were secured also in cases of chronic dysentery. The initial doses contained about five million Shiga and an equal number of the mixed Morgan and Flexner strains of organisms. The dose was increased by a like number of organisms daily. Later they found it better to use larger doses, the size of which they did not state, given at intervals of one week.

Treatment of Trench Frostbite.—G. Aperlo (*Gazzetta degli ospedali e delle cliniche,* April 19, 1917) divides the treatment into prophylactic and curative. The prophylaxis consists in the wearing of the proper foot coverings and gloves, it being especially important to use shoes which will be waterproof and at the same time nonconstricting. Woolen socks, underwear, and gloves are preferred and should be kept dry as far as possible. Frequent washing of the feet is important, followed by inunction with some oily base, a very good combination being Canada balsam in petrolatum. Massage of the feet is of great service in prevention of the condition. In treatment the limb is elevated and gently massaged, and applications of heat, dry or moist, are used. Incision should be made only when a local infection threatens to become general, and when made should be deep and free.

Gunshot Wounds of the Liver. — Cuthbert Wallace (*British Journal of Surgery,* April, 1917) says that some cases require no operation, as there are obviously no other organs wounded and the patient's condition is good. Many cases are operated on solely because of the possibility of injury to other organs. If such injures could be excluded, he was inclined to think that the best results would be obtained by noninterference. The incision for an obvious liver wound is either an f shaped rectus incision or a subcostal one. A recent French work on surgery recommends an incision parallel to the costal margin, passing through the costal margin and through the costal cartilages; access to the dome of the liver is said to be greatly facilitated by this method. The actual treatment of the wound when found consists in leaving it alone, packing it, or suturing. The latter is not very satisfactory. The big bile passages can be dealt with on ordinary lines by suture and drainage.

Colloidal Sulphur in "Trench Rheumatism."—John D. Comrie (*Lancet,* June 30, 1917) recalls the fact that sulphur has long held its position as one of the most effective remedies in rheumatic conditions and reports very favorable results from his use of colloidal sulphur solutions injected into the painful muscles in the condition known as "trench rheumatism." The condition seems to be one of an acute or subacute myositis and is resistant to the salicylates. The colloidal sulphur is in 1:1000 suspension, prepared chemically and held up with the aid of a small amount of egg white. The chief advantages of the colloidal form are its extreme fineness of subdivision and the fact that is can be injected intramuscularly. The initial dose is one mil, rendered isotonic by 0.2 mils of 5.5 per cent. salt solution added just before injection. The injections should be made into the painful areas of the affected muscles and repeated in different locations in the same muscle up to ten or more doses. The dose should also be increased to a maximum of two mils. The dose is given every second day and usually produces little or no reaction.

Surgical Treatment of Wounds of the Lung by Artillery Projectiles.—Pierre Duval (*Bulletin de l'Académie de médecine,* June 26, 1917) asserts that among 3,500 cases of lung wounds actually treated in military hospitals the mortality was twenty per cent. Including the men treated and dying in the advanced emergency posts, he estimates the general mortality of lung wounds as about forty per cent. Aside from rapid death by hemorrhage or asphyxia, the chief lethal factor is pleuropulmonary infection, these wounds being infected like all other gunshot injuries and showing the same shell fragments, bits of clothing, and bone splinters. Of six recent lung wounds, five yielded the perfringens organism in pure or mixed culture, and while the lung tissue defends itself well against such infection, the same does not apply to the adjacent pleura, infection of which from the lung constitutes the chief danger in pulmonary wounds. The principles of surgical treatment now followed in wounds in general are therefore applicable likewise in these cases. Through a broad thoracotomy opening the pulmonary wound should be opened up, dead tissue excised, all foreign bodies removed, and the wound then sutured at once or progressively sterilized and secondarily sutured. The institution of a temporary complete pneumothorax, with delivery of one or more lobes of the lung from the wound, inspection and palpation of their surfaces, and proper surgical treatment, is quite free of any serious effect on the breathing or blood pressure. Besides excision of the wound and suture of the lung, the pleura can be thoroughly cleaned out and the chest then closed without drainage. Performance of this operation as immediate treatment in eighteen cases of artillery wounds was followed by recovery in all, two, however, having a mild staphylococcic pleuritis. This contrasts with a mortality of twenty-eight per cent. in lung wounds with missile retained conservatively treated. Emergency operation in lung wounds with threatening hemorrhage is already saving seventy per cent. of those thus treated.

Miscellany from Home and Foreign Journals

Pathology of Cardiac Dropsy.—Charles Bolton (*British Medical Journal,* May 19, 1917) concludes from an extensive series of animal experiments, in which the heart's capacity as a pump was damaged, that the changes associated with the development of dropsy involve the following steps: 1. An initial venous stasis with moderate increase in venous and capillary pressures, withdrawal of blood from the arterial system, and fall in arterial blood pressure. 2. Dilatation of the veins and capillaries of the splanchnic area, mainly with fall toward normal of capillary and venous pressures; increased congestion in this region with increased anemia of the remainder of the body; increased extravasation of lymph in the splanchnic region and increased absorption of water from the peripheral tissues to restore blood volume. 3. Vasoconstriction from medullary anemia with rise in arterial pressure to normal, and some increase of capillary and venous pressures in the splanchnic, but not in the peripheral, areas. All of these changes lead to the establishment of a hydremic plethora in the splanchnic and a relative anemia in the peripheral regions. Ascites and hydrothorax result and the extension of edema to the legs is secondary as the result of gravity. The transudation of lymph is due to impaired nutrition of the capillary walls and to high capillary blood pressure.

Toxin and Antitoxin of and Protective Inoculation against Bacillus Welchii.—Bull and Prittchett (*Journal of Experimental Medicine,* July, 1917) undertook their experiments to determine, among other things, what was the cause of death in infections by the Bacillus welchii. Four of the five strains of bacilli used were from infected wounds resulting from injury on the battlefield. "The cause of death in the Bacillus welchii infection is not a blood invasion of the microorganisms and not acid intoxication, but an intoxication with definite and very potent poisons produced in the growth of the bacilli in the tissues of the body. This poison is readily produced in broth in the test tube in the presence of sterile nondenatured muscle. To obtain it in quantity only minimal quantities of glucose —0.1 per cent.—should be added to the broth and the incubation of the anaerobic cultures should not exceed twenty-four hours. The poison or toxin is a complex of an hemolysin and another poisonous body. The latter is the more toxic, since it may bring about death under conditions in which no blood destruction takes place." The next point to determine was whether or not this toxic substance could act as an antigen. It was found that by exercising great care, pigeons could be successfully inoculated so that they became immune to two lethal doses, thus proving the possibility of the production of an active immunity. For the production of an antiserum, a neutralized filtrate of a culture of the Bacillus welchii was injected into rabbits. It was found that the serum from such a rabbit was able to neutralize not only that particular filtrate but the filtrate from four other cultures as well. This neutralization affected not only the toxic substance causing the inflammation and necrosis of the tissues, but also the specific hemolysin as well. To determine the curative power of this serum, five pigeons were infected with pieces of gauze impregnated with cultures. One of these pigeons was treated with the immune serum. In the four inoculated, but untreated, typical local lesions developed and death occurred within twenty to forty hours. The treated animal never showed any local or general symptoms and the wound healed about the foreign body.

Xanthochromia and Other Changes in the Cerebrospinal Fluid.—Charles A. Elsberg and Edward L. Rochfort (*Journal A. M. A.,* June 16, 1917) have analyzed the findings in the cerebrospinal fluids of ninety-two patients suffering with chronic spinal disease. The results showed that the occurrence of xanthochromia was very suggestive of the presence of a tumor of the cord located in the region of the lower dorsal and lumbar portions. Froin's syndrome of xanthochromia—high protein, spontaneous coagulation, and pleocytosis—was found to be characteristic of the large endotheliomas or sarcomas surrounding the conus or the roots of the cauda. Nonne's syndrome was suggestive of an extramedullary spinal cord tumor. Extramedullary cord tumor was probable in the presence of increased globulin and xanthochromia without increase of cells. In spite of these probabilities and the decided diagnostic value of the spinal fluid changes, a diagnosis could not be based on the features of the fluid alone.

Sterilization of Wounds with Chloramine-T.—Carrel and Hartman (*Journal of Experimental Medicine,* July, 1917) call attention to the fact that the normal process of cicatrization depends upon the nature and extent of the infection. In order to study the process of repair of wounds it was necessary to find a method that would render the wounds sterile. In place of the Dakin hypochlorite solution, a paste was made that was designed gradually to give to the tissues one of Dakin's chloramines. The investigations were undertaken to determine whether this paste would be able to keep a sterile wound in an antiseptic condition, as well as to sterilize an infected wound, and whether it would retard tissue repair. The paste used consisted of sodium stearate and four to fifteen parts in 1,000 of chloramine-T. Their investigations showed that the paste should be used only under certain conditions, as in moderately infected wounds which have been carefully washed with sodium oleate and which possess but slight quantities of secretion. Under these conditions the paste causes the complete disappearance of the bacteria and maintains the sterility for as long a time as may be wished. The tissues are not injured nor does the process of cicatrization appear to be affected. It is useless to apply this paste in severely infected wounds on account of the dilution of this substance by the secretion and its combinations with the proteins contained in the pus.

Dysentery.—A. C. Inman and D. G. Lillie (*Lancet,* April 7, 1917) draw attention to the results of their observations on a large number of cases of dysentery coming under their care, since it was found that in a large proportion of amebic carriers there was also infection with either the Flexner or the Shiga bacillus, or with both. It was evident from these observations that the methods of examination of amebic cases required modification and that every case should be examined both protozoologically and bacteriologically, including the serum agglutination tests against the dysentery bacilli.

New Mastic Test for Spinal Fluid.—James A. Cutting (*Journal A. M. A.,* June 16, 1917) describes a simple modification of the mastic test which makes it of far greater value in the diagnosis of syphilis of the central nervous system than before. The modification consists essentially in rendering the mastic suspension more stable by the addition of a small amount of potassium carbonate. This makes it possible to carry out the test over a wide range of dilutions, increases its delicacy, and makes it possible to complete the test within two hours through centrifugation of the tubes. The test in actual practice was found to run closely parallel with the colloidal gold test and was more readily performed and interpreted. It was uniformly positive in a series of eighty-four cases of cerebrospinal syphilis.

Diagnosis of Peptic Ulcer.—J. Russell Verbrycke (*Virginia Medical Semi-Monthly,* June 22, 1917) points out that the typical symptoms of peptic ulcer are not those of the textbooks—pain, vomiting, and hematemesis—but consist of the periodicity of symptoms, the constancy of the time of their appearance after each meal in the individual patient, and their relief by vomiting and the taking of food or alkalies. Any two of the following manifestations may afford a positive diagnosis; localized tenderness, either anteriorly or posteriorly; hypersecretion; occult blood; localization of blood mark on the thread; confirmation by the x ray. Single pathognomonic signs are the finding by x ray of the niche or bud of the penetrating ulcer, or of the larger cavity of the perforating ulcer behind the stomach. Occult blood is an especially reliable sign. Perforation is indicated by agonizing pain, probably after exertion, followed by intense rigidity, generally with a suggestive history. No attention should be paid to fever, leucocyte count, or pulse, for operation is indicated before the pulse shows the effect. Carcinoma may be ruled out, 1, by putting the patient under strict treatment and noting if the occult blood disappears; 2, by finding no tendency to failure of the gastric secretion on repeated tests; and, 3, by the x rays. Gallbladder infection accompanied by adhesions to the pylorus or duodenum is excluded, 1, in that in gallbladder conditions, 1, the symptoms are apt to be more continuous in gallbladder dyspepsia; 2, by consideration of the characteristics of preceding attacks; 3, by the x ray, showing distortion by adhesions to pylorus or duodenum; 4, by the location of tenderness; 5, hypacidity or anacidity where there is occult blood in gallbladder disease; and, 6, by the duodenal tube revealing typically a turbid, dark green bile, full of mucus and many organisms, in gallbladder conditions.

Ceratodermia Punctata.—A. J. Chalmers and A. Kamar (*Journal of Tropical Medicine and Hygiene,* June 1, 1917) discuss a new form of hyperceratosis of the palms and soles which may be acquired at any period of life and by both sexes, and is characterized by its beginning round the orifices of the sweat ducts. These it blocks up, inducing a translucent pompholyx like lesion, in connection with which a punctation resembling a corn is formed. The punctation may fall out, leaving a depression which then fills up with horny cells and, joining similar areas, causes hyperceratosic patches on the palms of the hands. The sweat openings are patent on these patches. The disease is apparently not of arsenical origin, but seems to be due to chemical substances acting upon the skin, probably formed in metabolism or absorbed from the alimentary tract. In the treatment, disinfection of the gastrointestinal tract with local applications of salicylic acid or resorcin seems worthy of trial.

Relation of Amebic Dysentery to Acute Diarrhea.—G. Marshall Findlay (*Lancet,* May 19, 1917) examined the stools from 110 cases in which there had been one or more acute attacks of transient diarrhea with abdominal uneasiness, griping, epigastric pain, nausea, and vomiting. In thirty-six he found typical Entamebæ histolyticæ and in fifty-six others the form known as Entameba minuta. The form of acute, transitory diarrhea described is extremely common among foreigners within about a fortnight after their arrival in the tropics and it has been observed that a large proportion of its victims subsequently acquire amebic dysentery, or are found to have become ameba carriers. Confirmatory of the relation of the diarrhea to amebic dysentery was the fact that of a series of cases of this acute diarrhea treated at once with emetine injections, only one patient subsequently acquired amebic dysentery. These observations showed the close relationship between these two conditions and suggested that the diarrhea was a protective effort on the part of the tissues to rid themselves of the harmful new invader.

Incontinence of Urine and Paroxysms of Fear as Initial Manifestations of Taboparesis.—Logre (*Presse médicale,* July 9, 1917) reports the case of an artilleryman, aged thirty-eight years, who, strongly affected by the explosion of a large shell close at hand, became unable to hear the whistling of projectiles overhead without throwing himself to the ground with general trembling, profuse sweating, involuntary emission of urine, and psychical disturbance amounting almost to stupor. Such a condition might have been considered one of pathological cowardliness developing in a psychopathic subject as a result of violent emotion. Systematic examination showed, however, that the man was in reality suffering from tabes and general paralysis. The urinary incontinence, apparently emotional in origin, was merely a manifestation of tabetic sphincter trouble, and the cowardliness an initial symptom of paresis. This unusual beginning of the latter disease is presented as a striking instance of the group of cases comprised in war psychiatry, the dementia of paresis having affected first and selectively his mental qualities as a warrior.

Lateral Curvature of the Spine.—J. S. Kellett Smith (*British Journal of Children's Diseases,* April-June, 1917) in investigating cases of curvature determines whether the curve has to do with the spine alone or whether it is a curve of accommodation; whether there is evidence of past or present internal condition of the chest likely to cause unequal development, and whether the standing height of the legs are equal. In a series of forty-three cases observed during a year there were five of accommodation curves. Two of the patients had ovarian trouble, one had a movable kidney; one had recurrent biliary catarrh, and one presented pain, tenderness, and vasomotor signs over the distribution of the posterior branch of the fifth left cervical nerve. The patients who accepted operation or treatment showed distinct improvement. Six of the forty-three cases showed curvature the result of severe pneumonia or whooping-cough with pulmonary complications. Sixteen of the forty-three cases were due to a shortening of a leg. Of these sixteen, eleven were of the left side. The preponderance of left sided shortening may be explained by the fact that the left half of the diaphragm acts more strongly and has a greater excursion than the right side. This causes a tendency to a left low dorsal curve which is the common constant factor in the great majority of all cases of curvature. Two of the forty-three were examples of amesial pelvis, and the remainder showed no very definite actuating cause other than the habit of harmful posture.

Circular Suture of Bloodvessels. — Charles Goodman (*Annals of Surgery,* July, 1917) gives the following conclusions as the result of his studies: The continuous circular suture with fine silk, vaselined or paraffined, penetrating the media and intima is thoroughly practicable and of ready application. The circular suture restores the continuity of the vessel without impairing the integrity of its walls or diminishing its lumen. Side to side anastomosis between an artery and a vein can be readily accomplished without the formation of thrombosis. Fusion of the approximated ends of the vessels takes place by connective tissue proliferation. A slight bulging at the suture line does not seem in any way to interfere with the functional efficiency of the vessel. In the absence of infection, sutures penetrating the intima and entering the lumen of the vessel will do no harm. Connective tissue will grow in and cover the sutures. The cells covering the suture line may become flattened and function eventually as endothelial cells, or, as many believe, the connective tissue is covered by proliferating endothelium. In end to end anastomosis, by the introduction of one retaining suture posteriorly, a minimum amount of twisting of the vessels is brought about. This has been found of special importance in the suture of a shorter vessel. Autotransplantation and homotransplantation of segments of veins and arteries are perfectly practicable. While a tendency to degeneration of the transplant is indicated, the functional results of the transplant do not seem to be impaired. Goodman believes that all transplanted tissue that degenerates sooner or later undergoes connective tissue infiltration and becomes replaced by the tissue of the host.

Phosphatic Urinary Calculi in Rats Fed on Experimental Rations.—Thomas B. Osborne, Lafayette B. Mendel, and Edna L. Ferry (*Journal A. M. A.,* July 7, 1917) observed that in certain of their experimental animals large numbers of phosphatic calculi developed and determined that this occurred only in those which had been fed on diets deficient in the fat soluble vitamine. They suggest that there may be some relation between this vitamine and the animals' resistance to infections which lead to the development of the calculi. This seems to be supported by the fact that these animals are also prone to develop an infectious disease of their eyes.

Acute Delirium with Lobar Pneumonia in a Child.—Hugh T. Ashby (*British Journal of Children's Diseases,* April-June, 1917) reports the case of a child, aged two years, who had a severe pneumonia with crisis on the seventh day. Two days before the crisis he became slightly delirious. After the crisis, instead of the usual sleep he became more acutely delirious. The temperature at this time was only slightly raised. After thirty-six hours he began to improve and at the end of two and one half days he became more rational and slowly regained his usual health. Treatment consisted in giving bromides and chloral hydrate, six grains of each, repeated several times. There were no convulsions or signs of delirium.

Meningococci in the Purpuric Elements of Meningococcal Infection.—Arnold Netter and Marius Salanier (*British Journal of Children's Diseases,* April-June, 1917) took smears from the vesicles which developed on the surface of purpuric patches. On staining, these smears showed a collection of diplococci, resembling coffee berries, which were decolorized by the Gram method. One case was meningococcal infection without meningitis; the other was meningitis preceded by purpura. In the first case the lumbar puncture showed clear spinal fluid. Twenty c. c. of a mixed antimeningococcal serum were injected and the diagnosis was made the following day by an examination of the serum from a vesicle covering a part of the purpuric lesion. Meningococci are very rarely found in herpectic vesicles accompanying cerebrospinal meningitis.

Hyperacute Purpura Without Cerebrospinal Meningitis.—Arnold Netter, Marius Salanier, and Mme. Wolfrom (*British Journal of Children's Diseases,* April-June, 1917) report a case of a child ten months old, who, in two weeks before admission to the hospital, presented all over the body little red spots, in the centre of which a little pimple appeared. These dried up rapidly and formed a crust. It was considered to be due to digestive disturbance, and, as a matter of fact, cleared up after one of the articles of diet was eliminated. Two weeks later shivering and fever developed and the following day large violet spots appeared all over its body. A lumbar puncture proved to be negative. Twenty c. c. of antimeningococcal serum were injected and some of the darkest purpuric patches were scarified. These showed meningococci, and a fulminating form of purpuric meningococcus infection without meningitis was diagnosed.

THE NEW YORK ACADEMY OF MEDICINE.

Meeting Held April 19, 1917.

The President, Dr. Walter B. James, in the Chair.

Attitude of the Conservative Surgeon Toward Inoperable Cancer Cases. — Dr. George E. Brewer, of New York, said that before speaking of the attitude of the conservative modern surgeon in these cases, three facts should be considered. The first was that until recently cumulative clinical experience had taught that in the vast majority of cases of malignant growth, no benefit could be expected except by removal during the early process of the disease, though one might exclude basal cell epithelioma and myeloma of bone. The second was that most cases of malignant neoplastic disease were progressive, though it must be remembered that in certain instances spontaneous arrest had taken place, even disappearance itself having been observed, though this was so rare in carcinoma that it was estimated to occur in only 0.1 per cent., being more frequent in sarcoma. The third fact to be taken into consideration was the large number of so called cancer cures, including drugs, vaccines, extracts of ductless glands, toxins, external applications, blood and blood serum from supposedly immune individuals, and heat, electric current, x rays, and radium. Many would doubtless agree that of these only two had survived the test, Coley's fluid of the toxins of erysipelas and Bacillus prodigiosus, and radium or x ray, which had shown a large percentage of good results.

In consideration of these facts, the speaker felt that the attitude of the modern conservative surgeon could be based on the following premises: 1. All cases of genuine malignant growth should be treated by radical removal at the earliest moment, if possible. 2. Local recurrence, after primary removal, should also be treated surgically. 3. All forms of inoperable carcinoma should be treated by one of the forms of radium energy. 4. All inoperable sarcomas should be given a trial of Coley's fluid combined with radium; if there was too great reaction, the fluid should be discontinued and the sole reliance placed on the radium treatment. These rules were based on cases where there was a hope of cure, though the prognosis was grave and too much optimism should not be entertained. Another class to be considered was the class for whom there was no hope of cure; these measures should be used in palliation unquestionably. The patient suffering from inoperable carcinoma or sarcoma gone beyond the possibility of cure endured both physical pain and mental distress.

Studies in X Ray Effects on Cancer Immunity.—Dr. James B. Murphy summed up briefly the clinical results in this field for the last few years. The only uniformly favorable results were in the treatment of superficial cancers, for the most part those occurring in the skin. It was early observed in the treatment of such conditions that frequent doses of x ray often caused an increased rate of growth. Empirically, the treatment found best was a massive dose of x ray sufficient in amount to bring about a reaction in the skin; only after such reaction subsided was a second treatment given. The experimental studies on x ray in relation to cancer were confined almost entirely to changes induced in the cancer cell. Some years ago it was demonstrated that x ray applied to an animal affected first the lymphoid tissue, and only later were other organs involved. With this as a basis a technic was worked out by which there was a maximum destructive effect on the lymphoid tissue with a minimum effect on the other tissues. From this point the investigation was carried to the study of the lymphoid reaction in the transplantable tumors of mice. Effective immunity being induced in mice to these transplantable tumors by an injection of homologous living tissue, a study of the blood of animals so immunized showed that after the cancer was introduced there was an immediate crisis in the circulating lymphocytes. This reaction was absent in animals susceptible to such inoculations. A severe test was applied. Mice, after being immunized, were inoculated with cancer. Those which proved to be highly immune were divided into two equal lots, one being exposed to x ray. Then both lots were again inoculated with the same transplantable cancer. A high percentage of the x rayed mice proved to be susceptible to the second inoculation, while the intact animals remained highly immune. It seemed, therefore, to be undeniable that x ray was capable of completely neutralizing the immunity process to transplantable cancer.

Briefly stated, the facts brought out were as follows: In doses sufficient to destroy the lymphoid tissue, the x ray was capable of rendering the animals potentially immune to transplantable cancer highly susceptible to such inoculations. Furthermore, mice of tested immunity to transplantable tumors could be rendered susceptible to inoculation by certain exposures to x ray. Mice with spontaneous cancer were rendered highly resistant to replants of their own tumors by means of small doses of x ray, while by larger doses their resistance was increased.

The Place of Radium in the Treatment of Cancer.—Dr. Robert Abbe stated that it was vain to imagine that the place of radium was settled so recently as fifteen years after its discovery. Another decade, and perhaps another still, would see the knowledge of its value incomplete. It was known, however, that radium helped to cure cancer by altering the diseased cell growths. It acted by its enormous and perpetual output of electrical units, shooting out through space infinitely small fragments of infinitely small atoms, each carrying a charge of electricity, some positive, some negative. The negative electrons, beta rays, were the efficient factors in repressing cell growth; it was therefore not surprising to see in certain milder epithelial cancers a rapid, complete, and apparently permanent disappearance of the tumors when the correct dose of radium electrons was used. One such case had been watched for ten years without recurrence; a like result had lasted for thirteen years in another; in fact, there were thousands of such cases. These, perhaps, might be declared not to be cancer, but they contributed somewhat to the understanding of the nature of all cell tumor change under radium. The basis of hope lay in the proof that true cancer nests could be influenced by radium to cure themselves quite as readily as other tumors. For example, in the early marginal recurrence of a true cancer after a breast amputation for malignant tumor, the nests of disease disappear under a short radium treatment and stay cured, unless the growth was of considerable size. Another field offering poor hope without radium was opening. Doctor Wickham, of Paris, strongly urged the use of radium after operation where even some malignant remnants were necessarily left in the wound; this meant the combination of good surgery and radium.

To speak of a cure in many cases of inoperable cancer was not possible; yet, since there was no question of the retarding effects of radium in many of these cases, the student of the subject might well be tempted in the name of humanity as well as science to try and try again with new methods and new concentrations of radium to win victories. Radium had justified the claim for it as a unique agent in the hands of surgeons in combating many phases of cancerous disease.

Results of Radium Treatment at the Memorial Hospital, New York.—Dr. Henry Harrington Janeway called attention to the fact that for the last three years the Memorial Hospital had been testing the therapeutic action of radium on cancer. During the whole period, approximately 425 patients had been treated for cancer of almost every portion of the body and in all stages. This short period of time was not sufficient for the formation of an accurate definition of the place radium should occupy in cancer therapy, but certain conclusions might be drawn, chief among them being that radium might surely be regarded as one of the most efficient remedies, particularly for the cutaneous epitheliomas. Two forms of malignant tumors had shown themselves so susceptible to radium that it became the treatment of choice for them; these were the cellular carcinomas originating in the testicle or ovary, and the lymphosarcomas, particularly in the early stages. Another class of cases almost specifically benefited by radium were the myelogenous leucemias with enlarged spleens, a single application causing the splenic tumor to disappear with an accompanying reduction in the white blood count.

Of the 425 cancer cases treated all were malignant except two; of this number 120 showed a complete retrogression of the growth, 110 being known to be free from the disease; of these sixty-six were cutaneous cancer, so that forty-four represented complete retrogressions of the more malignant forms of cancer. Of the other cases 129 had improved; fifty-five were still under treatment and 162 had not improved. A study of the clinical records developed the fact that the favorable character of the end result was invariably proportional to the age of the tumor treated. Practically all the cases in the unimproved group had advanced growths when treatment was begun and the majority of those in the improved group likewise had advanced growths when treatment was begun.

The value of this report might be small from the point of view of those who were accustomed to give serious consideration only to those patients remaining well after a three to five year interval; nevertheless, the character of many of these retrogressions bore the stamp of sufficient permanency to warrant the use of radium in early cases with the advantage of offering an escape from operation.

Treatment of Inoperable Sarcoma with the Toxins of Erysipelas and Bacillus Prodigiosus.—Dr. William B. Coley detailed some of his experimental work which began in July, 1891, with the living cultures of the Streptococcus erysipelas, having been based upon the observation of a thrice recurrent inoperable sarcoma of the neck which disappeared under an attack of accidental erysipelas, the patient remaining well for over seven years. In the spring of 1893 the Bacillus prodigiosus was added to the cultures of streptococcus and a filtered solution containing the soluble toxins was used. A little later killed cultures of the two organisms were used in solution. In regard to the question of dose, it was most important to begin with a minimum dose, not more than 0.25 to 0.5 minim, as no two patients were of the same susceptibility. While many of the earlier cases were treated by local injections into the tumor itself, it was soon found that inaccessible tumors disappeared with almost equal rapidity under systemic injections. In order to get the best results, it was important to increase the dose as rapidly as was consistent with safety. The two dangers which deserved consideration were the danger of death from collapse from too large an initial dose and the danger of nephritis from long continued treatment with very large doses. Out of nearly 1,000 cases only three deaths had occurred during treatment and in three other cases nephritis had developed, so the danger might be said to be negligible.

There were five indications for the use of the toxins: 1, in practically all cases of inoperable sarcoma; 2, before operation in sarcoma of the long bones; 3, immediately following incomplete operations in which part of the tumor could not be removed; 4, in combination with radium or x rays, and, 5, after all operations for sarcoma and carcinoma in the hope of preventing recurrence. In addition possibly also toxins should be used in certain cases of inoperable carcinoma, though this was experimental; nevertheless, a few good results had been obtained. In the series of 1,000 cases, the disease apparently disappeared in ninety-seven. Seventy-four patients had remained well and free from recurrence from one to twenty-four years; sixty-six from three to twenty-four years, and thirteen from fifteen to twenty-four years. The greatest success was obtained with the toxins in sarcoma of the long bones and lymphosarcoma; in ten per cent. the tumors disappeared and between eight and nine per cent. were permanently cured. In the ninety-seven cases in which complete disappearance took place, the type of tumor was as follows: spindle celled; mixed celled; round celled; giant celled; chondrosarcoma; myxosarcoma; angiosarcoma; Hodgkin's disease; malignant leiomyoma, and carcinoma. Other men had also employed this method with marked success both here and abroad, notable among them being Harmer, of Boston, who estimated the number of cures of inoperable sarcoma by the toxins from nine to twenty per cent. In addition, the striking relief from pain frequently observed was a very convincing argument for the advocacy of this method.

Dr. WILLIAM DUANE, of the Cancer Commission of Harvard University, said that he felt he could best open the discussion by making a few statements regarding the activities of the Cancer Commission of Harvard. The commission had a hospital, the only one owned by a university devoted to the study of the cancer problem, and a great many of the treatments advocated for malignant conditions had been investigated. At the present time, ninety per cent. of the treatments given at the hospital were with radium emanation, either alone or in conjunction with operative procedures. Four years ago, the commission, deciding to take up the study of radium, purchased a small quantity, less than a quarter of a gram; since then, owing to the generosity of friends, the amount had been increased to one gram. Before they began the investigation of this method of treatment, the Cancer Hospital was known as "the morgue"; since then, the Boston physicians had been sending their patients to this hospital, so that now they were treating over 500 a year. The population of Boston being about 1,000,000, this meant that every year one person in 2,000 was treated here with radium.

The results had not borne out all of the extravagant claims made for radium, notably by some of the earlier workers who were influenced by the extraordinary properties of this element and by a certain amount of success in treating superficial types of the disease. If one looked to radium for complete and permanent cure of all forms of cancer, disappointment would be the result; but if for amelioration and improvement in the condition, one would be considerably impressed by radium therapy. Radium itself was not used; it produced other substances which were the real source of the rays called radium emanation which was an inert gas. This radium emanation was collected by a special process into small capillary tubes the size of half a pin, and these tiny tubes were the source of the radiation that was used. The cases that had been treated were superficial tumors; epidermoid carcinoma which was treated with the prolonged radiation method; sarcoma; serous carcinoma of the breast; Hodgkin's disease, in which the rays produced marked effect on the enormous glandular masses, shrinkage usually taking place in the first two weeks, though the relief was only temporary, there being no permanent cure; and myelogenous leucemia in which there were hopeful signs in the gradual reduction of the tumor in the spleen.

Although it was not believed that a permanent and definite cure for malignant disease had been obtained, the hospital had a method of alleviating these cases for a certain length of time, possibly even curing certain superficial types, and it was felt that a distinct and valuable service to the community was being rendered.

Dr. HOWARD LILIENTHAL discussed only the clinical side of the subject, first considering the definition of the term inoperable cancer. This meant a cancer that could not be extirpated. This did not mean, however, that the patient should not be operated upon for there were cases in which operation brought relief from suffering and prolonged the life of the patient, though the cancer itself was not entirely destroyed. Another object of operation was restoration of function, which might be approached even if it could not be entirely accomplished. Many of the palliative procedures, such as colostomy, enterostomy, enterectomy, gastroenterostomy, and cholecystenterostomy for cancer of the head of the pancreas, had accomplished very wonderful results. There was tracheotomy for cancer of the throat, an operation which was performed on the late German Emperor whose life it was deemed necessary to prolong for state reasons. Amputation of the breast was justifiable where it would relieve the patient of the horrible ulcerating mass even though it did not cure her, and in addition would confer encouragement and hope. There were other operations that might be done, such as resection of the conductive columns of the spinal cord for the relief of pain lower down.

Outside of operation, there were other means for treating inoperable cancer that had been discussed in the various papers of the evening. The speaker himself had seen radium, in the hands of Doctor Bissell, cause improvement in some cases and apparent cure in others. In one case where incision made by himself had revealed inoperable cancer of the thyroid, he had seen apparent cure result from radium placed in the wound. In regard to Coley's fluid, he had been interested in this method of treatment since its inception, having been impressed with the account of Sir James Paget of a cancer disappearance after an attack of erysipelas. He had used the fluid himself and personally observed cures. He thought the reason some others who had employed it had not been equally successful was because they had not pursued the treatment faithfully; in a series of cases a certain number would be cured or improved, but one could not say beforehand which might be the first or last in the series.

Dr. JOHN A. FORDYCE said that cancer of the skin included two large groups, the so called basocellular and the spinocellular varieties, which had different characteristics. The first type seldom invaded the lymph nodes; it was a new growth clinically similar to that of syphilis and tuberculosis and was not infrequently mistaken for these conditions. The new growth ulcerated and often spread serpiginously, but was amenable to treatment by x ray and radium. In this type of epithelioma previous curettage greatly facilitated the subsequent treatment with x ray and radium; one dose of the former should be given sufficient to produce erythema which should be allowed to disappear before another dose was given. The Coolidge tube was preferable to radium because its action was quicker, and furthermore one could cover a much larger surface. For the spinocellular, or squamous celled epithelioma, the variety practically always met with on the tip of the tongue or lip, very little reliance could be placed on the x ray or radium, the condition seldom or never being permanently improved. Biopsies for diagnostic purposes should be discouraged, for observation had demonstrated that parts of the growth which were not subjected to biopsies were more amenable to treatment than the parts where this procedure had been employed.

Dr. Charles H. Peck said that he would like to emphasize one or two points. It must not be forgotten that operable cancer was best treated by radical surgical measures, though there were sometimes favorable, a relatively small number, of results by other methods of treatment. As Doctor Lilienthal pointed out, one should not fail to employ palliative operation in cases not overhopeful of radical cure, such as carcinoma of the breast, in which one could secure palliation by the removal of an ulcerated or heavy growth, and removal of large ulcerated growths of the stomach would palliate the conditions for many months when hope for cure was not present. Such operations might do much toward prolonging life and making the patient comfortable.

The care of these inoperable conditions had not received the attention it warranted; every hospital should be prepared to take its quota. There was no better field for philanthropy than the endowment of beds and facilities for treatment of these cases in hospitals. If this were done the staff would have the benefit of the knowledge obtainable now in only the special hospitals for the care of cancer, such as the Cancer Hospital, the Memorial, and the Rockefeller.

Dr. Abraham Jacobi said that he had not heard in the discussion any reference to a method of treating these cases of inoperable or doubtful cancer, especially of the abdominal organs, the liver, gallbladder, omentum, ovary, and pancreas, and of the breast, which had accomplished very favorable results. Methylene blue, methylthioninæ hydrochloridum, was introduced for the treatment of malignant tumors by Moorhof and Mosetig, of Vienna, and later in New York by Willy Meyer. He himself had prescribed it for internal use, mostly in pills, in hundreds of cases for twenty-five years, reporting an experience of fifteen years before a section of the American Medical Association meeting in Boston in June, 1906 (*Jour. A. M. A.*, November, 1906). In this report he specified a few cures only, though his results were in part favorable; many changed for the better, felt well, became able to work, lived three, five, eight years, and were finally lost sight of. The daily methylene blue dose averaged four grains given in four installments mostly after meals, a dose of three quarters of a grain of belladonna accompanying it. Combinations were permissible; now and then arsenic trioxide, strychnine, or a mild vegetable cathartic might be added. Methylene blue was to be recommended where relapses were to be feared about the uterus or breast.

Dr. Willy Meyer said that he came to listen and learn, not to speak, and he felt he was fully repaid for having come. It certainly was wonderful to see how much cases called inoperable from a surgical standpoint could still be benefited by x rays, radium, and Coley's fluid. However, there could be no doubt that more rapid progress in this direction would come about when the cause of cancer—that goal of every physician's hope—was unmistakably discovered. A beginning had been made by Erwin F. Smith, of Washington, the pathologist in charge of the Bureau of Plant Industry, who had found a bacterium that produced tumors when injected in plants. Those who had seen his remarkable specimens and experimental results must be convinced that the right start had been made. The speaker believed that carcinoma and, in fact, all malignant as well as benign tumors were of infectious origin, and he believed that many of those present at this meeting would live long enough to see this proved to be the case.

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Book Reviews.

[*We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.*]

Modern Dietetics. Feeding the Sick in Hospital and Home with Some Studies on Feeding Well People. By Lulu Graves, dietitian Lakeside Hospital, Cleveland. St. Louis: The Modern Hospital Publishing Company, 1917. Pp. XII-214.

It is common knowledge among all who have had much to do with hospitals, either large or small, that the problem of dietetic treatment within their walls is one of the most difficult of all that are undertaken. It is not only in the hospital that the conduct of dietetic treatment is a matter of more than passing difficulty, but even in the well regulated home it is not usually an easy matter to secure much in the way of a specially prescribed diet unless it is very simple both in character and scope. The reasons for these difficulties are well brought out in Miss Graves's volume, although the greatest stress is laid upon the hospital aspect of the problem. It is a welcome work, therefore, that comes from the pen of Miss Graves, the more so because it is the product of her wide experience in practical hospital dietetics. She has approached the subject from several different, but complementary, points of view. Thus she begins with a chapter on the management of the institution commissary and makes many valuable suggestions for simplicity and economy which are well worth the consideration of any one who has to feed an institution, however small or large. This phase of her subject is followed by several chapters in which she discusses in lucid and plain language the values and places in the dietary of various foods. A chapter is devoted to milk and its modifications, one to butter and its substitutes, and others to vegetables, cereals, legumes, and breakfast foods; fruits of all sorts; beverages; and several on the various forms of meat products. Then comes a chapter on special diets in disease which alone should make the volume of the greatest help to the physician, both for hospital and for private practice. The methods of feeding various classes of patients and various institutions are also dealt with and chapters are devoted to the presentation of special diets and the composition of common foods. The book closes with an extensive collection of selected recipes designed for the hospital. While the recipes are given for quantities suitable only for a large number of persons, Miss Graves has stated the number of portions which each will make so that it is an easy matter to reduce them to any desired size. This is especially valuable in private practice, since many of the recipes should prove very serviceable in the home and are such as are not found in the common cookbooks. The majority of these recipes also have statements as to their gravimetric composition for each of the three main classes of foods, as well as their caloric values. As a whole the volume is unique among works on dietetics, both in its method of presentation and in much that it contains. It is a storehouse of information for the hospital dietitian and should prove of no small value to physicians who desire to use dietetic methods of treatment more extensively than has been the general practice. Several minor criticisms might be made, but the only one in which we will indulge is in respect to the balance of the material. It would seem that in some places the author has given more information than is desirable in a work of this nature, while in others her discussions seem rather less complete than they should be. The first criticism has reference to the discussions of diets from their purely medical and therapeutic aspects, the second to the discussion of foods proper, including their preparation and selection. As a whole, however, the volume is highly commendable and these questions of balance can be left safely to the author for consideration in the preparation of future editions of her work.

The Practical Medicine Series. Comprising Ten Volumes on the Year's Progress in Medicine and Surgery. Under the General Editorial Charge of Charles L. Mix, A. M., M. D., Professor of Physical Diagnosis in the Northwestern University Medical School. Volume III: *The Eye, Ear, Nose, and Throat.* Edited by Casey A. Wood, C. M., M. D., D. C. L.; Albert H. Andrews, M. D.; George E. Shambaugh, M. D. Series 1917. Chicago: The Year Book Publishers, 1917. Pp. 372. (Price $1.50.)

No small part of the credit due the editors of this little book is for the skillful way in which each has selected abstracts from the abundant literature during the past year on each of the specialties dealt with which would make the work interesting and useful to the general practitioner. The only criticism that can be made fairly is that too much of value has been omitted because of lack of space. About one half of the book is devoted to diseases of the eye, yet its editor tells us that he has had to cut down or eliminate material to make room for his excellent review of papers on Military Surgery of the Eye. This is unfortunate. There seem to be enough good contributions to ophthalmic literature every year, which deserve lengthy abstracts and are of interest to every physician, to warrant the devotion of an entire volume to the eye alone. We commend this proposition to the consideration of the managing editor of the series.

Notes on Galvanism and Faradism. By E. M. Magill, M.B., B.S., Lond., D.P.H., R.C.S.I. (Hons.) With 67 illustrations. New York: Paul B. Hoeber, 1916. Pp. xvi-220. (Price $1.50.)

It is stated that the purpose of this little volume is to constitute merely an introduction to a very difficult subject mainly for the use of British masseurs. The volume seems well fitted for this purpose, as far as can be judged without an exact knowledge of the English requirements. It is certainly for the most part a clear and very simple exposition of some of the more fundamental principles of electricity and for the uninitiated should form a fairly easily understood introduction. For the physician the work is too elementary to be of much use, and as we have in this country very few of the class of masseurs for which the book is intended, the volume will probably not receive the attention to which it is properly entitled. It is unfortunate that this is the case, for much would be gained if our masseurs had a clearer comprehension of the electrical treatments which they are often called upon to carry out at the direction of the physician but not under his immediate observation.

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After Office Hours.

The splendid mysteries of ship building are recounted in the leading article in *Scribner's* for September. It is called The Navy on Shore and is by Vernon Howe Bailey.

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Don't carry a gun and don't brag of a thirst are the first and second commandments in the Medical Reserve Corps, says the *New York Times* for August 26th, quoting a letter from a member in camp.

* * *

Informality and a certain unrestraint make the *Medical Pickwick* refreshing reading. A contributor who heads his effusion A Raw Doctor with Raw Recruits in the August number loosens up with a few remarks about his experiences on an examining board. We wonder how many sympathizers he has with similar first hand experiences.

Official News.

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending August 29, 1917:

Billing, W. C., Surgeon. Granted three days' leave of absence from August 22, 1917.

Collins, George L., Surgeon. Directed to proceed to Washington, not more than once each week, for the purpose of continuing the examination of eyesight as affected by occupation.

Francis, Edward, Surgeon. Relieved from duty at Savannah, Ga., and will continue on special temporary duty at Laredo, Texas.

Freeman, A. W, Epidemiologist. Directed to proceed to Charlotte, N. C., Augusta and Macon, Ga., and other places in those States on special temporary duty.

Le Prince, J. A. A., Sanitary Engineer. Directed to proceed to Hattiesburg, Miss., on special temporary duty.

Mathews, L. B., Scientific Assistant. Directed to proceed to Atlanta, Ga., on special temporary duty.

Sharp, W. K., Assistant Epidemiologist. Directed to proceed to Atlanta, Ga., on special temporary duty.

Stevenson, A. F., Sanitary Chemist. Directed to proceed to Newport News, Va., on special temporary duty.

Taylor, Quintard, Scientific Assistant. Directed to proceed to Atlanta, Ga., on special temporary duty.

Williams, C. L., Passed Assistant Surgeon. Directed to proceed to Little Rock, Ark., on special temporary duty.

Boards Convened.

Board of commissioned medical officers convened at the Bureau, Monday, September 17, 1917, to examine candidates for appointment as Assistant Surgeon. Detail for the board: Assistant Surgeon General W. G. Stimpson, chairman; Assistant Surgeon General J. W. Trask, member; Passed Assistant Surgeon H. E. Hasseltine, recorder.

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Births, Marriages, and Deaths.

Married.

Reidt-Donegan.—In Irwin, Pa., on Monday, August 20th, Dr. Urban H. Reidt, of Jeanette, Pa., and Miss Kathryn Donegan.

Died.

Colliver.—In Los Angeles, Cal., on Wednesday, August 22d, Dr. John Adams Colliver, aged forty-five years.

Follansbee.—In Los Angeles, Cal., on Wednesday, August 22d, Dr. Elizabeth Follansbee, aged seventy-eight years.

Hodge.—In Plainfield, Mass., on Wednesday, August 22d, Dr. Floyd J. Hodge, of Florence, Mass., aged thirty-three years.

MacRobbie.—In Hamilton, Ontario, on Monday, August 20th, Dr. Douglas G. MacRobbie, aged thirty-eight years.

Markey.—In Seattle, Wash., on Friday, August 17th, Dr. Francis F. Markey, aged thirty-nine years.

Matson.—In Columbus, Ohio, on Wednesday, August 22d, Dr. George H. Matson, aged forty-seven years.

O'Brien.—In Pawtucket, R. I., on Tuesday, August 28th, Dr. William F. O'Brien, aged thirty-nine years.

Orr.—In Toronto, Ontario, on Wednesday, August 22d, Dr. J. Orlando Orr, aged fifty-seven years.

Read.—In Brooklyn, N. Y., on Monday, September 3d, Dr. Henry Nash Read, aged seventy years.

Smith.—In Shenandoah, Pa., on Wednesday, August 22d, Dr. James Edward Smith, aged thirty-seven years.

Stern.—In Chicago, Ill., on Friday, August 24th, Dr. David Henry Stern, aged seventy-one years.

Tudor.—In South Windsor, Conn., on Friday, August 24th, Dr. Mary S. Tudor, aged seventy-seven years.

Walker.—In Pittsford, Vt., on Monday, August 13th, Dr. Henry F. Walker, aged seventy-nine years.

Walter.—In Solebury, Pa., on Saturday, August 18th, Dr. Joseph B. Walter, aged seventy-seven years.

Webb.—In Abingdon, Va., on Tuesday, August 7th, Dr. Jesse Barr Webb, of Lodi, Va., aged thirty-nine years.

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Original Communications

PERORAL ENDOSCOPY*

In the Diagnosis and Treatment of Diseased Conditions of the Respiratory and Upper Digestive Tract.

By Hubert Arrowsmith, M. D.,
Brooklyn, N. Y.

In 1861, William H. Church presented before the New York Academy of Medicine the Laryngoscope of Professor Czermak (1). In concluding his demonstration, he remarked: "When we have discovered any method by which disease may be brought under supervision of the eye, we accomplish just so much toward bringing our profession to an exact science." Two years later, Louis Elsberg, of New York, one of the most enthusiastic pioneers in laryngology and first president of the American Laryngological Association, wrote concerning this new and relatively unemployed art of laryngoscopy that it had "transferred diseases of the larynx from the category of internal and obscure to that of external diseases within our reach" (2). These two statements apply as well to peroral endoscopy today as they did to laryngoscopy more than half a century ago. The territory opened up for investigation is of vast extent. While the art has developed to a wonderful degree, the science is still decidedly in its infancy.

As laryngologists, therefore as endoscopists *in posse* if not *in esse,* we in our enthusiasm in foreign body work have very largely lost sight of the greater importance of endoscopy in the diagnosis and treatment of disease; a field perhaps less dramatic, but certainly eventually of greater scientific value. It is fair to assume that pathological states which are recognizable and may be amenable to local treatment are far more numerous than the cases of accidental inspiration or swallowing of foreign bodies. The widespread lack of information among general practitioners as to even the possibility of directly inspecting the esophagus, trachea, and bronchi is astounding. If they have heard of such a procedure at all, it is often related only to a rather dangerous, if occasionally successful, method of dealing with the extraction of foreign bodies. Even internists of large experience have been apathetic toward endoscopy as a diagnostic method of precision, perhaps because we ourselves have emphasized too strongly the surgical aspects of tube work. Our published reports may have appeared too exclusively in our special journals.

The particular point that I wish to make is that peroral endoscopy has already by its achievements won for itself as demonstrably useful a place in diagnosis and treatment as have ophthalmoscopy or cystoscopy. No intelligent practitioner today hesitates for a moment to submit to the ophthalmoscopist his arteriosclerotic patients; indeed, that is part of his routine. No more would he continue indefinitely a perfunctory treatment of a doubtful kidney or bladder trouble without the counsel of a cystoscopist. He apparently places the peroral endoscopist in an entirely different category, ignoring his possible aid in obscure instances of dyspnea, cough, dysphagia, and gastric syndromes, relying here on his "signs" and "symptoms," which are very prone to lead him into serious error, instead of submitting his patient to examination by a capable endoscopist who, in Elsberg's words, probably could transfer the existing trouble "from the category of internal and obscure to external and within our reach."

Let us briefly review what direct peroral endoscopy has accomplished. The latest development is that of Thomas R. French, of Brooklyn, who, by means of his tonsilloscope[1] has submitted the tonsil *in situ* to searching investigation. With the great skill he originally possessed and has developed in this particular line, he is now in position to determine definitely the condition of the tonsil and decide, pro or con, as to its removal. Yankauer, of New York, by his pharyngeal speculum has enabled us to view directly the greater part of the nasopharynx and the territory adjacent to the Eustachian tubes, including the fossæ of Rosenmüller, a region hitherto extremely difficult to study accurately by indirect view, or in which to operate. He has also given us a revelation of the possibilities of endobronchial and intrapulmonary manipulations by his studies of bronchiectasis and its treatment by irrigation. Lynah, by his modification of direct laryngoscopy and his enormous clinical experience in laryngotracheobronchial diphtheria, has revolutionized our concepts of this disease, as well as of the general clinical pathology of laryngotracheal stenosis and its treatment. His studies will be classics, and his methods have saved hundreds of lives and will save

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*Read before the section in Laryngology, Rhinology, and Otology of the American Medical Association, at the Sixty-eighth Annual Session, New York, June 6, 1917.

[1] New York Medical Journal, May 20, 1916.

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thousands when they are better understood and more widely adopted. In the hitherto inevitably fatal cases of bronchial diphtheria, he has repeatedly removed the casts with recovery of many patients. After bronchoscopic removal of the exudate, he makes local applications of antitoxin, which, he maintains, inhibits its recrudescence.

Akin to tracheobronchial diphtheria in its mechanics is the condition so aptly described by Jackson as "the drowning of the patient in his own secretions." When the secretions of the trachea and bronchi are in excess, and cannot be expelled by the patient's own efforts by reason of his weakness or the abolition of his cough reflex, they become a menace to life and he literally drowns in them. Here bronchoscopy with aspiration, or, if the secretions are too viscid to be withdrawn by the ordinary suction apparatus, "sponge pumping" through the bronchoscope, as described by Jackson, is an emergency measure of the greatest value, which will in many instances succeed in resuscitating moribund patients when the much advertised mechanical aids to artificial respiration would inevitably fail. Bronchoscopy also furnishes an ideal method for the administration of oxygen when its employment is indicated (3).

Suspension laryngoscopy, which was originated by Killian and refined to the *n*th power by our compatriot Lynch, has opened up a vista of observation and an opportunity for treatment, of which a few years ago we did not dream. Johnston's discovery that direct examination of the larynx, trachea, bronchi, and upper esophagus is not only possible, but really easier, in the straight or slightly flexed position of the patient's head has made these procedures relatively simple and entirely independent of trained assistants or specially equipped operating rooms and has very greatly extended the sphere of their practical usefulness.

Among many endoscopists who have studied bronchial asthma, Freudenthal is preeminent; he has had remarkable results in its treatment by means of his combined medicinal applicator and electrode for galvanization. Mosher has devised a satisfactory method of dealing with esophageal pouches endoscopically, and with his usual ingenuity has provided the necessary armamentarium. He has also given us in his ballooning esophagoscope our most valuable instrument for the diagnosis of esophageal lesions. Recently he has perfected an "operating window" for his tube, which increases its value as an operating channel by reason of the possible persistent pneumatic distention of the gullet. Thus, perhaps invidiously I have mentioned a few of the recent developments in our art which are most striking. I do not mean to detract in any degree from the credit of many of our colleagues who by their painstaking and laborious work have greatly contributed to the sum of our knowledge. It is impossible in such a paper as this to more than refer to the achievements of the master, Chevalier Jackson, who has seen and done more than all the rest of us and, in the vernacular, "then some."

In asserting our claim to be accepted as an indispensable factor in effective diagnostic teamwork by the internist and surgeon, we may offer the evidence of what our relatively young art has already demonstrated. "We," for brevity's sake, includes all endoscopists, without personal designation. We have studied, operated on or otherwise treated, and more successfully than in preendoscopic days, every previously observed laryngeal lesion. Papillomata and other benign tumors have been removed with the precision of external surgical technic, accurately fulgurated, and treated by direct applications of radium. It is most significant that we can now count on cures which hitherto have been only hoped for. Here I may record my personal conviction that no endolaryngeal attack on malignant disease can be justified under any circumstances. Benign tumors of the trachea and bronchi have been successfully removed, and in isolated instances circumscribed malignancy has been satisfactorily attacked, notably in Jackson's case of endothelioma of the bronchus, the patient being subjectively absolutely well nine months after removal (4).

In a general way, the indications for bronchoscopy are as given by Jackson (5): 1. All cases of bronchiectasis should be bronchoscoped for foreign bodies, diagnosis, and treatment; 2, every case of dyspnea, except of course pneumonia and similar well understood conditions, calls for bronchoscopy; 3, every case in which tracheotomy does not relieve dyspnea; 4, all cases of hemoptysis not definitely proved tuberculous; 5, every case of paralysis of the recurrent nerve, the cause of which is not known; 6, in every case of thoracic disease in which any element of doubt exists, valuable information may be gained. There are no contraindications when really needed, except, that unless for foreign bodies, it had better not be done in cases of aneurysm, high blood pressure, advanced heart disease, and pulmonary tuberculosis. I insist that, as a rule, pulmonary tuberculosis constitutes a most serious contraindication to endoscopic examination. Being convinced that surface contamination is the almost invariable cause of laryngeal infection, I am most fearful that even the extremely slight trauma of bronchoscopy, however skillfully conducted, might be followed by disastrous results.

Compression stenoses of the trachea and bronchi are endoscopically recognizable and may usually be interpreted as to their origin and the indicated treatment logically outlined. Syphilis of the trachea and bronchi has been relatively rarely observed *intra vitam;* a further study of its protean manifestations is necessary. Esophagoscopy alone furnishes the opportunity for a positive diagnosis of malignancy at an early period, or an equally positive refutation of a diagnosis based on the traditional "signs" and "symptoms." A striking illustration occurred recently in my service at Kings County Hospital.

Case I.—A patient referred to me for examination as to the location of an esophageal cancer showed an entirely normal esophagus structurally, but with an obvious esophagismus, the so called cardiospasm. The diagnosis was, as the endoscopy suggested, some focal point of irritation within the stomach itself. The surgeon found malignant disease of the pylorus; the accepted surgical procedure has for the time ameliorated the patient's symptoms.

Here, in moot conditions, biopsy has an indisputable value. In late inoperable esophageal malignancies, Mosher has temporarily palliated the patient's discomfort by repeated removal of obstructing masses, followed by gentle dilatation. Stenosis of the esophagus may be produced by inflammatory conditions involving the tube itself, or by pressure from outside. In preendoscopic days, practically all that could be learned about these obstructions during life was that they existed, the character, extent, and causation being only inferred.

A striking example of the old method of blind bouginage occurred in the following case:

CASE II.—A child two and a half years old six months previously had swallowed a solution of lye. She was moribund when I saw her and suffered extremely for the want of water. An immediate gastrostomy relieved that aspect of the situation, and no attempt at endoscopic examination was made in view of her condition; she died within a few days. Autopsy showed a moderate stricture, which would certainly have yielded to endoscopic bouginage. Immediately above the stricture was a perforation of the esophageal wall, with an immense mediastinal abscess. Blind passage of the bougie had been practised repeatedly.

Jackson and Gaub have devised a combined internal and external operation for esophageal diverticula, in which the endoscopist guides the surgeon by the esophagoscope in the pouch. Jackson's investigations have shed a great deal of light on the condition we have known as cardiospasm, which he prefers to call esophagismus, hiatal, abdominal, and cardial. It has been my fortune to have examined two patients with angioneurotic edema of the esophagus. The first has already been published (6).

CASE III.—A young woman twenty-four years old, suffering from pulmonary tuberculosis, was sent to me for laryngeal treatment. I removed several true papillomata, and because of a recent difficulty in swallowing, passed the esophagoscope. Extending downward from the cricoid region for a space of three inches was a tubular thickening of the mucosa, very decidedly diminishing the lumen of the esophagus. The surface was rather pale and quite resistant. Endoscopy a week later showed an apparently normal and perfectly patent esophagus. The patient had had numerous angioneuroses of the external surface, which were likely to appear when she was nervously upset.

I have thus sketchily reviewed some of the more striking observations made by means of peroral endoscopy and the treatment suggested by the endoscopic appearances. We must recognize that the study of clinical pathology by ocular observation in the living patient is even more important for his welfare than investigations made in the deadhouse and laboratory, when the discovery of vital aspects of his disease are made too late to do him any good. Moreover, by endoscopic study we may learn many things concerning various diseased processes in their early stages which autopsy will never reveal because they are discoverable only during the patient's lifetime. Do not understand that these endoscopic procedures are recommended as part of the physical examination of every patient. My purpose is to emphasize the importance of and bring to the attention of our internist confrères the possibilities of peroral endoscopy in diagnosis and treatment. Only by cooperation between internist and endoscopist can the science advance, for only through the internist can the tube man obtain sufficient material to investigate, whereby he may through many observations and careful study of a multitude of patients attain the diagnostic acumen and therapeutic skill which this method has made possible.

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CONTROL OF HEMORRHAGE FROM THE UPPER DIGESTIVE TRACT.*

BY EDWARD L. KELLOGG, M. D., F. A. C. S.,
New York,
Professor of Digestive Diseases, Polyclinic Medical School;
Director of Surgery, Gouverneur Hospital.

This paper presents to the general practitioner a résumé of the control of hemorrhage from the upper digestive tract. This symptom, which manifests itself either as hematemesis or melena, may result from a number of causes. The following list is given by Martin (1) in Osler's *System of Medicine:* Direct local causes: ulcer, acute or chronic; varices and miliary aneurysm; gastritis, simple, acute, chronic, phlegmonous, or toxic; cancer; trauma. Physical causes: foreign bodies; strain of vomiting; injury from stomach tube; stretching from distention by CO_2. Chemical causes: poisons; purgatives; emetics. Postoperative lesion, including direct causes after operations on the stomach, and indirect after operations on the other organs. Indirect local causes: thoracic disease with circulatory obstruction—chronic pleurisy, fibroid lung, organic heart disease; splenic enlargement, as splenic anemia. General causes: sepsis; exanthemata and other fevers; hematemesis neonatorum, uremia; cholemia. Blood conditions: hemophilia; purpura; scurvy; pernicious anemia; leucemia. To these should be added hemorrhage from the biliary tract by way of the common bile duct and the superficial erosions of Dieulafoy. Balfour (2) believes that aside from direct lesions, the most frequent causes are splenic anemia, or primary hepatic cirrhosis, and his report of a case of splenectomy for repeated gastrointestinal hemorrhage with recovery is most instructive. I shall limit myself to the consideration of hemorrhage from benign ulcer of the stomach or duodenum, for this is the most frequent cause of hemorrhage and the general methods of treatment of hemorrhage from all causes are the same. In ulcer we have some points of particular interest. The cases may be roughly classified as: 1, sudden, profuse, and overwhelming hemorrhage; 2, severe, but not overwhelming hemorrhage; 3, small, but repeated hemorrhages. Some of these cases will terminate fatally before efficient treatment can be instituted.

Usually one of the first and most pressing questions is the choice of surgical or medical treatment. Statistics from a number of sources show that the mortality from operation during hemorrhage is from thirty-six to sixty-two per cent., while with medical treatment it is three to seven per cent. It may be of interest to briefly state the rules which various men have formulated for their own guidance. Patterson states that when the bleeding is sudden and the history of previous gastric ulcer is absent, that is in hemorrhage from acute ulcer, erosions, or general oozing, one should first give thorough medical treatment consisting of rest in bed, ice applied to the abdomen, hot water rectal injections, and no food by mouth for five days. If a second profuse hemorrhage occurs, operate, provided that the second hemorrhage was not brought on by lack of absolute rest, too early stimulation, or too early administration of food. In bleeding from chronic ulcer, that is, in those cases with a definite history of pain after food, indigestion, vomiting, or hematemesis, operate after the first severe attack or after several small hemorrhages if the continued loss of blood causes anemia and debility. Dieulafoy advocates immediate operation if during the first bleeding as much as half a litre of blood is lost. Deaver (3) tends to limit surgical interference to cases in which the history is sufficiently definite to justify the diagnosis of chronic eroding ulcer. If the individual is in shock, the proper medical measures should first be instituted, but after a return to a normal circulatory condition, an operation should be performed without waiting for further hemorrhage. My own rule is as follows: Never operate during profuse hemorrhage. Treat every case medically, unless there are evidences of other conditions requiring surgery, such as pyloric obstruction or deformity of the stomach. Cases showing the above conditions should be operated in after the hemorrhage ceases, and every case of bleeding recurring or developing after a thorough course of ulcer treatment, requires surgery.

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*Read before the Medical Association of the Greater City of New York, March 19, 1917.

SURGICAL TREATMENT.

The details of the surgical procedure are not appropriate to this paper, but briefly outlined are: 1. Ligation of the bleeding point—usually very difficult or entirely impossible. 2. Excision of the ulcer, with or without gastroenterostomy—the best method in selected cases. 3. Cauterization of the ulcer through a gastrostomy opening. This is specially indicated in ulcers near the cardia, and when followed by the suturing of the mucous membrane over the eroded surface, it is often effectual. 4. Gastroenterostomy without excision of the ulcer. This is the procedure most frequently used, and is successful in a large percentage of the cases.

MEDICAL TREATMENT.

General care.—The patient should be kept absolutely quiet in bed. Nothing should be given by mouth, unless certain measures hereafter mentioned are indicated. An icebag should be applied to the epigastrium which should be suspended above the abdomen so that there is a minimum of pressure. Body heat should be maintained by the usual measures—hot water bags, electric pads, electric light frames placed under the blankets, etc.

Measures to combat shock.—Unless the patient is in immediate danger of death, it should be strongly emphasized at this point that many of the measures which are of help in the treatment of shock from other causes are in the case of hemorrhage definitely contraindicated. The low blood pressure consequent upon the bleeding is one of the most favorable factors for the formation of a lifesaving clot, and this may be dislodged by too early stimulation of the heart and the increase of blood pressure through the use of drugs, or the coagulability of the blood may be diminished through its dilution by saline infusion. Morphine is one of the most valuable drugs in this condition, as it insures rest, lessens the shock to the cerebral centres, slows the heart, diminishes peristalsis, allays the patient's fears, and by slowing the body's activities lessens the needs of nutrition. The dose should be sufficient to contract the pupils and make the patient sleepy. Hot enemeta, 125° F., were first advised by Trepier, of Lyons, in 1897, who considered the results analogous to those seen in epistaxis when the hands are placed in hot water. This has been a frequent part of my treatment, and has proved very beneficial. The Murphy drip should be used after, and not in place of, the hot enema, as it is usually difficult to keep up the temperature of the solution. By the drip method, one may give either saline or a glucose solution, three to five per cent., containing bicarbonate of soda, one dram to the pint. Hypodermoclysis may be instituted with benefit, as this supplies the needed fluid slowly without the danger of a sudden increase in the contents of the arterial system. The Esmarch bandage or tourniquet may be applied to all the extremities compressing the veins without checking the arterial flow, but this procedure should be applied for only a short time to any one extremity. Saline infusion may be necessary, owing to a sudden and profound collapse, but it is a poor substitute for the other measures, and must be given with the knowledge that it merely supplies fluid to the tissues and may increase the hemorrhage. The quantity should be limited, and it should be introduced very slowly.

Transfusion is one of the most efficient measures, but should not be instituted too early, owing to the danger of dislodging the blood clot. From 400 to 700 c. c. may be easily given by any of the modern methods, or we may give frequent small amounts by drawing into a twenty c. c. syringe containing one c. c. of sodium citrate solution, two per cent., the blood from the vein of the donor, and injecting it immediately into the vein of the recipient. This may be repeated at two hour intervals; it does not disturb the patient and has been beneficial in numerous cases. Atterbury in reviewing the results of transfusion in 200 cases of hemorrhage, mentions particularly the beneficial effect in cases of hemorrhage from gastric and duodenal ulcer. In Hogan's colloidal solution, we have a substitute for blood transfusion which may prove of value. The formula is as follows:

Gelatin,	25 gm.
Sodium chloride,	1.5 gm.
Distilled water,	100 c. c.

Mix, place in flask, and boil for fifteen minutes. Filter, and place in the autoclave for one hour at 255 F. and then place on ice until needed. To prepare the transfusion mixture, warm the flask of gelatin until it melts, and add to it 1,000 c. c. of 0.9 per cent. NaCl to which has been added two grams of sodium carbonate crystals.

Measures to stop the hemorrhage.—Local measures are as follows: 1. Adrenalin chloride solution

1-1,000 twenty to thirty minims may be given by mouth every half hour for five or six doses, and is reported as being beneficial. I am not convinced that it has helped my cases. 2. Lavage. When the hemorrhage continues, despite the other measures of treatment, I strongly advise lavage either with ice water as recommended by Ewald or preferably with hot water, 130° F., as suggested by W. L. Rodman. This is frequently objected to, but the results are convincing. Especially is this true when used in hemorrhage after gastroenterostomy, and it has been my custom in these operative cases to order lavage if blood has been vomited more than twice in the first twenty-four hours. Frequently one finds a large accumulation even though the amount vomited may be small. The relief is striking, and it seems reasonable to believe that overdistention may be a factor in preventing the subsidence of the hemorrhage. It should be given most carefully, marking the tube and introducing it eighteen inches, then shifting it just enough for siphonage without changing the patient from the recumbent position. The fluid is measured, and the quantity limited to from eight to sixteen ounces at a time. Lavage has been repeated as often as the patient vomited blood with the knowledge that there would be an accumulation in the stomach. Following the lavage, bismuth may be introduced through the tube as advocated by Naunyn. Lindenberg claims success with one per cent. solution of ferric chloride.

Systemic measures to stop hemorrhage are: 1. Emetine. There have been numerous reports in the literature of recent years of the successful use of this drug in hemorrhages from the body cavities. The dose advised by Flandin is one half to two thirds of a grain. I have used the smaller dose two or three times daily for several days, and have considerable confidence in the drug in spite of a limited experience. 2. Ergot hypodermically is also recommended, but evidences of benefit are not convincing. 3. Calcium lactate, twenty to thirty grains by rectum, or ten grains hypodermically, seems to increase the coagulability of the blood, and I believe that it has been helpful in some of my cases. It must be remembered that if given by hypodermic injection, it may produce a slough. 4. Gelatin in two per cent. solution has been used hypodermically, 100 c. c., but is not always easily available, and its value is not proved. 5. Horse serum or human serum injected subcutaneously twenty c. c. every four hours is used extensively and with many favorable reports, though more particularly in conditions where there is diminished coagulability. The efficacy of this measure depends greatly on the freshness of the preparation, and failures are claimed to be due to the use of inactive serum. Therefore the following has been suggested: 6. The injection of twenty c. c. of whole blood removed from the vein of the donor into a syringe lined with sterile mineral oil and injected at frequent intervals into the muscles of the back or buttocks. 7. Further, various preparations of the dried serum which are soluble in water have been used with reported beneficial results, such as coagulose. It is asserted that these preparations are more active than even fresh whole serum. My own experience has been limited to fluid or dried horse serum apparently with some benefit.

The late care of these cases resolves itself into the usual dietetic treatment of ulcer.

CONCLUSIONS.

In conclusion the following points should be emphasized: 1. Never operate during acute hemorrhage, nor in any case until there has been an attempt at a medical cure, except in cases showing pyloric obstruction, or considerable deformity of the stomach. 2. Operate in all cases in which hemorrhage recurs, or appears primarily, after a thorough course of medical treatment. Medical measures consist of: absolute rest in bed; icebag; emetine; avoidance of early stimulation and overstimulation; lavage; hot enemas; transfusion; animal or human serum.

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CONCLUSIONS DRAWN FROM A COMPARATIVE STUDY OF DIFFERENT METHODS OF PERFORMING THE WASSERMANN REACTION.

By J. Bronfenbrenner,
Harvard University Medical School,
Boston,
and M. J. Schlesinger,
Pittsburgh.

(From the Research Laboratories of the Western Pennsylvania Hospital, Pittsburgh, Pa.)

Although the Wassermann reaction has been in use for over ten years there seems to be no uniformity of opinion as to its value and even as to the technic to be employed in performing it. The mechanical features of the technic are very easily mastered, however, and for this reason many lay claim to proficiency in performing the test. Many of these workers, however, lack general experience in serology and do not realize and do not avoid the many possible sources of error inherent in the test, and surely must obtain more or less unreliable results. Such results should not discredit the test. That the Wassermann reaction is not specific has long been known, and there are no absolute measures which can be used to standardize it. The clinical diagnosis is nearest to a standard measure which we have and this must vary considerably, depending upon the judgment of the clinician, but the results of the tests should not show any more variations than those due to variations of diagnosis. We are far from even this degree of accuracy, however, for where attempts have been made to compare the reports from different laboratories on the same specimens of blood, the variations have been far greater than could have been expected. Some clinicians have found that as few as only twenty-one per cent. of the reports agree with each other.

The responsibility for these discrepancies is divided betwen the clinician and the serologist. The clinician sending his specimens to the laboratories does not take proper precautions to assure uniformity of conditions to which the serum is exposed before the test is performed. Most clinicians do not realize the importance of supplying an adequate history of the case to the serologist and thus permitting him to make a proper serological study of the case. There are, however, a large number of incompetent serologists performing the Wassermann reaction whose results cannot be relied upon. There was a decided increase in the number of such workers when commercial firms commenced to sell the necessary reagents. No serologist can lay any claim to reliability unless he can properly control the performance of his test, which control begins with the proper preparation and titrating of his own reagents. Among the competent serologists, however, there is a wide diversity of opinion as to what method should be used in performing the test, and since the various methods differ in delicacy, this must lead to discrepancies. Finally, many serologists seem to forget that the Wassermann reaction is only a symptom and endeavor to make a diagnosis instead of merely reporting the results of a serological examination. All the tests cannot be either definitely positive or definitely negative, no matter what the method used. There must be some borderline or doubtful cases and it is the duty of the efficient serologist to give such cases special attention. It is in connection with the study of these cases that a good history is especially desirable. Most of the causes for discrepancies can be removed as soon as they are recognized. The removal of the differences in methods can only be brought about by an extensive comparative study. We wish to call attention to a few points which were brought out by such a comparative study on over 20,000 cases.

Serum.—The serum when possible must be fresh and not inactivated, as inactivation destroys some of the antibody. We presume that the antigen used is free from protein and thus the proteotropic power of fresh serum can be disregarded. In cases where crude alcoholic or watery extracts are employed as antigen, the use of fresh serum may lead to nonspecific proteotropic reactions. If it is too old and has become anticomplementary, heating may be resorted to, but not to any greater extent than just sufficient to remove the anticomplementary property.

Antigen.—The comparison was made by using aqueous and alcoholic extracts of syphilitic tissues; crude alcoholic extracts of various normal tissues; crude alcoholic extracts reinforced with cholesterol; pure lipoids—acetone insoluble—from normal animal or plant tissues, and finally the same extracts reinforced with cholesterol. The acetone insoluble fraction of tissue lipoids was found to be most suitable, from the viewpoint of high antigenic and low anticomplementary power. The preparation of the emulsion of the antigen is of great importance. The opaque emulsions were found to be less antigenic than the opalescent, fluorescent ones. Each new emulsion made should be titrated. The anticomplementary titration should be properly performed against one unit of complement. Only such antigens that show sufficient antigenic power in one tenth the anticomplementary dose should be used. Some of the recently published textbooks recommend using one half to one third the anticomplementary dose of antigen, which does not leave a safe enough margin. We have prepared acetone insoluble lipoids of which one tenth the anticomplementary dose contains 10-100 antigenetic units, by repeated reprecipitation. This has the effect of removing a larger amount of cholesterol and other constituents which make the antigen anticomplementary. The addition of cholesterol to alcoholic extracts increases the number of fixations when compared with the crude extracts, but not if compared with pure lipoids unless one uses an amount of the cholesterinized extract very close to the anticomplementary dose, when one obtains a great number—over twenty per cent.—of nonspecific fixations. In general the addition of cholesterol, though increasing the anticomplementary power, does not improve the antigen in a specific way.

Amboceptor.—The majority of serologists are using various heterologous hemolytic systems, mainly antisheep. We found that although through a great deal of work one can reduce the errors due to the presence of natural amboceptors, it is best to obviate this interference altogether by using the antihuman amboceptor. The objection to antihuman amboceptor that it is difficult to prepare, is incorrect. If one is careful to desensitize the rabbits by preliminary intraperitoneal injections before the intravenous injections are given, the loss of animals by anaphylactic shock is obviated. Also, if one does not kill the immunized rabbit in bleeding it, but allows it to recover and later uses it again for a series of injections, the serum of such an animal will increase in potency each time. We have been able to prepare amboceptors of which 1/3,000 to 1/4,000 c. c. of the serum contained one unit. It is to be remembered, however, that our titrations are performed against one c. c. of one per cent. emulsion of washed red blood cells, and if a five per cent. emulsion is used, as is usually the case with other methods, this titre would be reduced accordingly. The danger of interference of isoagglutinins for human cells is very small, for they are present in less than four per cent. of cases, and only if the test is positive is it necessary to repeat it with other cells. Preliminary sensitization of the cells was found preferable, for it not only permits of great economy of time, but also of reagents, and, besides, renders the test more sensitive. If one uses sensitized cells and titrates his complement properly, he finds that the unit of complement is much smaller than if the cells were not sensitized. If this unit of complement is used in the test it can be more completely fixed by a weak serum, and thus the delicacy of the reaction is increased.

Complement.—We find that human complement, contrary to accepted opinions, is as active against human cells as that of the guineapig. Therefore, in the systems using fresh serums, if the amount of complement in the human serum is ignored, serious mistakes may occur. This is especially true if one uses sensitized cells. However, if the human complement is carefully titrated and taken into account and only supplemented with minute amounts of guineapig complement, when necessary, this danger is eliminated. Besides, the error due to the presence of natural hemolysins of the guineapig is much reduced.

Incubation.—For diagnosis a thirty minute incubation at 37° C. in the water bath is the most reliable procedure. We found, however, that serums having a number of units of antibody—three to five or more—completely fix two units of complement in five minutes. On the other hand, complement is more completely fixed if the reaction is allowed to proceed at a low temperature for a longer period of time, but a number of fixations obtained in this way are not specific for lues, but are due to the presence in the serum of other antigens and their specific antibodies.

SUMMARY.

The procedure we recommend makes use of fresh unheated serum. The complement of the serum is titrated and utilized in the test, guineapig complement being added when necessary. We use reprecipitated acetone insoluble lipoids, of which one tenth the anticomplementary dose still contains ten to 100 antigenic units. The antihuman hemolytic system is used and the erythrocytes are sensitized before being added to detect the presence of free complement. Incubation for fixation of complement is best performed for thirty minutes at 37° C. in the water bath. However, one can use icebox incubation for ten to fifteen hours as a presumptive test to eliminate the negative serums, and 37° C. incubation for five minutes to eliminate the strongly positive serums. For diagnosis, however, the one half hour at 37° C. incubation is the best.

EMOTIONAL INFLUENCES IN GASTROINTESTINAL DISEASES.

By Malcolm Graeme MacNevin, M. D.,
New York.

Emotional states have long been known by the physiologists to exert profound influences on the functions of the gastrointestinal tract. Physicians, however, have rather slowly adapted experimentally obtained facts to clinical problems. The purpose of this paper is to call attention to such data and their clinical application.

Through carefully conducted experiments upon animals, Pawlow made valuable contributions to the study of the digestive secretions. He skilfully sectioned off a portion of the stomach without in any way interfering with its nerve and blood supply, in order to collect the stomach secretion free from food particles for the purpose of study under varying conditions. Since a normal flow of secretion was observed in the pouch into which no food had entered, it was obvious that the presence of food in the stomach was not essential to the production of the initial flow of gastric juice. This was proved to be the case through sham feeding, in which the food passed out of the esophagus through a fistula after having been taken with relish. Under variously modified but relatively similar experimental conditions, numerous investigators, among them Beaumont, Bidder and Schmidt, Schiff, Richet, Hornborg, Bogen, Le Conte, Bickel and Sasaki, Oechsler, Auer, Mantegazza, Kast, and Cannon and his associates, have presented many interesting facts concerning the digestive secretions and the motility of the gastrointestinal tract, some of which are as follows:

1. The initial flow of gastric juice is psychic. It is brought about through the sight, odor, taste, or chewing and swallowing of food under normal conditions whether the food enters the stomach or is sidetracked, as in sham feeding. 2. The flow of saliva and pancreatic secretions and to some extent the bile, is subject more or less to the same influences that govern the gastric secretion. 3. The flow of the digestive secretions may be modified or inhibited as a result of great disappointment, disgust, fright, anxiety, rage, or pain. 4. Fatigue or systemic infections may cause a temporary or prolonged cessation of gastrointestinal motility. 5. In the absence of appetite or relish for food, there is a diminished activity of the secretory glands of the mouth, stomach, etc. 6. The factors influencing the digestive secretions may also modify or inhibit temporarily the motility of the stomach and intestines.

The saliva begins to flow, especially if one is hungry, at the sight or anticipation of food. The watering of the mouth is familiar to everyone. During the mastication of food saliva continues to be excreted, aiding in mastication and deglutition. The ptyalin of the saliva begins its action on starch in the mouth and the process is continued for some time after the food reaches the stomach, namely, until free hydrochloric acid makes its appearance. In conditions of subacidity or achylia the ptyalin exerts its influence on the starch for a longer period. The initial outpouring of gastric juice appears a few moments after the flow of saliva under normal conditions, and as a sequence to the action of the psychic secretion on food in the stomach, the main flow of gastric secretion which continues throughout stomachic digestion follows through stimulation of the mucosa of the pyloric portion or as a result of absorption.

The normally established secretion of gastric juice plays a most important rôle. It assures the digestion of connective tissue and an acid medium in which pepsin efficiently converts the albuminous matter into albumoses and peptones. It also performs a valuable service in destroying myriads of pathogenic organisms which enter the stomach with the food, water, or swallowed saliva. Through the duodenal reflex the hydrochloric acid of the gastric juice regulates the opening and closing of the pylorus, and the discharge of the stomach contents into the duodenum where, upon contact with the intestinal mucosa, the acid chyme incites the flow of pancreatic secretion. The presence of fat or of water in the duodenum also stimulates the pancreas to activity. The bile, while to some extent governed by the same influences which dominate the other secretions, differs in that it is constantly secreted in the liver; there is not, however, a continuous flow into the intestine in the normal state. Even in fasting, bile is secreted though in greatly diminished amount. The secretion as well as the flow of bile is increased upon the taking of food, and this fact suggests in the treatment of cholecystitis and cholangitis the therapeutic value of frequent feeding, thereby causing a more continuous flow of bile and a consequent flushing of the biliary passages. The intestinal juice from the glands of Brunner and Lieberkühn follows mechanical and chemical stimulation from the presence of food in the intestine.

During the process of digestion in the stomach, the food through mechanical forces is intimately mixed with the gastric secretion and reduced to a puree consistency, in which state it is delivered at intervals into the duodenum. Although the epithelial cells of the gastric mucosa seem to experience no alteration during the splitting up and transportation of firm food particles, the cells of the intestinal mucosa are readily irritated through the passage of firm bodies which escape breaking up in the stomach. From the foregoing, it is seen that a well arranged series of events follows when food is anticipated and taken in the normal way. Having now briefly reviewed the physiological factors in digestion, we may turn our attention to the influence exerted upon them by psychic states.

In view of the sensitiveness of the balance of the secretory functions, frequently subject as they are in the human to disturbing factors through the play of the major emotions especially, it is clear that marked modifications or inhibitions of the digestive secretions are not of infrequent occurrence. Moreover, it is quite probable that a repetition of such occurrences at frequent intervals may in time induce changes in the gastrointestinal tract which account in some measure at least for various symptoms of disturbed digestion resembling in many respects those observed in subacid conditions and more especially those of achylia gastrica. Such symptoms as epigastric pressure or fullness, eructations or nausea, and occasionally vomiting or diarrhea after meals, are not uncommonly observed in individuals who are readily affected through emotional influences. In other words, a state of emotional achylia may result in which the early motility inhibition is probably of short duration.

The rôle of psychic factors is not sufficiently appreciated in gastric analyses. Thus, it not infrequently happens in examining patients who dread the passing of a stomach tube that a lower acidity is registered than in those patients not so disturbed; again, when such patients become accustomed to the use of the tube, the findings are more representative of the actual conditions in the stomach. In certain cases, particularly those in which there is an absence of hydrochloric acid or a diminished acidity, it is advisable to make a number of test meal examinations before drawing final conclusions and to take into account any factors which may have had an influence upon the secretion.

As a striking instance of emotional secretory inhibition and arrest of gastric motility, the following case is of interest:

Case.—A patient was given a retention meal in the evening; on passing the tube the following morning on a fasting stomach a considerable portion of the retention meal was expressed which showed no free acid and no evidence of digestion. The patient, shortly after taking her retention meal, had received a message of a distressing nature, causing a sleepless and anxious night. A few days later when the situation had cleared, upon repeating the retention test, the motility was found to be normal, as was also the Ewald test breakfast.

In the absence of the normal psychic influences which should accompany the taking of food there is undoubtedly some delay in the digestive process, the degree of interference probably depending on the absence or presence of an additional emotional factor. After such inhibitions the appetite may soon return though the flow of the secretions is not so readily reestablished. In all conditions in which there is an absence of hydrochloric acid in the gastric juice, there develop lactic and other related lower fatty acids based upon abnormal fermentative processes. Certain diseases, such as anemia, carcinoma ventriculi, achylia gastrica, and chronic atrophic gastritis, favor these developments. Even disease of the appendix and gallbladder, or other abdominal conditions, such as adhesions, are said to induce an achylia occasionally which clears up on a removal of the cause spontaneously or otherwise, the disturbance in the stomach being obviously reflex.

In the play of the major emotions conditions exist which are the result of abnormal or disturbed innervations, and while recognizing the element of speculation in attempting to account for the absence of hydrochloric acid in the gastric juice in some cases, suffice it to say that impulses are known to travel readily on well opened up pathways; hence, in those individuals who are especially susceptible to frequently recurring emotional states, the abnormal or inhibitory influences are in control. A condition of arrested or abolished secretion or an emotional achylia may result and continue over a considerable period, thereby establishing an achylia probably of the type in which no organic change takes place in the gastric glands, in contradistinction to subacidity and achylia due to chronic atrophic gastritis.

As a result of the absence of hydrochloric acid there is no peptic activity. The stomach empties its contents into the duodenum not only insufficiently prepared mechanically and chemically, but with such rapidity as to seriously tax the digestive capacity of the intestines. In hydrochloric acid deficiency it has been proved experimentally that an impaired or insufficient pancreatic secretion may also exist, which would further embarrass the intestinal digestion. The proper splitting up of food materials as far as the intestine is concerned, can only be thoroughly accomplished when the food is mechanically and chemically prepared in the stomach. In the absence of such preparation there results an irritation of the intestinal mucosa, an abnormal secretion and a marked influence on the muscularis follow, leading to the development of increased peristalsis, a fact of great importance in the origin or diarrhea. Under such conditions the intestinal flora is completely changed, and fermentation readily occurs. Microorganisms which under ordinary conditions are either absent or relatively inert, are thus able to cause inflammatory changes and become important factors in producing intestinal irritation through the formation of toxins. In such a disorganized state the digestion of meat is seriously impaired. The more rapid peristalsis carries the food materials to lower levels of the intestine before they have been sufficiently exposed to the digestive juices of the small intestine, to a region where food absorption is less active and where conditions are infinitely more favorable to the development of fermentative and putrefactive changes. The digestion of starch and fat is, on the other hand, not materially affected unless the diarrhea assumes a more active form, for the reason that these food materials are rapidly split up in the presence of their ferments and readily absorbed. Should the intestinal condition become still more pronounced, undigested food particles including connective tissue are easily recognized in the intestinal evacuation, establishing a lienteric diarrhea.

Many practitioners do not have it sufficiently in mind that the great majority of chronic diarrheas are found to be associated with or dependent upon a deficiency of hydrochloric acid in the stomach. Hence, the term "gastrogenic" diarrhea. It is quite probable that in achylia gastrica of the nonatrophic type the hydrochloric acid may be reestablished, in which event the intestinal condition continues in some cases for a long period, and if observed at this stage for the first time, the gastric origin of the diarrhea would be obscured. Little is known regarding the etiology of achylia gastrica. In some cases the secretory glands of the mucosa are atrophied while in others no changes are found. It may be suggested that some of the latter, or nonatrophic types, are associated with or follow the frequently established emotional states, the emotional chronic achylias resulting. The psychic states are intimately related to certain phenomena frequently observed in the digestive tract and elsewhere, which are the outcome of a disturbed relationship of the groups of nerves which make up the autonomic nervous system. These groups are as follows: 1, the vagus which transmits tonic or motor impulses; 2, the sympathetic which transmits inhibitory impulses; 3, the ganglionic plexuses of Auerbach and Meissner, which are said to initiate and transmit independent impulses. When there is an increase of the vagus tone, or vagotonia, the following conditions may exist: hypermotility of the gastrointestinal tract, hyperacidity, or a spastic type of constipation with mucus frequently in the stools. There may also be a slow pulse, contracted pupils, and clammy hands and feet. When the sympathetic group is in control there is generally a hypomotility of the gastrointestinal tract, a hypoacidity, an atonic type of constipation with mucus less frequently in the feces. The pulse is rapid, the pupils dilated, and the hands and feet dry. It is seen, therefore, that these two sets of nerves are diametrically opposed in their actions. The stability of the autonomic system is possibly dependent upon the maintenance of a normal balance of the internal secretions, and these in turn, when relatively disturbed, may be intimately associated with the emotional states as recently demonstrated by Cannon. In vagotonia conditions exist which may readily lead to the development of gastric or duodenal ulcer. Indeed, it may be found that digestive disturbances not infrequently have as a background an abnormal relationship of the internal secretions. The onset of a diarrhea in hyperthyroidism is of interest in this connection.

Regarding the influence of physical exercise and mental effort on gastrointestinal motility, Kast has demonstrated experimentally that in healthy individuals there are but very slight variations. Physical exercise, however, when carried to the point of marked fatigue may impair motility. Mental effort in normal cases has no effect. In persons with marked degrees of atony or splanchnoptosis the evacuating power of the stomach and intestines decreases in direct proportion to the amount of physical and mental effort. In individuals who are clinically susceptible to the effect of fatigue, mental effort has more influence in delaying evacuation than physical exertion.

Mention should be made of hypersecretion and hyperacidity, as these conditions are frequently associated with the psychic state. Hypersecretion, gastrosuccorrhea, whether intermittent or continuous, is in many cases a result of faulty innervation. It occurs in neurasthenia, hysteria, mental fatigue, and in emotional strain; also, as a result of errors in diet and excessive indulgence in alcohol and tobacco. It may also occur in hyperacidity and ulcer of the stomach. The vomiting of large quantities of fluid of acid reaction or the finding of an excess of secretion in the fasting stomach containing acid and pepsin are characteristic features. In well marked cases, nutrition is seriously impaired as a result of frequent vomiting. Hyperacidity is of frequent occurrence, being present in about fifty per cent. of the cases of digestive disorders. It may be purely of nervous origin, depending on abnormal stimulating or inhibiting impulses, or it may result from reflex impulses from a pathological condition in some remote part. Persons suffering from hypochondria, neurasthenia, and melancholia are often victims. It is frequently observed in those who suffer from gastric or duodenal ulcer, mental strain, grief, etc., and in individuals who eat rapidly or who partake of improperly prepared food, cold beverages, etc. Those who take freely of meats and wine and smoke to excess are especially liable to hyperacidity; while those who indulge freely in whisky are prone to subacidity.

In conclusion, I wish to emphasize that while great advances have been made in the treatment of diseases of the digestive system, as a result of thorough investigation of the gastrointestinal tract and the adaptation of properly selected and prepared food to the requirements of the body, it is equally important intelligently to interpret symptoms occurring in other parts which are purely reflexive expressions of a disturbed digestive process. When the significance of these symptoms is recognized, treatment should follow more rational lines. There are still other influences to be considered which are primary, the digestive disturbances being secondary. Thus, in a study of psychic and emotional states, a number of suggestive clues offer themselves as factors to be followed in treatment, and until a better understanding of these states from this angle is reached, treatment will often fail. Indeed, the effects of psychic and emotional influences may be far reaching, frequently dominating the situation. It is hoped that a clearer conception of the importance of these interesting phenomena may result in simplifying the treatment in certain perplexing digestive problems.

771 Madison Avenue.

THE USE OF THE TERM "HYSTERIA."*

With a Plea for Its Abolition and a Consideration of the Problem of Dismemberment of So Called Hysteria.

By Meyer Solomon, M. D.,
Chicago.

It is my object in this paper to take up for general discussion the use of the term "hysteria" from the clinical viewpoint. In two previous communications (1) I made an effort to delimit hysteria clinically as a disease. It is because my viewpoint has broadened and my conception has become more radical, that this, my third paper on this subject, is offered. I shall confine myself as closely as possible to the clinical aspects of the problem. The various theories of hysteria will not be considered except in so far as they bear directly on the clinical use of the term "hysteria." I find various writers and students of so called hysteria using the word with different clinical concepts. It is well known that the average physician employs the diagnostic label "hysteria" very loosely. And one finds no unanimity of opinion as to the clinical significance of this term even among the foremost specialists in nervous and mental diseases.

The word "hysteria" is, of course, a misnomer and rightfully has no place in scientific medicine. As Donley (2) says in discussing the problem of neurasthenia: "The words we employ to denote abnormal conditions of mind and body have been transmitted to us in large part as an heritage, and to these words custom has attached a more or less definite, distinct meaning." Unfortunately at times the meaning is so vague, indefinite, and indistinct that we seem to have been cursed by a burden of heredity. This, as I see it, is our precise status with respect to the term "hysteria." The term recalls to mind the past history of so called hysteria, which was at first given a uterine etiology. As Jelliffe (3) has so neatly expressed it: "From the uterus, to uterine humors, to uterine nerves, to the nerves in general, and thus to the centre of the nervous system; these were the successive steps in the evolution of the ideas of etiology." Our modern theories really began with Charcot and may be divided into three groups, psychological, physiological, and biological, with the psychogenic factor prominent in all. Most modern writers on hysteria employ the term without giving a specific clinical group of phenomena to which it is applied. Consequently, to know exactly what a writer means when he refers to hysteria, it is necessary to ask point blank: How is this author using the word hysteria clinically? or, What does this author mean clinically by hysteria?

PROTEAN SYMPTOMATOLOGY OF SO CALLED HYSTERIA.

A few have made attempts to limit the use of the term when used as a clinical diagnosis. One, at least—Babinski (4)—has made a bold effort to dismember the group, to limit the use of the term hysteria to a specific group of symptoms, and finally to substitute another name—pithiatism—for hysteria. Babinski's views have not received general acceptance because he has not given all of the facts a full and fair hearing. It may be said that most of the definitions of hysteria are of no help to us in our quest. Moebius's definition (5) has been widely quoted by many. According to him, hysteria should include all morbid phenomena induced by ideas, or he would define it as a state in which ideas control the body and produce morbid changes in its functions. This definition is entirely unsatisfactory. It does not distinguish between ideational and emotional states. It would include all sorts of mental and bodily disorders, transient or prolonged, and due directly to ideas, although it is possible that Moebius meant to include the effects of the emotions within the confines of his definition. Since this definition includes all sorts of manifestations occurring in normal and abnormal persons, everyone is somewhat hysterical and hysteria has no particular clinical delimitation. Gilles de la Tourette (6) laid stress on the factor of suggestion, Bernheim (7) followed in the same train, and Babinski has, as just mentioned, cut off a group which he calls pithiatism and in which suggestion is the sole factor. Babinski (4) has removed pithiatism, Janet (8) psychasthenia, and Freud (9) his anxiety neurosis from so called hysteria. Janet's well known and oft quoted definition (10) of hysteria as "a form of mental depression characterized by the retraction of the field of personal consciousness and a tendency to the dissociation and emancipation of the systems of ideas and functions that constitute personality" is purely psychological and does not hint at the dividing line of hysteria clinically. Freud, the Freudian school and their offshoots, in spite of the flood of papers on the psychoneuroses, have never endeavored to give a clinical delimitation of hysteria.

Most authors include under hysteria a heterogeneous mass of symptoms, which we may conveniently classify under three main headings: 1, disturbances of a purely psychological nature; 2, disturbances of the voluntary nervous system; and 3, disturbances of the involuntary nervous system. Some of the main symptoms included under each group are as follows: Under disorders of a psychological nature there are mentioned the hysterical character, emotional instability, suggestibility, negativism, tendency to sensationalism, dream states, fugues or flights, even the Ganser syndrome and other psychotic outbreaks, somnambulism, subconscious acts, amnesias and abulias, and some include even double or multiple personality. The disorders of the voluntary nervous system include such manifestations as hysterical motor attacks with the convulsive phenomena—the minor and major crises; tremors; crying and laughing; choreiform movements; hysterical myoclonus; hysterical tetany; paralyses; losses of skin sensation—of touch, temperature, deep sensibility, and the mucous membranes, and of pain; hyperesthesias; hyperalgesias and pains,[1] internal and external; disorders of the special senses—hearing, the vestibular apparatus, smell, taste, sight and abnormal reactions of the tendon reflexes due to volitional interference. Under disturbances of the involuntary nervous system we may mention: hysterical fever; trophic skin changes—bullæ, gangrene, ulcers, etc.; vasomotor phenomena, such as edema and bleeding; secretory disturbances—sweat, urine, and intestinal secretions; and the reflexes.

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*Read, in part, before the Chicago Neurological Society, April 26, 1917.

It is thus seen that hysteria may include disturbances of all sorts in the sphere of ideas, feelings, voluntary sensorimotor nervous system, and the involuntary sensorimotor and vegetative nervous systems. It is not at all surprising, then, that we find Dana (11) wisely remarking: "If we take in all that is usually called by this name [hysteria], it is a condition that cannot be defined." In fact different writers of good repute disagree on which manifestations shall be called stigmata and which accidents. Under these circumstances we may well ponder whether we shall agree with Janet that hysteria is a disease with such a beautiful and wonderful history that it would be a very sad thing if we did away with it. May it not rather be that the diagnosis hysteria has not represented any particular clinical disease and that it is our duty to do away with this term and definitely name the various clinical entities for which it has stood so often in the past?

ATTEMPTS TO DELIMIT SO CALLED HYSTERIA CLINICALLY.

Let us briefly review the few real attempts that have already been made to dismember the hysteria of old and to limit the employment of the term to some clean cut clinical syndrome. According to Steyerthal (12) there is no such things as hysteria. Most of the cases of so called hysteria are, he believes, really neurasthenia or mental inferiority, and the so called stigmata of the Charcot school are but signs of exhaustion. All that Steyerthal says, then, is that what others have been in the habit of calling hysteria is in fact always something else—neurasthenia, mental inferiority, or signs of exhaustion—he does not define in what clinical sense he uses any of these terms, including the term hysteria. Bernheim (7) and his followers (13) use the term hysteria in a very limited sense. According to Bernheim only the pure major crises should be called hysteria. Hysteria is not a disease entity but an epiphenomenon, consisting merely of the crises, which may result from accidental emotion or in the course of some other disease, the crises being nothing more than an exaggeration of a psychodynamic reaction occurring in all of us under emotion, in the form of trembling, choking feeling, delirium, stupor, and the like. The crisis is an accident and not a disease. If it repeats itself, be it by new emotions or emotional autosuggestion, then we have what Bernheim is willing or pleased to call hysteria; which, he insists, can be cured by suggestion. It is to be noted here that Bernheim does not differentiate between the transient manifestations of acute emotionalism and the prolonged and lasting symptoms of a postemotional nature which have been grouped under hysteria by all writers on the subject. He thus disregards all manifestations other than the pure major crises. In fact he regards all these other symptoms as the results of suggestion, to which the patient is subjected subsequently.

Next we come to the views of Babinski (4). I consider these views so important that I shall present them and discuss them at some length since it is my opinion that Babinski has made the first noteworthy attempt to dismember hysteria clinically. Even though he has neglected certain factors, his efforts were productive of much good and at least threw down the gauntlet to those who had been using the term hysteria so loosely from the clinical standpoint. In brief, Babinski takes from the conditions generally grouped by others under so called hysteria a certain group in which the symptoms can be produced by suggestion—which he would define as the acceptance of unreasonable ideas—and which can be cured by persuasion—which he would define as the acceptance of reasonable ideas—and it is this group which he would call true hysteria. This term, however, he would substitute by one of his own coinage, namely pithiatism, which in Greek means "cured by persuasion." Babinski thus excludes from so called hysteria the following groups: 1. Errors in diagnosis of nonnervous from nervous diseases and of organic from functional nervous diseases. 2. Conditions due to simulation and deceit, which may be of three different types: simulation of true pithiatic signs—this in truth being but aggravation and exaggeration; simulation of purely fictitious phenomena, such as fever and anuria; simulation of real phenomena consciously produced by the patient for purposes of fraud, called by Dupré (14) mythomania, and comprising such phenomena as erythemata, phlyctenulæ, ecchymoses, ulcerations, edemas, and the like. 3. Other functional states, such as those conditions classified as hypochondria, neurasthenia, and the like, not characterized by the special earmarks of his pithiatism, or, in other words, not producible by suggestion or curable by persuasion. 4. This would thus leave the following three classes of symptoms: a. True pithiatism in which the manifestation are due to and can be produced by suggestion and are cured by persuasion. Here he would include all the so called stigmata. b. Symptoms which he refers to as emotive, the phenomena appearing and disappearing as the result of emotional shock, with imitation probably playing a more important rôle than emotion itself. This group would include such manifestations as tachycardia, vasomotor disturbances, disorders of the cutaneous and intestinal secretions. c. Lastly come the so called reflex phenomena, including exaggerated tendon reflexes, vasomotor skin disorders (dermographia and so forth).

Athough Babinski admits that all the phenomena mentioned under heading 4 may be grouped together, yet, since he believes that the last two groups containing his emotive and reflex symptoms are not producible by suggestion and curable by persuasion, they have no right to belong to his true hysteria or pithiatism, a condition in which the characteristic magic formula "producible by suggestion and curable by persuasion" holds true.

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[1] Pains cannot, of course, be voluntarily produced. I believe they are always of peripheral origin primarily and directly.

All phenomena which do not react according to his formula are excluded by Babinski from what he would regard as real, true, pure hysteria, renamed by him pithiatism. At one point Babinski asks whether the phenomena which he groups under pithiatism—all the so called stigmata of so called hysteria—may be of two kinds: 1, curable by suggestion-persuasion, and 2, incurable by suggestion-persuasion. He denies this possibility and says that pithiatism or hysteria may be pure or associated with other conditions, but in any instance it is curable by suggestion persuasion. This would clearly mean that when the so called stigmata of the hysteria of old are found to be not curable by persuasion, then, if we follow Babinski, they are not pithiatic or hysterical. Now it so happens that the really typical form of so called hysteria, as seen for example in the traumatic form of so called hysteria, presents symptoms which are definite, objective phenomena, which we may find to be not at all influenced by any amount of suggestion or persuasion and which continue for a more or less prolonged period. Whether we call these phenomena pithiatic or not does not matter much, but we cannot deny the existence and reality of these most characteristic phenomena, and, despite Babinski's dogmatic assertions, these phenomena are found in many instances to respond not in the slightest degree to his formula. Babinski, then, it is plain, has failed to give consideration to the most common, prolonged, and typical group of symptoms which we have been in the habit of calling hysterical. Without, therefore, entering into a long, controversial discussion of Babinski's views in this connection, I may say that Babinski's conception of hysteria, which to him is synonymous with pithiatism, is but a special formula and applies to but one group of symptoms. His great mistake is his failure to consider the prolonged postemotional somatic phenomena not due to mere suggestion and not cured by persuasion. Sollier (15), Dubois (16), and others have shown the error of Babinski's thinking in this matter. In truth, according to Babinski, the patient is an automaton—the hysteric is in a chronic state of autohypnosis. The physician operator's will power can produce or cure the phenomena of hysteria in others. Babinski's pithiatism or hysteria is really simulation of disease due to autosuggestion or heterosuggestion. It is a certain kind or degree of simulation; he would call it unconscious, involuntary, nonpurposive, nondeliberate simulation. It is a sort of semisimulation. He would probably agree that the mechanism of simulation and pithiatism is the same except that the former is conscious, purposive, deliberate, planfully produced, while the latter is not. Babinski has failed to appreciate the fact, it seems to me, that suggestion cannot produce phenomena that last for weeks, months, and even years, being present continuously without intermission during this period. Babinski has also failed to distinguish between phenomena produced by ideas and those the result of emotion. Somatic phenomena due to ideational processes, whether those of everyday life, or due to simulation or due to suggestion, are voluntary and may be stopped immediately under the influence of suggestion. But manifestations due directly to emotionalism are produced involuntarily, may persist, and are not to be expected to be cured immediately by the direct influence of suggestion.

Let us now turn to the views on the clinical concept of hysteria offered by Dejerine and Gauckler (17) in their recent book on the psychoneuroses. They stress the peculiar indifference or passivity concerning the physical symptoms which we meet so constantly in hysteria, and demand that this be the characteristic mental state for pure, true, typical hysteria. They rightly insist that hysteria is not a synonym for suggestibility; for all of us, normal or abnormal, are more or less suggestible. Moreover, these authors assert, suggestion alone, unless reenforced by emotion, can neither produce nor cure the symptoms of hysteria. It is emotion, and not suggestion, which produces the symptoms of hysteria. They include trophic and cutaneous disturbances under hysteria, these being of vasomotor and trophoneurotic origin. They admit that "the great majority of hysterical symptoms, particularly the anesthesiæ, contractures, and paralyses, conform to a topography which corresponds to intellectual acquisitions, and not according to anatomical or functional localization." Dejerine and Gauckler insist that "the hysterical symptom always appears as being a residue, or an emotional relic." They go further than this and say that "the domain of hysteria may in fact be limited to the very domain of physical and psychic emotional reactions. Everything that an emotion may create in an accidental and transient way hysteria may accomplish in a lasting way." Since in this statement the authors fail to limit clinically their symptomatology it is not surprising to find that on the very next page there is a statement which directly conflicts with this last quotation: ". . . It seems to us quite legitimate to study under the common term psychoneurosis the symptomatic mechanisms which recognize emotion as a general and immediate pathological factor. According to the ground on which the seed falls emotion will exercise its action. Sometimes it is neurasthenia which will be developed and sometimes it will be hysteria with all its symptoms which will manifest itself." And, again, further on, they say that "all the phenomena which emotion or emotional representations are capable of creating in a transitory fashion are susceptible of existing in a lasting form in a psychoneurosis, whether they occur as hysterical phenomena, or neurasthenic phenomena, or associated phenomena." This last statement is made during the course of a discussion of lasting vasomotor, secretory, and trophic symptoms, both diffused and localized. They look upon the attack as the least specific thing in hysteria, an hysterical attack being only an emotional discharge. Finally Dejerine and Gauckler make an unequivocal statement at variance with some of the above quotations when they assert: "No symptom whose origin does not lie in some emotional traumatism, and which has no relation to the various modes of physical emotion or which is not due to the emotional inhibition of a certain number of mental representations, is, to our way of thinking, an hysterical symptom." It is thus seen that in the opinion of Dejerine and Gauckler, although suggestion may play a secondary rôle, emotion and not suggestion is the genetic route of hysterical symptoms. And although in certain places they include under hysteria postemotional disturbances of both the involuntary and voluntary nervous systems, in a final and unequivocal declaration they seem actually to limit the use of the term to postemotional somatic phenomena confined to the voluntary nervous system, with a mental state of relative indifference or passivity.

Dubois (16) regards as the characteristic of hysteria the fixation of postemotional somatic disturbances. So called hysterics have an undue or exaggerated somatic or physical impressionability or reactivity as a result of external stimuli in the form of shock or emotion with the production of persisting symptoms. He does not specifically differentiate between manifestations of the voluntary and involuntary nervous systems respectively.

In looking over the many works and articles on the symptomatology of hysteria, one is at once struck by the fact that it is the so called stigmata of hysteria which are viewed as the most typical, characteristic, and constant findings of hysteria. These consist of phenomena or reactions, which belong, for the most part, to the voluntary nervous system. Even Babinski's pithiatism confines itself to a certain set of disorders of the voluntary nervous system for the most part. He believes, for example, that suggestion can produce convulsive crises, paralyses, contractures, trembling, choreic movements, disturbances of speech, disturbances of respiration, disorders of general sensation, and of the special senses, and bladder symptoms. All of these are under voluntary control to a varying degree. As not being producible by suggestion, he groups exaggeration or abolition of tendon reflexes, disturbance of pupillary or cutaneous reflexes—although he admits that to the novice suggestion may interfere with most of these reflexes—vasomotor, secretory, or trophic disorders, or hemorrhages, anuria, albuminuria, and fever. In other words, athough Babinski does not so express himself, there is a tendency in his classification to separate phenomena of the voluntary from those of the involuntary nervous system.

Recently, in the two papers (11) previously mentioned, I attempted to delimit hysteria clinically, that is, to limit the use of the term hysteria in a special sense, as representative of a certain group of symptoms. I advocated the limitation of the use of the term hysteria to functional disturbances of the voluntary sensorimotor nervous system, including the disturbances of the special senses, not due to suggestion or simulation, not removable by suggestion-persuasion, but being protracted symptoms of emotogenetic origin. I agreed with Dejerine and Gauckler that mentally one should require a state of indifference or passivity for the pure form. I also agreed that the pure major crises be included under so called hysteria. Donald Gregg (18) has come to somewhat similar conclusions. Since writing these two papers I have come to realize that Gregg and I have no more right to limit the term hysteria to the particular class of disorders I have mentioned than Babinski has to limit his hysteria or pithiatism to the special group of disturbances he has removed from the hysteria conglomeration. I will say, however, that, in my opinion, the clinical definition or delimitation offered by Gregg and myself independently comes nearer conforming to a clinical concept in accordance with the typical cases of so called hysteria, as seen, for illustration, in the posttraumatic form, than any previously offered.

WHY THE TERM "HYSTERIA" SHOULD BE ABOLISHED.

It is clear from the above superficial review that it is the employment of the term "hysteria" which has been the stumbling block for all of us. Since hysteria has no definite clinical delimitation for most of us, each of us has the right to use it for any clinical functional concept that he may wish. What satisfies one author may not find a similar reception on the part of another. Different authors may be discussing entirely different types of symptoms, and all of them may be dubbing these different clinical concepts hysteria. The duty before us, it is plain, is not to state in what sense we should like others to use this term, but, since there is disagreement of opinion and preference on this point, to do away with the term altogether and completely dismember the hysteria of old, split it up into the different clinical groups which have been called by that name by this or that writer, and name each of these different groups appropriately.

The term hysteria, then, should be abolished for many reasons: 1. Hysteria as a word is etymologically unscientific when applied to any of the phenomena which have been classified under this name, since it harks back to the days when the uterus was incriminated as the cause. 2. It recalls the days when hysteria was synonymous with simulation. 3. It must be discarded because of the heterogeneous clinical groups of manifestations in the purely psychological sphere, and in the sphere of the voluntary and involuntary nervous systems which have been packed by one or another author into this group. 4. No unanimity of opinion or agreement can be reached as to the delimitation of the clinical concept to be given this name transmitted to us from olden days. Shall we be bound down by tradition and usage which leads but to a conflict of tongues and universal misunderstanding in discussion of this subject? It seems to me, as a consequence, that there is no way out of the dilemma other than to do away with the use of this term once for all. And, having done that, to proceed to a disintegration and arrangement of the protean conditions hitherto massed together by different students of this problem.

THE DISMEMBERMENT OF SO CALLED HYSTERIA.

We must first agree that the following three groups of disorders are not infrequently labelled hysteria, but that they are merely errors in diagnosis. To be sure, no one now includes these conditions under "hysteria" or knowingly labels them as such. Errors in diagnosis include: 1. Organic diseases of nonnervous origin are often called hysteria. Here we may mention unrecognized or concealed tuberculosis and syphilis, conditions due to chronic focal infection, gastric and duodenal ulcer, and the like. 2. Certain organic nervous diseases may be wrongly diagnosed as functional nervous diseases and given the all inclusive name hysteria. Here we may mention multiple sclerosis, syphilis of the nervous system, brain tumor cases, and so forth. 3. Sometimes the term hysteria has been applied so loosely and indiscriminately that it has been made to include all functional diseases of whatever nature. It is small wonder, then, that this label has been given and is being given by many to such different functional states as tics, phobias, doubts, anxiety states, and the other types of functional disease. These conditions should be recognized for what they are and given their appropriate label or name.

We may now proceed to dismember so called hysteria. In order to appreciate the different groups that follow, we may begin tabulation with the sort of phenomena which characterize usual, everyday life, and which are generally labelled ordinary conduct, using this word in a psychological sense.

I. Ordinary voluntary activity.—This activity is performed consciously and purposively. It may consist of ideational processes, emotional reactions, and activity of the voluntary sensorimotor nervous system. This is our ordinary conduct, and the activity so produced is transient in nature.

II. Simulation.—Ordinary simulation is done consciously and purposively, and employs the same mechanisms or processes as ordinary voluntary activity, but the motive is not the same. The activity is being employed in order to convince the physician that the ideas and other activities are the evidence of abnormality or disease and require special consideration. Here we have the voluntary simulation of disease. In this group we find activities in the form of ideas, emotions of an acute and transient nature and consciously and purposively produced, and activities of the voluntary sensorimotor nervous system of the same nature. The volition cannot directly affect the involuntary nervous system and so temporary functioning of this nature can occur in simulation only indirectly by the antecedent assumption of certain emotional states. Simulation cannot produce lasting, prolonged disorders which remain unchanged for weeks and months. The manifestations are transient, but they may be reproduced over and over again, whenever brought into play by the simulator. Exaggeration is closely related to simulation.

III. Lying.—Lying, of course, is nothing other than the employment of ideational processes for the purpose of willful misrepresentation. Ordinary lying is done consciously for some particular object in view.

IV. Mythomania.—This term was invented by Dupré and has received much usage in a special sense. It refers to selfmutilations produced by the patient for the purpose of deceiving the examining physician. The injury or mutilation is produced secretly by the patient who denies their false origin and insists that they appeared as the result of internal bodily processes, without any action or interference on his part. *Selfmutilation* is a better and more desirable term than mythomania.

V. Pithiatism.—This is the condition described by Babinski. He regards it as unconscious simulation. It is a sort of semisimulation. The manifestations are the result of blind conduct brought on by suggestion and not of a consciously purposive kind, as we have in ordinary, conscious simulation. Pithiatism, or unconscious, blind simulation, can affect only those activities under the control of the volition. We may have here, as in ordinary simulation, activity in the form of ideas, of acute and transient emotional attitudes, and of the voluntary sensorimotor nervous system. Disorders of functioning of the involuntary nervous system cannot be produced directly by suggestion, but the intervention of the emotions may cause such transitory phenomena to appear. Pithiatism or suggestion cannot directly produce disordered functioning of the voluntary nervous system which remains present for weeks, months, and even years. The phenomena capable of production by suggestion or pithiatism are of short duration. They are transient. In his failure to appreciate this point, so it seems to me, Babinski has erred. *Suggestionism* is, it seems to me, a term preferable to pithiatism.

VI. Disturbance due to direct emotionalism and shock.—These phenomena are not due to simulation or pithiatism. Here the emotionalism is unconsciously and nonpurposively produced so far as the self is concerned. But it is of the ordinary, pure, true type, a biological reaction in response to certain disturbing stimuli, internal or external. Ideas and shock are the two inciting factors. Emotionalism may produce two main kinds of reactions with respect to the duration of the induced phenomena. Ordinarily the functional reactions of emotional upset are acute and transient in nature, passing off in a brief time, usually within a few minutes or more. Sometimes, especially as the result of traumatic shock, after the transitory symptoms of the acute emotional upset have passed off, there remains or supervenes subacute or chronic, prolonged, postemotional disordered functioning. Let us add these two types to our list.

A. Transient phenomena accompanying acute emotionalism.—Four chief kinds of symptoms may result: 1. Activity in the ideational sphere. 2. Activity in the sphere of feelings, with the assumption of characteristic emotional attitudes. 3. Reaction of the voluntary sensorimotor nervous system. Here, among other types of reaction, we should include the so called hysterical crises; there is some voluntary control over the reflexes. 4. Reactions in the domain of the involuntary sensorimotor and vegetative nervous systems. The former comprises the skin and tendon reflexes. The latter phenomena are of two kinds: internal phenomena, with reaction of the visceral functions—heart, intestinal muscles, and glands, and so forth; and peripheral vegetative nervous system functional reactions—sweat, vasomotor phenomena, etc.

B. Prolonged postemotional phenomena.—Here, too, the disorder may be in one or more of the same four spheres: 1. Ideational processes. 2. The feelings with their specific attitudes. 3. Disturbances of the voluntary sensorimotor nervous system. This group of reactions comprises the most characteristic and typical set of disorders which all have been classifying under so called hysteria, seen most typically in the posttraumatic form of so called hysteria. If the term hysteria were to be used at all, I would be in favor of limiting its employment to this particular class of symptoms. The term "neuromimesis," which Sir James Paget once suggested be substituted for hysteria, can well be applied to this special group, giving it the limited clinical significance here outlined. It would thus be employed to designate prolonged, postemotional disorders of the voluntary sensorimotor nervous system. These manifestations are thus seen to be emotogenetic in nature, not due to simulation or suggestion, and involuntarily produced. 4. Disorders of the involuntary sensorimotor and vegetative nervous systems. Again, as with transient phenomena accompanying acute emotionalism, the involuntary sensorimotor reactions consist of the skin and tendon reflexes, while in the involuntary vegetative nervous system we have two groups: internal or visceral, and peripheral disorders of a prolonged nature. Ductless gland and biochemical changes may be produced in some cases.

One must be careful to exclude all possible causes other than emotional shock and trauma before attributing such disorders as we mention under this heading to emotogenetic factors. Nor is it easy to prove such etiology or genesis.

It is understood that, since such postemotional disorders are relatively infrequent, they must be looked upon as abnormal or pathological. The transient disorders accompanying acute emotionalism are normal and occur in all of us in varying degree. This cannot be said of the second group. Those, then, who develop the postemotional disorders mentioned under the heading Prolonged Postemotional Phenomena have exceedingly impressionable, sensitive, irritable, abnormal nervous constitutions. This abnormality may be congenital or acquired. By "abnormal" I mean nothing more than unusual, infrequent, uncommon. When protracted, chronic, or frequently recurring symptoms indicative of abnormal functioning of the vegetative nervous system occur in any patient, it means that there is an overstimulation or abnormal irritability with overfunctioning of one or both of the great divisions of this involuntary network—the vagus or autonomic involuntary nervous system and the sympathetic involuntary nervous system. Although such abnormal functioning or activity in this system is an indication of a special irritability or susceptibility in this direction, still it is necessary for us to make a thorough study and search for all possible inciting agents which may be responsible for bringing such a trend or weakness to the fore. Among other provocative factors, such as intoxication by foreign protein, infection, drugs, etc., such disturbed, pathological reaction may be induced by emotionalism. The more frequent, intense, and chronic the emotionalism and the greater the abnormal constitution or irritability of one or the other or both of these divisions of the vegetative nervous system, the greater the possibility and the greater the degree of such reactivity.

If I am justified in offering the classification which I have given in this communication, it means that in all cases of the sort enumerated, one must make a careful investigation as to the possible mental state of the person presenting the symptoms and as to the genetic factor or factors responsible for the evocation of the particular picture which is before us for diagnosis. Of course, there may be a combination of two or more of these types of reaction in the same person. For example, an individual may have what I have suggested may be referred to as neuromimetic symptoms, classified under prolonged emotional phenomena, disorders of the involuntary sensorimotor and vegetative symptoms, and still resort to lying or simulation or both as superadded types of meeting the situation.

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1517 SOUTH KEDZIE AVENUE.

THE SEROVACCINE TREATMENT OF PNEUMONIA.*

By JULIUS BRODER, M. D.,

New York,

Visiting Physician, People's and Har Moriah Hospitals.

In this paper I desire to point out the excellent results obtained from the use of vaccines and serums in cases of pneumonia, particularly those that have assumed a serious and aggravated character. Plenty of fresh air, a nonputrefactive fluid diet, and skillful and careful use of vaccines and serums comprise my method of treatment.

Acute lobar pneumonia is an acute specific general disease caused by a specific poison. The specific germ, such as the pneumococcus, has been found in the mouth, nose, and larynx. Other microorganisms, such as Friedländer's bacillus, the streptococcus, and the staphylococcus, have also been found to possess the power of exciting pneumonia. The toxins formed by these bacteria are diffused throughout the system, causing a general infection. Acute lobar pneumonia is of quick onset. In a typical severe case, the temperature rises rapidly and may reach 104° F. in a few hours after the initial rigor. Then the general symptoms follow. The pain in the affected side may be almost unbearable and if unrelieved, aggravates the dyspnea. The cough may be so frequent and irritating as to exhaust the patient completely. The pyrexia is usually very great and its continuance is especially dangerous to the cardiac muscle. The dyspnea may be extreme and is accompanied by cyanosis. Delirium coming at an early stage is dependent on the severity of the action of the toxins on the nervous system, but if it comes at a late stage and depends on exhaustion, it is a very grave and dangerous symptom. An acute gastritis is apt to occur, induced by improper feeding, and by the administration of antipyretics, irritant diuretics, expectorants, and sedatives. Cardiac failure is the greatest danger to life in pneumonia and is usually due to the intensity of the septic infection. This form of pneumonia of an aggravated type, whose mortality rate is ordinarily very high, responds remarkably to the serum treatment, the temperature falling rapidly after the injections. Doctor Katz, house physician to the People's Hospital, was kind enough to gather the accompanying records and charts of cases treated in this hospital.

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*Read before the Clinical Society of the People's Hospital, April 12, 1917.

In treating this type of pneumonia, the first indication is to antagonize the injurious influences of the specific infective organisms on the blood and the tissues. The second is to relieve and to subdue the distressing symptoms. Both of these indications are met by the proper use of vaccines and serums according to the type of bacteria present and the symptoms produced. Pneumonia, as stated, is caused not only by the pneumococcus, but by other microorganisms, such as the influenza bacillus, the streptococcus, and the staphylococcus. The pneumococcus generates a pneumotoxin which is diffused throughout the organism, causing an intoxication, and the pneumonic fever depending upon the presence of this substance in the blood runs a regular course. The toxin formed by the streptococcus causes a general infection, and the fever runs an intermittent septic course. Therefore, the pneumococcus generates pneumotoxin which causes pneumonic intoxication, and the streptococcus forms toxins which cause a general infection. These are the indications for the use of the serums. Accordingly I administer the antipneumococcic serum, the antistreptococcic serum, the autogenous serums, or a combination of serums. Antistreptococcic serum is employed by me in doses of ten to thirty or forty c. c. repeated in from twelve to forty-eight hours as may be necessary.

Lobular pneumonia or bronchopneumonia differs from lobar pneumonia in the mode of its onset and course. The disease usually originates from a preexisting bronchitis, the inflammation extending to the air cells, and often occurs in those forms of bronchitis which accompany the infective fevers. Here also streptococci, staphylococci, and the pneumococci will be found in the sputum and blood. The invasion is usually gradual, being preceded by the symptoms of bronchitis. The fever in this form of pneumonia may not at first be very high, but subsequently may rise to 104° or 105° F.; then the respirations become frequent and the pulse small, feeble, and rapid and may reach 180. There is a tendency at this stage to restlessness, delirium, and convulsions. In this type of disease with severe symptoms the first aim is to relieve the obstruction in the air passages, next to alleviate the distressing symptoms, such as cough, dyspnea, cerebral irritation, etc., and, third, to maintain the strength of the patient. These objects are best attained by the use of the pneumococcic serum or of vaccine, particularly in the initial stage. I use the combined vaccine and give about 500 million, and repeat in from six to twenty-four hours, and in most cases the bronchopneumonia will go through its course without any alarming symptoms, and in a rather subdued manner. Should there be added infection, as when the bronchopneumonia complicates or follows whooping cough, influenza, diphtheria, or measles, or if I am called to the case at a later stage, the temperature being 104° or 105° F., the pulse feeble and rapid, cerebral symptoms and delirium being present, and streptococcic and other bacteria present in the sputum and blood, I immediately proceed to give antistreptococcic serum in large doses, at least thirty c. c., repeated in twenty-four hours if necessary, and its use continued until the pyrexia is relieved and the distressing and alarming symptoms subside. No drug will bring down these alarming symptoms as the serum will, particularly in the cases where the delirium is great and the patient is very restless. Pyrexia causes cardiac exhaustion, and this failure of heart power is the special and particular danger we have to combat. In order to save your patient from death by exhaustion, antistreptococcic serum should be given promptly and efficiently. The commonly used drugs, such as quinine and urea hydrochloride, pituitrin, camphorated oil, colloidal iodine, and digalen, do not seem to meet the indication. The inhalation of oxygen in dyspnea is of some value provided it is given continuously and should be employed in the earlier stages of the disease. Cold water therapy, such as the cold bath or the local applications to the chest, is not without risk. The patient must be watched very carefully, for some persons are more susceptible than others to the depressing effect of cold, which, if long continued, may be followed by serious symptoms of collapse. If the delirium is marked, 0.02 grain hyoscine hydrobromide hypodermically may be used in the adult. Care of the bowels is important and they should be moved by mouth medication in the early stage only. In the later stages I use only enemas so as not to produce any strain upon the heart. The intestinal complications should be met by modification of the diet.

Finally it may be mentioned that while serums and vaccines do not always reduce the duration of the disease nor cause the disease to terminate in crisis, it does relieve the pyrexia and the other alarming symptoms, by antagonizing the injurious influences of the specific infective organisms on the blood and the tissues. Serums and vaccines have been extensively used by me in a series of cases of all types of pneumonia both in my private practice and in my hospital work with uniformly good results. The isolation of the disturbing bacteria and the use of the corresponding antitoxin are necessary. Hitherto pneumonia has claimed a high mortality. Drug therapy, at best, combats the symptoms and does not act directly at the septic infection. In the use of serums and vaccines we have a direct and rational method of treatment, and a more extensive and general use of this method ought to affect a material reduction in the mortality from pneumonia.

2131 Broadway.

CAUSES OF APPENDICITIS.*

By Henry P. De Forest, M. S., M. D.,
New York,
Adjunct Professor of Obstetrics, New York Postgraduate Medical School and Hospital; Examining Surgeon, Municipal Civil Service Commission.

Some of the causes of inflammation of the appendix are still obscure, but certain facts are definitely known which seem to predispose to the disease and even to act as a definite cause of the trouble.

The first operation to be performed for acute appendicitis was done in 1887 by Dr. Charles McBurney, attending surgeon at Roosevelt Hospital and professor of surgery at the College of Physicians and Surgeons. This was my first year in the medical school and I still remember the interest which was created by this great triumph in modern surgery. Three years later, while house surgeon at the Methodist Episcopal Hospital in Brooklyn, it was my good fortune to be closely associated with another famous surgeon now also dead, Dr. George Ryerson Fowler. Doctor Fowler was a pioneer in this and in many other fields of surgery. His work was enormous and he was one of the first surgeons of the country who gained an international reputation as an operator for appendicitis. For some years Brooklyn was noticeably ahead of New York in the proportionate number of operations for this particular ailment. The Methodist Episcopal Hospital during the ten years that succeeded Doctor McBurney's epoch making operation, 1887-1897, admitted 8,750 patients, of whom 340, or 3.875 per cent., were cases of appendicitis. During the same period, while Doctor Sands and Doctor McBurney were surgeons at Roosevelt Hospital, 29,727 patients were admitted. Of this number there were 520 cases of appendicitis, or 1.75 per cent. of the total number admitted. At the New York Hospital during the same ten years 0.66 per cent. were cases of appendicitis; at St. Luke's, 0.6 per cent.; at the Presbyterian, 1.33 per cent.; and at the Johns Hopkins, 0.66 per cent.

Thus it will be seen that during the first decade in the history of appendicitis, at the Methodist Episcopal Hospital of Brooklyn the percentage of cases treated was more than twice as great as at the Roosevelt Hospital, nearly three times as great as at St. Luke's, six and a half times as great as at the New York Hospital, and five and eight tenths times as great as at the Johns Hopkins Hospital, of Baltimore.

It was one of my duties during the years that I was on the house staff and later as pathologist of the Methodist Episcopal Hospital to examine all of the appendices removed by operation at this hospital and also a large number of other specimens brought to the laboratory by our various attending surgeons. Partially because of this rather unusual experience, but still more largely, I suspect, through a purely personal interest, I was asked by Doctor Fowler early in 1893 to prepare for publication the manuscript and notes which he had made on this subject and to put into permanent form for the use of the medical profession as a whole the results of his exceptionally large experience and his equally brilliant surgical technic. This I did, and in 1894 there appeared *A Treatise on Appendicitis*, the first book on the subject to be published in any language and which still stands as a monument to the author's learning and skill. The training which I thus was fortunate in receiving by my association with so distinguished a surgeon has more than a mere academic value in my memory, for on the completion of my literary labors, Doctor Fowler presented to me his private office desk and chairs, which I am still using, and a sum of money which to me at that time was considerable and which was the first professional fee of any importance I had ever received.

During the score of years that have elapsed since Doctor Fowler's book was published, "appendicitis" has become literally a household word. Its victims have been numerous in all classes of society. We have all lost friends through this particular disease. The names of Governor Alexander R. Shepherd, the man who was largely instrumental in making Washington the beautiful city that it now is, and Major Walter Reed, who with Doctor Carroll and Doctor Agramonte discovered the cause of yellow fever, are names of prominent victims which come to my mind. Most impressive of all in my own mind is the memory of the fact that on the last evening that Doctor Fowler spent alive in his own home I was associated with him on the Examining Board for Surgeons of the National Guard of the State of New York. A surgeon of the Binghamton Battery was before us for examination and after the real work was over we spent half an hour in a social way. Doctor Fowler was never more genial nor brilliant and was in the best of health. At eight o'clock we went together to the medical society where he was to deliver an address and at eleven o'clock he took the train for Albany to attend a meeting of the State Medical Society of which he was an active and honored member. While on the train shortly after midnight he was taken acutely ill with the very disease that he had been instrumental in curing in hundreds of similar cases. The best surgeons of the State were at his service as soon as he reached Albany, but in spite of prompt operation and great surgical skill he died as the result of a perforated appendix within a few hours. "Others he saved; himself he could not save."

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*An address delivered to the city employees at the Municipal Building of the City of New York, October 4, 1916, under the auspices of the Committee on Education of the Welfare Committee of the Borough of Manhattan, Leonhard Felix Fuld, Ph. D., chairman.

Briefly the appendix may be described as an organ which in man is quite rudimentary. It represents an important portion of the large intestine, still present in some of the lower animals, but which in the course of human evolution has in man become so small as to be of no use, except to the surgeon. The appendix is about the size of a small lead pencil about two and a half to three inches long. Its walls are relatively thick and as a result its cavity is only as large as the lead of a blue pencil. The intestine has two sets of muscular fibres: one set runs lengthwise and maintains the length of the intestine; the other set is composed of circular fibres which dilate and contract and thus cause the food to pass onward in the process of digestion. In the appendix these circular fibres are atrophied and in many cases do not appear to exist at all. The result is that if undigested particles of food gain entrance into this rudimentary organ they may remain there and cause local irritation.

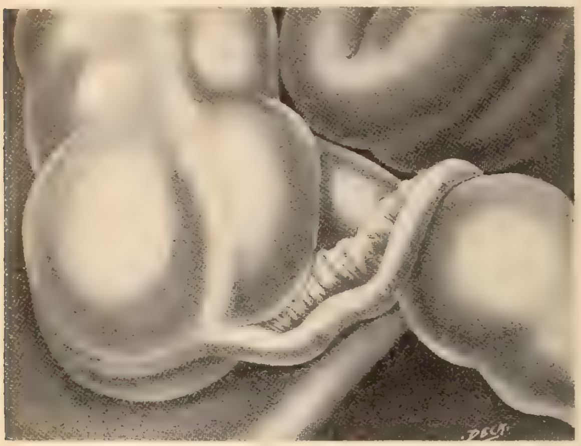
FIG. 1.—The appendix verformis in its usual relation to the cecum, the ileocecal valve, and the small intestine. (Keen.)

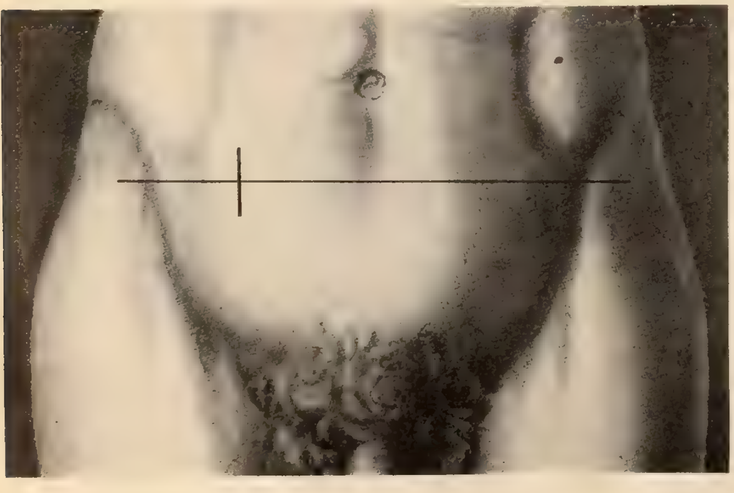
FIG. 2.—Anterior abdominal wall, showing location of McBurney's point. (Keen.)

The position of the appendix is a factor in its liability to disease. The small intestine enters the large intestine on the side of the latter at a point in the abdomen in the lower right side about an inch or two from the rounded end of the large intestine. The ileocecal valve lies between the two, and the cecum or blind end of the large intestine lies below this valve. The small intestine at this point is about an inch in diameter while the cecum is nearly three times as large. Coming off from the cecum which is itself a rudimentary organ, dangles the vermiform appendix, in most instances not at all unlike in shape and appearance the angle worm from which it derives its name. The relative position of these strictures is shown in Fig. 1.

As a rule, the appendix dangles freely over the edge of the pelvic bone into the pelvic cavity, but in some instances it is buried in the fat behind the cecum and may even point upward toward the ribs behind the large intestine. It is of interest to note that a number of cases have been reported in which by some freak of development the appendix lies on the left side of the body. As a rule, however, the definite point on the abdominal wall beneath which the appendix lies is an inch below the middle of an imaginary line connecting the navel and the prominent point of bone on the right side which marks the top of the rim of the pelvis, the antero-superior spine of the ilium. This spot is known as McBurney's point and it is here that pain most frequently is felt, particularly on pressure, at the onset of an attack of appendicitis. (Fig. 2.)

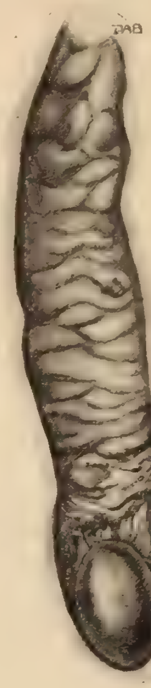
FIG. 3.—Showing necrotic and gangrenous changes of the interior of the appendix. (After Fowler.)

It is easy to tell the causes of tuberculosis or of typhoid fever, but the causes of appendicitis are far from being so definitely determined. The structure of the appendix and its position are undoubtedly important causes, but why the disease should occur four times as often in men as in women has never been satisfactorily explained. It is possible that the circulation of the blood at the base of the pelvis is better in women than in men and that this acts as a safeguard. The earliest case of appendicitis reported in medical literature was operated in in 1759 by Doctor Mustivier, a surgeon of Bordeaux, France. In this case an abscess had formed which contained a pint of pus. The patient died and at the autopsy a pin encrusted with earthy matter was found which had served as a starting point of the disease by perforating the appendix vermiformis ceci. Since that time it has been a common belief that cherry stones, grape seeds, lemon and orange pits, fish bones, and other small foreign bodies become lodged in the appendix and thus cause the disease. As a matter of fact, Doctor Fowler in his large experience of over 2,000 cases reported but three cases of foreign bodies found in the appendix. One was a gallstone and the other two were enteroliths or intestinal stones. In the many hundred specimens removed at operations which I have personally examined as one of my duties as pathologist and in the several thousand appendices examined at autopsies in the Vienna General Hospital, in hospitals in our own country and during the Spanish-American War, I cannot recall a single case in which the appendix contained any substance which may properly be called a foreign body. On the other hand, it is not at all uncommon to find in any appendix, inflamed or otherwise, small collections of fecal matter shaped something like a coffee bean. The weakness or absence of the circular muscular fibres and the position of the appendix hanging, as it often does, with the open end up, explains the presence of this seemingly solid mass. Fortunately it by no means follows that when these little masses are present the appendix necessarily becomes inflamed. Since the first case, reported in 1759, thirty cases only of a true foreign body in the appendix have been reported and collected. A pin was most frequently found in these cases.

Consider for a moment what happens when a cinder becomes lodged under the eyelid. Redness and congestion soon appear and pain is present from the first. If the cinder is not promptly removed it may scratch the eyeball. Germs which are always present soon begin to act and an acute inflammation develops. It is probable that a similar condition develops in the appendix to produce appendicitis. If some minute particle of undigested food retained in the appendix irritates the walls, an inflammation is speedily started as the result of germ activity. This inflammation causes swelling, which in turn interferes with the circulation of the blood in the minute vessels in the muscular wall. If the swelling continues the nutrition of the wall of the appendix is impaired and a localized death of tissue may occur. This condition is known as gangrene. The germs in their growth may perforate the thin wall, extend into the surrounding tissue, and thus cause an abscess. If the appendix ruptures, as it not infrequently does shortly after the attack, the poisonous germs of inflammation may escape among the coils of intestine and a general peritonitis speedily follows. These are the reasons why an acute attack of appendicitis with gangrene and rupture are so apt to be fatal in spite of an operation. Disorders of digestion are doubtless frequent causes of the attacks. Haste in eating, indigestible food, imperfect mastication, and disorders of the stomach or intestines which interfere with the normal production of the gastric or intestinal juices are all contributory causes. Their prevention is a matter of prime importance.

The food itself must be pure and free from poisonous or deleterious ingredients. The teeth and mouth of the patient must be in the best of condition, and the patient must take care that the process of mastication is thoroughly performed. Fletcherism by other names has aided in preserving good health from earliest times. The quantity of food taken must not be excessive, nor must the stomach and other organs of digestion be called upon to perform more work than is actually needed to supply body waste or needed growth. Indigestible food must be avoided, since this leads to useless effort on the part of the digestive organs and results in functional impairment. A certain amount of coarse food must be taken, or the intestines are not stimulated to proper activity, and constipation and kindred ills result. Sufficient fluid must be taken to furnish ample blood and tissue moisture, not in excessive amounts at meal time, as is so often the case, but properly distributed throughout the day.

The importance of this lack of fluid as a cause of appendicitis has recently been graphically described and emphasized by Dr. Thomas A. Darlington, formerly commissioner of health of the City of New York, in a recent report made on the sanitary conditions of the New York troops in camp along the Mexican border. The temperature in these camps ranged from 100° to 110° F. in tents; and in the sun 140° to 150° F. was not unusual. Many of the men in the National Guard regiments were unaccustomed to heavy manual work, but much of their duty consisted in digging enormous ditches, in one case fifteen feet wide at the bottom and twenty-five feet wide at the top, and in clearing the camp site of brush, cactus, and various impurities left by hundreds of goats which grazed in that section. This work of a most strenuous nature would have been difficult for laborers, since the heat was very trying and caused profuse perspiration on slight effort. A single two inch pipe lying practically on the surface of the ground for several miles provided the only available water supply for several regiments. In one command the surgeon reported that frequently there was no water available for drinking purposes for twenty-four hours at a time, and on one occasion seventy-two hours elapsed without any water coming through the pipe. Such little water as was available had to be drawn in wagons over miserable roads, usually at night. Much of it was spilled on the way. The work and the perspiration of the men brought the bulk of the blood to the surface of the body while the intestines were deprived of all surplus fluid. The result was that the contents of the intestines became dry and hard, and there is little doubt that this condition was the cause of the unusually large number of cases of appendicitis which developed in the military camps.

If these requirements of food and drink are complied with, and the food varies in character with the climate and with the demands for bodily energy, it seems to make but little difference how the actual food elements are supplied. Carbohydrates, nitrogen bearing foods, and water are the essentials, and each can be supplied in many different articles of diet. If the proper hygiene of nutrition is observed, the physiological processes of salivation, chymification, chylification, absorption, and excretion progress smoothly, and good health is maintained. If on the other hand the food is eaten in a hurry, is slightly chewed, imperfectly mixed with the saliva, and swallowed hastily and in large sized masses, the saliva does not get a chance to act properly upon the starches, the gastric juice can act but slowly upon the large particles of food, the meal remains too long in the stomach, fermentation is apt to result, and the usual symptoms of dyspepsia ensue.

The time allowed for meals is too short and the hours are too irregular in this ever crowding life of ours. From the suburbanite, who eats by the clock and then runs for the morning train, to the shopgirl or clerk who consumes a concoction of egg in malted milk and calls it a lunch, and on again to those who hurry home, devour a dinner, and hasten on to an entertainment, the list of those who are candidates for the degree of Dyspeptic Invalids is steadily becoming longer. In the matter of irregular hours, doctors themselves are among the worst sinners. Their work may serve as an excuse, for all of them know better, but few will act upon their knowledge.

In the use of too finely prepared foods, women are the greatest offenders, and as a result are the greatest sufferers. The vast number of prepared foods that are on the market, each claiming to be better than all the others, have almost done away with the need of teeth. The result is that not only is the food swallowed without mastication, but there is so little solid material left to pass into the large intestine that that organ has but little work to do, and retires from business. Add to this improper food, the indoor life, the lack of active exercise in the open air, and the modes of dress, and it is little wonder that some cynic has defined woman as "a constipated animal with a pain in her left side." Other common causes of chronic gastritis are the persistent use of certain articles of diet, such as very fat substances or foods containing too much of the carbohydrates. New England pie and the hot breads of the Southern States are responsible for many cases of chronic dyspepsia. The use in excess of tea or coffee and above all of alcohol in its various forms is also a cause. A common cause of chronic catarrh of the stomach is drinking too freely of ice water during meals, a practice which plays no small part in the prevalence of dyspepsia in America. Another frequent cause is the abuse of tobacco, particularly chewing.

The conditions under which food is eaten have, of late, received considerable attention. It is a matter of common knowledge that the mental condition of an individual oftentimes has an important effect upon the process of digestion. Fear or anxiety, even the suspense of an athlete just before a race or a football game, often causes diarrhea or nausea. The meal time, therefore, should be when possible a time of mental relaxation. An article has recently appeared in the newspapers to the effect that no one who is addicted to laughing will ever have appendicitis. This, of course, is an exaggeration, but Colonel Carter of Cartersville epitomizes the situation. It was a rule of the colonel's never infringed upon, that, no matter how urgent the business, the dinner hour was to be kept sacred. "Salt yo' food, suh, with humor," he would say. "Season it with wit, and sprinkle it all over with the charm of good fellowship, but never poison it with the cares of yo' life. It is an insult to yo' digestion, besides bein', suh, a mark of bad breeding."

The following case history reported by Doctor Fowler is of interest in connection with this:

"Case.—N. B., aged forty-seven years, with no history of a previous attack, and of previous regular habit of bowels, dined at a cheap restaurant, which was not at all his habit, making a hearty meal of pork and cabbage. He was attacked the same evening, December 15, 1889, by pains referred to the epigastrium, and by vomiting. Pain in the right iliac region developed four hours later and tenderness in the latter region was present upon the following day. The vomited material consisted of partially digested food of the above mentioned meal. I saw him on the fifth day, when a tumor was found. An incision made into the latter evacuated about five ounces of seropurulent material from a cavity formed by adhesions about the inflamed appendix. The latter lay in the northeast position, and was evidently a portion of the limiting wall of the abscess cavity in that direction. For this reason the organ was not removed. The patient made a good recovery, but on November 19, 1892, nearly three years later, he dined under the same circumstances at the same restaurant, and partook of the same kind of meal. The same evening he was attacked with pains and vomiting; the pain finally centered in the right iliac fossa. The vomited material showed partially digested pork and cabbage. Within thirty-six hours after the commencement of this attack primary perforation and septic peritonitis had taken place, shortly after which I saw him and operated. The appendix was removed, and it was found to have been the seat of a rapidly suppurative process; extreme dilation had taken place and rupture of its contents into the general peritoneal cavity followed. The patient was a diabetic, with low powers of vital resistance. It is interesting to note that the appendix, at the second operation, lay in the southeast position."

These, then, illustrate the causes of appendicitis as fully as the space at my disposal will permit.

To sum up, therefore, the disease may be due: 1, to infection from the presence of one or more of the intestinal microorganisms; 2, to circulatory disturbances, more or less readily produced by sharply curved or angular shapes of the organ, or a deficient blood supply; 3, to the presence of accidentally imprisoned fecal matter, which is prevented from returning to the cecum both because of the feeble expulsive power of the tube, due to an insufficiency or entire absence of circular muscular fibres, and because of constriction of the tube, which may or may not be due to previously existing inflammation. This fecal matter, because of bacterial infection which it conveys to the parts or because of the pressure effects due to inspissation or both, contributes to the etiology of the disease in its entirety, but particularly in the cases in which perforation takes place. Bacterial infection, however, may occur independently of the presence of fecal matter, and the presence of fecal concretions is not at all essential to ulceration, perforation, or gangrene. (Fig. 3.)

In recent years, and particularly since the beginning of the European war, much has been written on the subject of first aid in illness and injury. In suspected cases of appendicitis there are several things which an intelligent person can do at the onset of an attack, real or suspected, that are quite as efficient as anything that can be done by a physician. It must be borne in mind by all that mere pain in the right side is not necessarily due to appendicitis. It is quite as often due to acute indigestion with resulting colic. A tablespoonful of castor oil with an equal amount of glycerin in a glass of iced lemonade can be taken at once by a person who believes that he has appendicitis. It can do no possible harm and may be the means of speedily and effectively clearing up the diagnosis. After the oil has been taken if the "error," as our Christian Science friends would call it, still persists, the victim should go at once to bed and a well filled icebag should be placed on McBurney's point and there allowed to remain until competent medical and surgical assistance be secured. Many an attack of appendicitis has been eliminated by this simple procedure. Once the diagnosis has been made, however, by some one who is really qualified to give an intelligent opinion in the matter, the sooner the appendix is removed by operation, the better. Delay, even for a few hours, may mean gangrene, rupture, peritonitis, and death.

Upon the only occasion that it was my good fortune to dine with the friend of all mankind, Mark Twain, he made a statement in the course of the conversation which I have often remembered and which is particularly applicable as a close to the present brief summary of the causes of appendicitis. "The only safe place for an inflamed appendix," said the humorist in his inimitable drawling way, "is in a ginger ale bottle hanging on a string."

59 West Fifty-fourth Street.

HYGIENE OF RURAL SCHOOLS.

By J. A. Nydegger, M. D.,
Baltimore, Md.,
Surgeon, United States Public Health Service.

At no period in the history of this country has there been a time when the people have been more interested in health and health matters than at the present. We have awakened to the realization, too, that the vast natural resources of our country have been wantonly wasted and that there is danger of their exhaustion. We have concluded that we have lived at too rapid a pace; we have unnecessarily exhausted some of our many resources, and have been drawing extensively upon others, our national health being, perhaps, the greatest among these. What would the richest and fairest part of the world be worth, stored with great natural resources, but without the brain and brawn of healthy men to develop them? On what does the real greatness of a nation depend? Is it in territory, science and art, fleets and armies? No. All these are but secondary considerations. The greatest resource of a nation is its healthy people, healthy mentally, morally, and physically. Without health no nation would succeed. We have often been told of the value of our grain crop, our cattle and our hog product, and the output of our mines; but we are only just beginning to fully realize that the greatest asset in dollars and cents is our country's health. Disease and death mean social waste. It is waste because it can be largely prevented. Forty-two per cent. morbidity and one half million mortality in the United States every years could be prevented. One third of the three millions of people who are sick in the United States every year are in the working period of life. Most of these diseases are preventable.

Realizing that the greatest asset of any people is health, let us consider what the country is doing to protect the health of eighty-five per cent. of its people who are rural residents, and the children in the rural schools, who we so frequently hear from statesmen and others are the real foundation of the republic. Sanitary laws have been enacted for the betterment of the complex health conditions in our cities and extensive health educational campaigns have been carried on. The rural districts, however, which offer the most fruitful field for the promotion of these conditions, have until quite recently been overlooked in a great measure. How frequently are the country district schools spoken of as the bulwark of the nation, and yet how little has been done for the public schools of the rural communities! In the cities and larger towns the schools are as a rule fairly well administered, and the buildings fairly well constructed and equipped in accordance with hygienic measures, but how about the sadly neglected rural schools? I believe that this is one of the supreme questions of the hour. When we fail to respond to the call for more modern schoolhouses in the rural areas and better equipped and better paid teachers, we fail in a great public duty.

The children in the country districts are entitled to just as well lighted and heated buildings, to just as habitable, modern and sanitary schools as are the children of the cities and towns, and the demand must be met, if we would heed the call of progress and justice. Every American child is entitled to the best that we can give him, good food, good clothing, a good home, and good training and teaching in good, sanitary schoolhouses and environs, to fit him to grow up into a healthy citizen, well equipped to fight the battle of life. When we fail to provide these, we fail in our public duty. We fail to give the child a square deal, a square start in life. We start him in life with the worst possible handicap he could have—a poorly nourished and developed body, with lessened resisting power to the inroads of disease.

It is highly important to understand that schools are provided for that part of our population which is peculiarly susceptible to the influences of bad hygienic surroundings. Moreover, it is now a well recognized fact that the hygiene of school life is of paramount importance in connection with the political economy and the prosperity of a nation. It is therefore of the greatest importance that those who are in any way connected with the education of the young should have uppermost in mind that the greatest resource of a nation is its healthy citizen, and that unless we provide better and more modern and sanitary schools in the rural districts we cannot expect the children of these communities to grow up into healthy citizens. Formerly it was universally believed that the country was more healthy than the city, but recently it has been shown by sanitarians that the death rate in cities is falling more rapidly than in the rural districts. The cause of this is simply a matter of sanitation; while sanitary provisions have been made for the cities, the rural sections have been neglected. When the country was first settled, the population was scattered, the virgin soil was not polluted, the water was pure, and many of the communicable diseases, which now claim thousands, were practically unknown.

In the little white or red, one roomed, one teacher country schoolhouse many of our greatest men began and completed their school education, yet there can be no doubt that there were others who would have been great, but for the undesirable environment and limitations of the country school. It is a sad fact that the schoolhouses in many rural communities are far from sanitary. The majority of the rural school children have to spend from twenty-five to thirty hours weekly in the schoolroom for a period of several months each year for eight or ten years. The contrast between the present unhygienic condition of the average rural school and the excellent condition of the city school is striking. How frequently do those who are somewhat more familiar with rural life and rural conditions, mark that the district school is located at one or other extreme of the school district, placed there doubtless to please some influential patron or trustee or because of a stronger local faction, rather than to meet the convenience and comfort of the school children. Again, on the same grounds, as also by reason of ignorance of the laws of hygiene, how frequently do we see the rural school located at some unhygienic or badly oriented spot. How often do we see the school placed on low ground where there is no adequate drainage, or perhaps shaded and overhung by trees which are conducive to moisture and cut off sunlight, or it is situated at the base of a hill or eminence, thereby depriving the building of the requisite amount of light and affording an unpleasing view from the windows. The filth and foul air of the toilet rooms of many schools in decent town communities is at times unspeakable, but if we venture into the somewhat remote rural districts we are wont to observe rather frequently the total absence of this important sanitary accommodation of the schools, and the scholars responding to the calls of nature must make use of whatever privacy is afforded by objects or irregularities of the ground surface in the vicinity of the buildings, with inevitable soil pollution. In this manner pathogenic germs may and do easily gain access to the source of supply of the drinking water for the school, and illness, often of a serious nature, results from its use.

The dangers of the drinking water are thus twofold: the impure water and the common drinking cup, still so obviously in use in the rural schools. Numerous instances are on record where typhoid fever has been spread in schools in this way. The unscreened and unprotected privy constitutes a serious menace to the health of any community. Sooner or later it is bound to become a source of typhoid infection and a hazard to every resident in the vicinity, for that very environment creates an insect host and renders it otherwise capable of disseminating the scourge to every point of the compass.

The water supply of the rural school generally comes from a surface spring or shallow well. The former, if free from pollution, is frequently made inaccessible by reason of the long distance necessary to transport the water, thereby resulting in a deprivation of the amount supplied for drink, as also for the purposes of maintaining the cleanliness of the school children, their personal effects, and the building itself. It has been observed in rural sections where the water supply is scanty or has to be transported a long distance, that the same wash water is frequently used by a number of different school children in the same dirty common basin. There is great danger of contracting diseases from this undesirable habit. Water coming from a shallow well is usually more dangerous than that from a spring, as it is located nearer to the school and is more liable to receive surface drainage from the vicinity of the building and the outhouses, if any.

Hookworm is a plague of the rural schools of the Southern States. In the South many of the country school children go barefoot, and the young hookworm or larva, gains entrance to the body usually through the skin of the unprotected feet, and after a circuitous route through the body, finally reaches the alimentary canal and attaches itself to the wall of the bowel, feeds, and grows to mature size. It is not the loss of blood, as is popularly supposed, that causes the severe anemia, paleness, and other symptoms in the victim of hookworm infection, but the toxin introduced in the system by the hookworm. The sufferers are pale and appear bloodless. Many deaths result from it in warm, semitropical, and tropical countries all over the world. This disease is disseminated by means of human excreta containing the eggs reaching the ground. In some rural schools in the United States, the surveys made by the Public Health Service have shown that from eighty-two to ninety-eight per cent. of the children were suffering from hookworm, while in other schools the infection has been shown to be as low as ten to twelve per cent. Hookworm is not the only intestinal parasite found in school children, the eggs of which, reaching the ground soil in the excreta, are disseminated by wind, dust, hands, feet, flies, hogs, dogs, fowls, and birds, and gaining access to water and food, after having undergone development to the larval stage, again reenter the body and produce disease. Chief among these are the Amœba hystolitica, the cause of dysentery; Balantidium coli trichomonas, causing diarrhea; Oxyuris vermicularis, Asceris lumbricoides, Trichuris trichurea, and Hymenolepis nana, or dwarf tapeworm, which produce intestinal troubles. The direct effect of these infections on the child, aside from the other bad effects, is reflected in physical dwarfing and mental retardation. Especially have these conditions been observed in school children, as shown by studies made by the Public Health Service in those ill with these infections.

The Rockefeller Sanitary Commission in the course of its surveys found the rural schools a marked factor in producing diseases in the case of 46,748 school children examined, who were harboring intestinal parasites as follows: 22,782, or forty-eight per cent., had hookworm infection; 7,991, or twenty per cent., had ascarides; 2,915, or fifteen per cent., had Trichocephalus dispar; 1,246, or eighteen per cent., had dwarf tapeworm; 134, or 0.2 per cent., had strongloides; and forty-six, or 0.09 per cent., had Oxyuris. Of most interest is the fact that many of the cases of ascaris infection presented marked symptoms of mental retardation and anemia.

The Public Health Service in an extensive survey of sanitary conditions conducted in thirteen States and 1,300 rural schools, with the examination of some 175,000 school children, during the past three years, has shown that in the territory covered there is a general lack of sanitary supervision in the construction and maintenance of rural school buildings and outhouses and of medical supervision of the pupils. In the course of these investigations it failed to find the installation of a scant dozen of sanitary privies for use of rural school children. Recent investigations conducted by the writer showed in sixty-six rural schools in Indiana, that only six outhouses out of 132 were in good sanitary condition, forty-two in fair condition, and eighty-four in bad sanitary condition. A more recent survey of rural schools in Florida, also conducted by the writer, showed a somewhat better sanitary condition of the privies in the urban and eleven rural schools visited. Here, out of the total number of outhouses examined, six were found to be in good sanitary condition, two in fair sanitary condition, and fourteen in bad sanitary condition.

The results as shown by these two surveys with respect to the insanitary condition of the outhouses will serve as the standard of index of the insanitary condition at all of the rural schools inspected by the service during the aforementioned period. A description of one of these outhouses and the insanitary conditions found to exist about them will practically apply to all. The majority of these wooden buildings are simply set upon the surface of the ground with no attempt at closing them up beneath or at the back to prevent the free access of domestic animals and flies, and they were noted in all stages of deterioration, from newly constructed to dilapidation. The majority of these outhouses were found to be in a horrid condition. In many the conditions were unspeakably dirty and insanitary, being filled with excreta almost to the seat. In a considerable number of outhouses objectionable odors were so pronounced as to make it practically impossible to remain within. Almost forty per cent. of the outhouses were found to be without screens in front of the doors, and at many schools the outhouses for the boys and those for the girls were placed near each other on the premises. At some schools the outhouses were built double for the two sexes, and some of these were noted to have no screens in front of the doors. In a few of the outhouses urine troughs had been provided for the boys, while in others the seats and floors were urine soaked, and the odor of urine was all pervading. In some instances an attempt to suppress the strong odors by the use of lime was noticed.

In a very few instances was it observed that any attempt at cleaning up and removal of the excreta had been made at the beginning of the school year, or in fact at any time.

The question may therefore be asked: What is the real method of excreta disposal at rural schools which in the main are provided with outhouses as have been described? The answer is simple: No method, but a trusting to luck and nature's elements. The excreta are allowed to accumulate in the most of instances until the space below the privy seat is filled to overflowing and conditions become intolerable. Then the outhouse is removed to another spot nearby, a few shovelfuls of earth or nothing at all, more often the latter, are sprinkled over the accumulated excreta of years, and the same process is gone through with again until the privies are again filled and require further removal. What is happening in the meantime? Aside from the dissemination of disease producing bacteria and parasites by flies, animals, fowls, and other means, there is an infiltration of liquid excreta, rain and urine washings from the excreta on to the surface and into the soil constantly going on, with the result that in the course of time the subsurface as well as the surface water becomes polluted, and there is percolation of any pathogenic organisms that may be present in the excreta through the subsoil into the water of the shallow wells or springs, frequently located, as our surveys have shown, dangerously near the outhouses.

How great is the danger of pollution of the water supply of rural schools in this manner is strikingly shown in some instances observed during these surveys. At one school the source of water supply, a shallow dug well, some seven or eight feet deep, was noted as being but sixty feet away from the nearest outhouse, and the natural drainage from the outhouse was directly toward the well. There was grave danger of pollution of the well water from the outhouse which was in a highly insanitary condition. At another school, the well, a shallow driven one, eighteen feet deep, was found to be located less than 100 feet from the two outhouses with natural drainage toward the well. These outhouses were in bad sanitary condition, with years of accumulated excreta on the ground beneath them. The outlet from the outhouses was an open shallow ditch, and infiltration of sewage into the soil along the whole course of the ditch was constantly going on with constant danger of percolation of disease producing organisms through the subsoil into the water of the well.

Glaring instances of grave danger were also noted during these surveys by reason of the outhouses having been located in close proximity to the school buildings. In one such instance it was observed that the privy in a highly insanitary condition was by actual measurement eight feet distant from an open window of the schoolroom, thus allowing malodors to permeate the air of the room, and in addition offering an excellent opportunity for flies, having fed on the possible germ laden excreta but a few feet away, to transfer the infection to the food of the school children. Numerous other instances of a similar nature and equally dangerous to the health of the children were noted. The above are but instances of what was constantly being encountered during these surveys, showing the wide prevalence of dangerous negligence which exists today in the rural schools in the United States.

When we consider the rural school itself, the lack of cleanliness is perhaps one of the most glaring defects, being worse usually in this respect than the school in the city, while also it is generally found to be poorly constructed and imperfectly heated, ventilated, and lighted. The average country schoolhouse is usually a one room affair, with thin walls and thin floors and cloakroom, washroom, and school room combined in one, with emanations from unwashed bodies and soiled clothing and collected gases tainting the atmosphere. No vestibule or anteroom is provided, and the single door, opening directly from without, assists in making the heating of the country school a serious question. This is generally done by stoves and in cold climates is as unsatisfactory a method as possibly can be imagined. The floors are always cold, and the children suffer severely from chilblains and colds. While the upper part of the room is too warm, the outer row of seats is in an icy atmosphere, and the whole room full of children suffers from bad air. The floors in rural schools are covered with dust and dirt, as also are the walls and furnishings; the floors are customarily scrubbed but once a year. The cold floors, poor ventilation and lighting, and absence of all toilet conveniences make them extremely uncomfortable and often insanitary. The improper ventilation and lighting of these schools frequently justly call for words of harsh criticism on the part of the hygienist.

What provisions do we usually see for the proper ventilation of the schoolrooms of the rural communities? To nature is intrusted this all important function. Foul air must find its egress from the room *per via naturalis,* as also must fresh air gain access in the same manner. To supply these defects in construction, windows must frequently be raised or lowered, and doors thrown open when the air becomes overcharged with accumulated gases or the room overheated, as frequently happens; this results in exposure of the scholars to cold drafts with consequent detrimental effects on health. We also see many rural schools where the lighting is totally inadequate. Either the building is not properly oriented so as to receive the maximum amount of sunlight throughout the day, or the windows are insufficient in number and size or improperly placed with the resultant detrimental effects on the eyes of the scholars, leading to eye strain, headaches, and other discomforts, and eventually to permanent impairment of visual acuity.

Until rural communities possess improved methods of medical inspection the health of farm boys and girls will be below that of city children. In many sections of the United States the sanitary conditions surrounding many rural schools are scarcely more than medieval. Because of the absence of a privy, or almost equally as bad, a privy where the excreta are deposited on the ground soil, pollution of those places will spread disease to the pupils, and the infection may be carried to uninfected homes. An immediate and radical reform in the sanitary surroundings of rural schools is urgently needed. If sanitary privies were used at the rural and town schools under intelligent supervision there would be an immediate and marked reduction of hookworm disease, typhoid fever, and many other diseases produced by intestinal parasites. In a word, a great step forward will have been accomplished when sanitary conditions surrounding the schools are improved to a point where the country school will not form what it is today, the great disease spreading centre for rural communities.

The inception of competent medical inspection of schools is still in its infancy in this country. In the vast majority of rural schools in the United States such a thing as medical inspection is still unknown. However, the recent wonderful awakening on the part of State boards of health and education, medical organizations, and the Federal authorities with respect to those deficiencies in rural schools cannot be praised too highly. The initiative in solving this particular phase of rural school need seems, therefore, to have been taken, but time will be required for the development of public sentiment along these lines among the rural people and for the passage and enforcement of local laws providing for this much needed inspection. The common drinking cup, the common towel, the common wash basin, the badly constructed, placed, and kept blackboard, all will be found still to fill a prominent part in the equipment of rural schools in many communities, and three of these at least play well their part in the spread of disease among the school children. Many subjects which have an important bearing on the promotion of hygiene in the rural schools, such as proper sized and sanitary playgrounds, proper toilet rooms, the proper care of schoolrooms, equipment with adjustable seats, provision of showerbaths and lunchrooms, shortening of the long school hours, the color of the interior walls of the schoolrooms with respect to light, and numerous other improvements are worthy of much consideration.

Within recent years the question of hygiene of the rural schools has become one of national importance. Under this head the Federal Government has carried on extensive sanitary surveys through the agency of the Public Health Service working in conjunction with State health and educational officials. Investigations into the following problems have been made: the area and condition of the school yards and walks and their drainage; the condition of outhouses with relation to methods of excreta disposal and the danger of dissemination of diseases; the condition of outhouses with relation to the source of water supply and drainage, with possibility of pollution; sources of water supply; kinds of drinking cups used; drainage from pumps and condition of well covers; cleansing and disinfection of schoolhouses; lighting of schoolrooms; color of interior walls and ceilings with respect to amount and effects of light; methods of heating and ventilation; the moisture of the air of the schoolroom; cloakrooms; facilities for washing hands and face; the use and kinds of towels in schools; adjustable seats and their good effects; location and illumination of blackboards; the health of school children, as to the presence of trachoma, follicular conjunctivitis, and other communicable diseases, care of teeth, enlarged tonsils, adenoids, defective vision, enlarged glands, anemia, hookworm disease, deformity of spine, impaired hearing, tuberculosis, mental dullness, and other conditions. The result of these surveys is convincing proof that the rural schools have been neglected and that their problems have been more pressing than the problems of the city schools.

(*To be concluded.*)

Medicine and Surgery in the Army and Navy

BRITISH SURGERY AT THE FRONT AND ON THE LINES OF COMMUNICATION.*

I.

SURGICAL FACILITIES—HOSPITALS—TREATMENT OF WOUNDS IN GENERAL.

For three long and terrible years the greatest war of history has been waged at the cost of innumerable lives. New methods of destruction have been devised and used with diabolical results and new forms of injury and infection have been encountered. All of these have made the task of the military surgeon greater than ever before. It is also true that medical science has progressed rapidly in the last few decades, but even this progress was insufficient to enable the surgeon to cope at the outset with many of the conditions which he encountered. This was partly due to the fact that some of the conditions had been rare in civil life and were strange to him; partly to the lack of proper facilities; and partly to the enormous pressure under which he was often compelled to work when a battle was in progress. In these three years, however, the surgeon has learned much and military surgery has overcome many of the obstacles which lay in its path, so that now the outlook for a wounded man is vastly more favorable than it was somewhat over two years ago. It will be profitable, as we are now actively engaged in the great war and will soon have our troops and our surgeons at the front in large numbers, to review some of the advances that have been made and to outline some of the procedures and methods of treatment which have yielded the best results so far.

The duties of the regimental surgeon have changed but little and he still stays with his men in the forefront of the conflict to render first aid and thus save many lives which would otherwise be lost. In addition he continues with the rescue of the wounded men and their transport to the hospitals behind the lines. The nearest hospital facilities to the firing line are those provided by the field ambulance at its advanced dressing station. The personnel of this includes two or three medical officers, some noncommissioned officers, and orderlies. Here the first aid dressings may be supplemented and suitable splints may be applied to make the further transport of the wounded man safer and more comfortable. A mile or more further behind the line of support is located the tent section of the field ambulance where the surgical facilities are sufficient to perform any urgent operation. Emergency operations only are performed in these and totally smashed extremities are removed and the patients kept for a day or so before being sent further to the rear. All hemorrhage is also arrested, either by ligation of the severed vessels or by plugging or direct pressure. All abdominal wounds and other severe cases which require prompt treatment are sent at once back to the casualty clearing station by special motor ambulance. Other cases are held for the regular convoys. At the present time the motor ambulance is the foundation for the surgery at the front, for horse ambulances could not cope with the numbers of wounded men sent back in a heavy encounter.

The question of time is of such importance to the success of military surgery that it deserves special mention. If there is no great battle in progress the removal of the small numbers of wounded men from the trenches to the field ambulance and thence to the casualty clearing station can be carried out with comparative ease and rapidity. In the presence of a big battle, however, the conditions are very different. At such times it is often impossible to secure enough stretcher bearers to care for the great numbers of wounded men. The work is very heavy at best and often is made doubly so by deep mud. The men soon slow down from the hard labor, and this and other difficulties render the evacuation of the wounded often a matter of many hours. Even in relatively quiet times most of the evacuation from the front lines has to be done under cover of darkness. All of this combines to delay the removal of some of the men as long as twelve to twenty-four hours or more, and some of those who have fallen in No Man's Land may not be rescued for even longer periods of time. Even with all of these hardships it is remarkable how efficient the transport of the men has become. Of a total of 200 men brought in to a casualty clearing station seventy-eight arrived in the first six hours, 134 in the first twelve hours, thirty-five in the second twelve, and thirty-one later than the first twenty-four hours.

The most important of the hospitals is the one next behind the field ambulance and is known as the casualty clearing station, or C. C. S. There are two series of these, one located from six to nine miles back of the front line of trenches; the second from three to six miles to the rear of the first. These hospitals are strung along behind the entire front and are located near railroad stations and where good roads can connect them with the front and where a good supply of water is available. It is in these, especially the first series, that the major portion of the immediate surgical work is done. The second series usually serves the purpose of reserves for military operations or as units for special types of cases when the times are quiet. The smallest of the casualty clearing stations accommodate 400 to 500 patients, the largest from 800 to 1,200. Wherever it is possible these stations are located in linked pairs to take the wounded alternately, so that when one is filled the patients can be diverted to the other. These hospitals have all the necessary facilities of the modern general hospital. Large operating theatres are essential and are always provided in such stations. Their staffs are large and are often reinforced by men from other sections where work is less active. Some of the stations are located in various types of public buildings, while others

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*The material contained in these articles has been summarized from two papers which appeared in the *British Medical Journal.* The first was by Surgeon General Sir Anthony Bowlby and Colonel Cuthbert Wallace and appeared in the number for June 2nd. The second was by Surgeon General Sir George H. Makins, published in the number for June 16th. The illustrations are reproduced from the originals loaned to the JOURNAL by the courtesy of Dr. Dawson Williams, editor of the *British Medical Journal.*

are hutted or tented, the latter types being the more numerous. The tented hospital is not very satisfactory in the climate of northern France, and every effort is being made to hut all of the casualty clearing stations. In addition to these hospital facilities special hospitals of various types have also been provided. Thus in the rear of the front line of casualty clearing stations there are hospitals set aside for the care of head injuries, for cases of shell shock, and for skin diseases. A few stationary hospitals are also located at the front, but their number is rapidly decreasing with the increase in the scope of the work being done at the casualty clearing stations. Those which remain are usually devoted mainly to the treatment of the medical cases rather than the wounded, or else to some of the special types of work just mentioned.

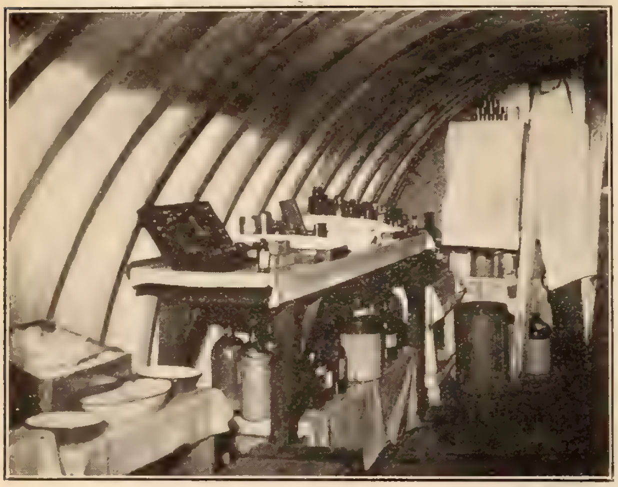

FIG. 1.—Interior of a regimental aid post, where the men receive their first attention from the Royal Army Medical Corps in the trenches immediately behind the first line trenches.

This completes the list of the dressing stations and hospital facilities at the front and on the lines of communication. The types of some of these aid posts and clearing stations are shown in the photographs. Aside from these hospital facilities, the other link in the chain for the care of the wounded is the provision of methods of easy and rapid transport. In the trenches ambulant cases find their own way to the advanced dressing stations, while those too severely wounded to walk are borne back by stretcher bearers, either by hand or with the aid of some form of wheeled stretcher carrier. Several of these methods are also illustrated and need no further comment. Then comes the motor ambulance, which connects the field ambulance with the casualty clearing station, which, in turn, is connected with the base hospital by means of the railways, on which special hospital cars are provided for the transport of the wounded.

At the casualty clearing stations the wounded men are taken at once into large reception huts or tents, whence they are distributed in three classes immediately after they have been dressed. The three classes are: those for immediate evacuation; those for retention at the station; and those for operation. The first class comprises mainly such as are but slightly wounded. The second includes cases suffering from shock, hemorrhage, injury to the lung, exposure to cold, etc. The third class includes all serious wounds of the soft parts, most fractures, a large proportion of the vessel injuries, all perforating abdominal wounds, etc. The proportion of operations done at a casualty clearing station to the total number of cases admitted varies with the conditions. Thus when shell wounds are very numerous the proportion is high, while it is low when bullet wounds are relatively abundant. Also if a transport train is waiting many cases will be sent farther back at once, which otherwise would be kept for operation. Some idea of the activity of one of these casualty stations may be gained from the fact that during a given period, which included a spell of heavy fighting, 20,589 wounded men were brought in and of these 4,554 were operated upon. In this group of operative cases there were 277 for ligation of arteries, 247 for the treatment of wounds of the joints, 431 amputations, 1,403 fractures, 1,816 for excision and cleansing of wounds, 280 miscellaneous gunshot injuries, and 101 operations for conditions not due to wounds, including cases of appendicitis, strangulated hernia, cellulitis, etc. In periods of heavy fighting such work as this goes on continuously, night and day, and relays of surgeons and nurses are required. Even with relays a certain proportion of the staff will become exhausted after a few weeks of such exceedingly strenuous activity.

A very large proportion of severely wounded men require general anesthesia and at the outset the European preference for chloroform led to its general use in military surgery. It soon became evident, however, that it was not suitable for universal use and at present it has been largely replaced by ether. Ether was at first administered chiefly by

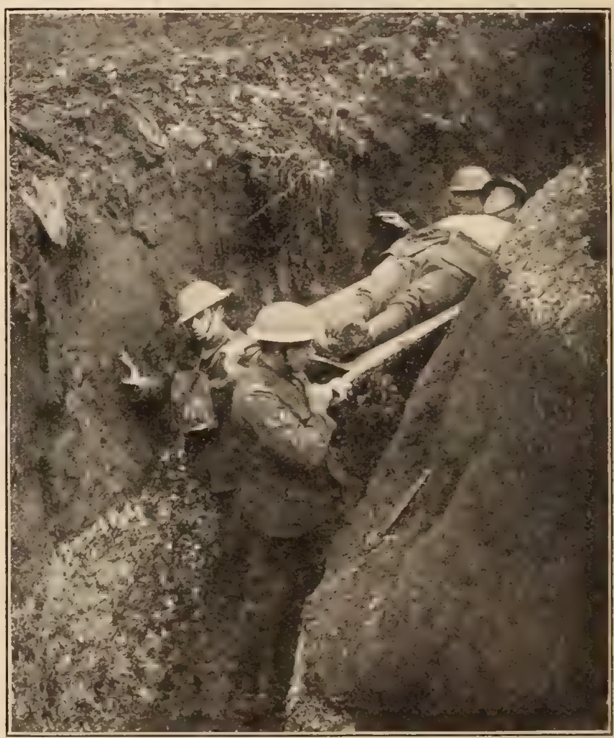

FIG. 2.—Handling a stretcher round a corner of communicating trench. The wounded are brought from the trenches generally at night. In some parts of the lines this can be done in daylight.

the open method, but the exposure of the men to wet and cold and the great prevalence of respiratory catarrhs led to many fatalities from pulmonary complications following this method of use. As a result of this experience some form of "closed" method of giving warmed ether vapor has now become general. Of all the forms of apparatus, that of Shipway has proved the most satisfactory and is now widely employed. This method has been found to have the following advantages: It causes very little secretion of saliva and mucus; very little nausea and vomiting; relatively slight tendency to bronchitis and other pulmonary complications; little aggravation of the tendency to shock and collapse; it is productive of even anesthesia; is economical of ether; and can be used in connection with oxygen for combined anesthesia.

Probably no more important and at the same time more perplexing problem has arisen in military surgery than that of the general treatment of wounds. The principles of treatment are not essentially different from those established in civil practice, but the conditions are so different in military wounds that the application of these principles has had to be greatly modified. Methods of asepsis are generally inapplicable, owing to the fact that most of the wounds have already been heavily infected by the time they reach the hospitals. In addition to heavy infection the tissues are usually severely damaged by laceration, contusion, and often by interference with their blood supply. Various types of foreign bodies including fragments of missiles, mud soiled clothing, etc., are often deeply embedded in the wounds. Finally, owing to the exigencies of war, many wounded men have to lie out in the mud, cold, and wet, or in the hot sun for many hours before they can be given any attention whatever. Such exposure is often complicated by shock or extensive loss of blood.

The problems of wound treatment are manifold and it is little wonder, therefore, that no satisfactory general method of treatment has been worked out. There are, still, two points upon which all are agreed: 1, the absolute necessity for efficient and immediate primary surgical cleansing and opening up of the wound; 2, the great importance of securing maintained rest of the wounded part. Even if the former step has been carried out thoroughly the failure to maintain rest of the part often leads to severe infection and largely accounts for the many very badly infected or even septic cases which reach the base hospitals. The treatment and outlook vary with the types and severity of the wounds and can best be outlined according to the general types of wounds. It should be stated that no attempt is made to treat wounds in the trenches or at the advanced dressing station of the field ambulance and that most of the treatment is carried out at the casualty clearing station, except in the minor types of injury. In the case of the slighter wounds, whether infected or not, the progress is usually favorable and rapid, almost irrespective of the nature of the treatment. In this class, however, probably the ideal method consists in the early complete excision of the small wounds with immediate suture. This method has proved highly successful, and is specially suited for cases of minor scalp injuries. Acutely infected and septic wounds, as well as those which are extensive or complicated with bone or joint injuries, offer a vastly more difficult problem. Omitting for the present discussion of the treatment of any complicating injury, some of the more widely used methods of treatment may be mentioned.

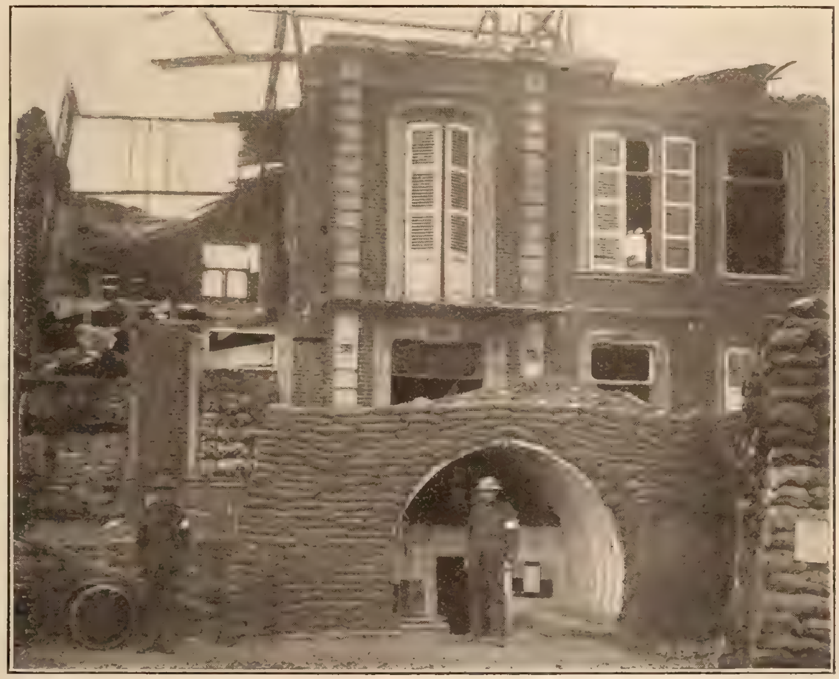

Fig. 3.—Advanced dressing station of field ambulance.

The first problem to be met is that of overcoming the infection, and for this purpose some form of antiseptic treatment is generally employed. Many antiseptics have been tried, but at present some form of hypochlorous acid is by far the most extensively used. While opinions still differ as to its value, there is little doubt that when used according to the method of Carrel it gives the most successful results. The method has already been described in detail by several surgeons as well as by its author. Experience with it has shown definitely that if it is begun within the first twelve hours simple flesh wounds can be rendered practically sterile in an average of six days; that if first treated at a later time they can be sterilized in an average of twelve days; and that compound fractures can be made sterile in three weeks. All of these wounds can be closed by secondary suture at the end of the periods mentioned. This represents an enormous gain over the results previously obtained by any method of treatment. One of the most important features of the method of treatment is the control of the progress by frequent bacterial counts made from the wound, and the results of these counts are made the sole basis for the decision as to when it is safe to suture the wounds. Up to the present this method of treatment has not been adopted in the face of a great rush of wounded, but arrangements have been perfected for its use under such conditions. It has also been provided for in the transport trains, so that when begun at the casualty clearing station it need not be interrupted during the patient's evacuation. It has one great disadvantage in that it is complex, requiring the frequent attention of a nurse and daily change of the dressings.

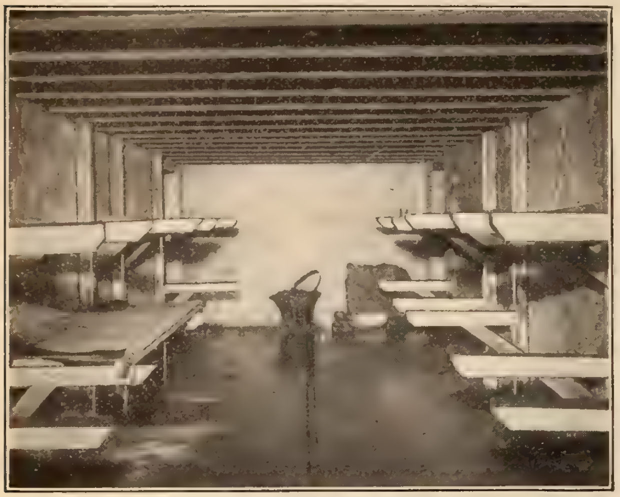

Fig. 4.—Interior of an advanced dressing station.

A second method of treatment which has given very promising results is that suggested by Rutherford Morrison. In this a thin layer of antiseptic paste, consisting of bismuth and iodoform in liquid paraffin, is spread upon and rubbed into the whole wounded surface and the wound is then sutured and dressed. Primary healing very often results in a short time, but it has the one disadvantage in that if complete rest of the part is not maintained sepsis may be lighted up. This not infrequently happens during transport and many of the cases treated by the method reach the stationary hospitals in a state of acute wound sepsis. The method is also less satisfactory than that of Carrel in that it gives rise to much denser and firmer scars than the latter and may lead to deforming contractures. Whichever method is followed the primary step is the complete surgical cleansing of the wound by free incision, removal of all foreign bodies and the excision of all dead or badly injured tissues. Without this preliminary treatment no method will succeed in preventing infection. Antiseptic baths and irrigations have been generally abandoned as a result of experience. Other antiseptic solutions have been tried in place of hypochlorous acid, using the same method of application, and of these brilliant green promises to be of great service. It has the advantage over the hypochlorite solutions of being stable and of uniform activity. Hydrogen peroxide has been used, but has proved of little value as an antiseptic, though it is serviceable for loosening adherent dressings without damage to soft tissues or the production of pain. Phenol was strongly recommended, but has fallen into disuse for the purpose of sterilizing recent wounds on account of its ineffectiveness.

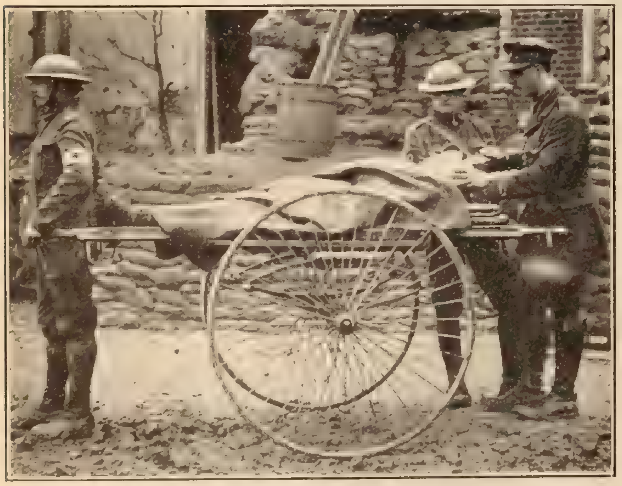

Fig. 5.—A wheeled stretcher.

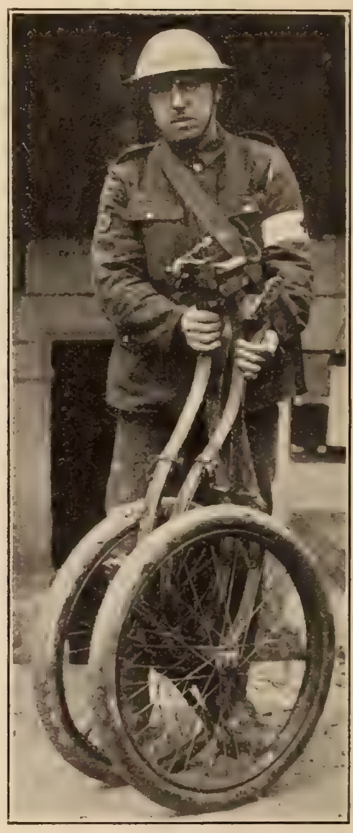

Fig. 6.—Showing how compact the wheeled stretchers are when closed.

While not strictly an antiseptic dressing the use of hypertonic salt solution or the salt pack has been fairly extensive. The former has been shown to have so many disadvantages and to be so feeble in combating marked sepsis that it has been largely given up. The latter, which consists in dressing the cleansed wound with many layers of gauze between which tablets of salt are placed, has proved a very satisfactory initial dressing and is particularly helpful in the matter of transport, for it can be safely left in place for four to six days. It cannot, however, be renewed without serious damage to the newly formed tissues, which become pale, friable, and soggy and which do not heal well or rapidly. It is solely as a first dressing that the salt pack is of value.

The methods for the securing of drainage of wounds have undergone considerable change and the cylindrical tube is little used because it acts as a foreign body, tends to form a localized channel through which drainage is not very adequate, and because it establishes an open track for further infection. The tube is now used as a provisional measure only and drainage is now generally secured either by the method of Carrel or by that of Rutherford Morrison. The one provides for drainage by the light gauze packing, the other by separating the wound surfaces by a film of bismuth, iodoform paraffin mixture.

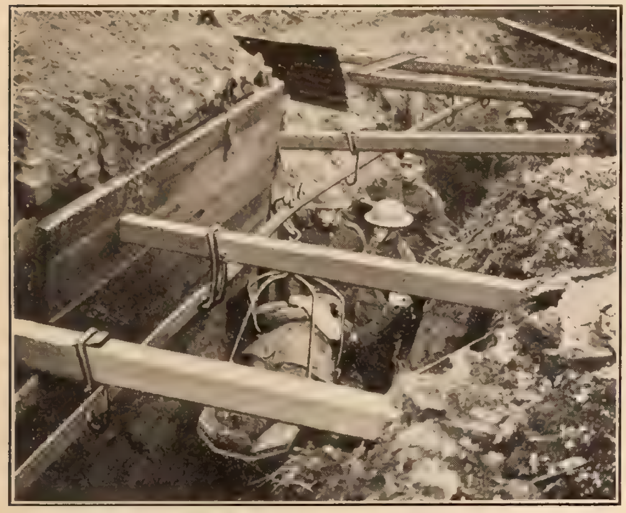

Fig. 7.—Light railway ambulance trolley.

The accepted principles for the treatment of infected wounds in general may be summarized as: 1. Treatment, irrespective of the method, at the earliest possible moment following injury. 2. The complete surgical cleansing of the wound—the removal of all killed tissues and all that have been severely bruised or lacerated, removal of all foreign bodies. 3. Excision of the entire wound if small and of relatively little severity, followed by immediate suture. 4. The provision for drainage and antisepsis by the Carrel-Dakin, the Rutherford Morrison, or the salt pack method. 5. Complete and effective immobilization. 6. Secondary suture as soon as the wound has been rendered practically sterile. One of these principles is quite as important as another, and it must be the aim of the surgeon to fulfill them all so far as possible. This he can do in every case, with the exception of the first principle, the meeting of which largely depends upon circumstances more or less beyond his control. If all are fulfilled the results are exceedingly good quite irrespective of the nature of the infecting organisms, but certain differences must be made in the cases of such specific infections as tetanus and gas bacillus infection.

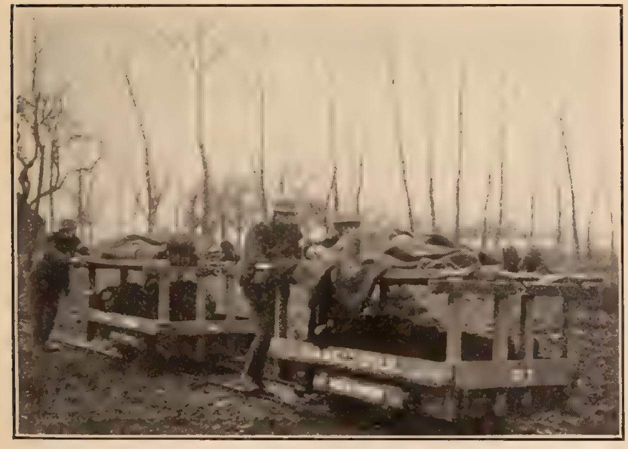

Fig. 8.—Four men ambulance trolley for bringing men from regimental aid post and advanced dressing station.

(To be continued.)

MEDICAL NEWS FROM WASHINGTON.

Division of Ophthalmologists to Care for Eyes of the Army.—Major Nelson M. Black in Charge.—Medical Officers Ordered to Cantonments and Camps.—The Army Sanitary Corps.

The office of the surgeon general of the army, in conjunction with a subcommittee of the Council of National Defense, has initiated thorough preparations for the care and treatment of the eyes of troops. The subcommittee made a survey of all the eye specialists in this country, and the surgeon general now has a list of ophthalmologists who are willing to serve for the period of the war. The committee sent to 9,000 specialists a communication designed to elicit the special training and experience of each, to ascertain his fitness for army service and those that were approved and signified their willingness to serve were sent blank forms for admission to the medical reserve corps.

Dr. Nelson M. Black, of Milwaukee, Wis., has been commissioned a major in the reserve corps and assigned to duty in the office of the surgeon general in charge of ophthalmology as a subdivision of the section in surgery of the head. He now is engaged in preparing a list of medical reservists specially qualified for making eye examinations at the cantonments. Particular attention will be given to the identification of cases of trachoma, as every effort will be made to keep that serious infection out of the army. Eye trouble always has been one of the favorite claims of the malingerer, but the tests that have been prescribed for the guidance of the examining specialists are calculated to bring to light every case of deception. Major Black's section also has prepared a list of eye instruments for use in the base hospitals, and plans have been made for utilizing one of the wards at every cantonment hospital for eye examinations.

There is no provision in the medical department for optometrists, and thus far the only way they can be of use is by enlisting as privates, to be detailed in case of need to that duty for which they are qualified. However, there is a prospect that a unit of manufacturing opticians may be attached to a proposed special hospital for surgery of the head, but thus far no such unit has definite status.

* * * * *

One of the troubles of soldiers that is causing considerable concern to our medical authorities in anticipation of the time when our troops will be in the trenches in France is trench foot, and the importance of very careful treatment in such cases is becoming more and more apparent. One report in the hands of the medical officers shows that in 511 cases of trench foot coming under the observation of one particular medical officer at the front, there were sixty cases of gangrene, or twelve per cent. Of these sixty cases, forty were of the humid variety, and thirty-five of them were bilateral; one case had humid gangrene of the left foot and dry gangrene of the toes of the right foot; one had humid of the left and dry of the right, and a third case was of the humid variety of both feet and dry of the forefingers of both hands. Five of the cases were attacked with tetanus, despite antitetanic injections given at the first aid stations and repeated every six days in the base hospital, and all five suffered a rapid development of the disease and early death. In two of the 60 cases, true gaseous gangrene developed; and one of the patients died. Eighteen of the cases showed gas, but it proved to be due to the mortifying processes in the diseased members. One patient succumbed to septicemia. Amputations were made in eighteen cases, of which eight were bilateral, and all of these patients survived.

* * * * *

Detailed instructions have been issued by the surgeon general of the army for the guidance of medical officers in the examination of the heart and blood vessels of candidates for the military service. The duties of the examiner are to exclude from active service in the army any man affected with disease of the heart or bloodvessels which impairs his ability to undergo severe bodily exertion; to hold to the service men that have been recommended for rejection or discharge because of supposed defects that do not indicate disease and do not impair the man's ability to undergo severe bodily exertion, and to determine the importance of definite defects in the case of candidates for special service, not entailing severe bodily exertion, and to recommend acceptance or rejection for such special service.

It is necessary that the conclusions of the examiner shall be based on objective evidence in the widest sense, including both physical signs, cardiac rhythm, measurement of the blood pressure, and the observed effect of effort. In the presence of questionable signs or symptoms, the history, especially of past rheumatic fever, may be a factor in the final decision. No statements of the subject, however, will be accepted as proof of the existence of cardiovascular defect, unless supported by objective evidence.

Since it is the duty of examiners to protect the interests of the government by preventing men from entering the service whose circulatory systems may be expected to break down under strain, and equally by preventing exemption or discharge of fit subjects because of unimportant deviations from the normal, it will be necessary for them to exercise every care in the interpretation of their findings and bear in mind constantly the murmurs and other departures from the supposed normal that may occur in perfectly healthy hearts.

* * * * *

Selections have been made of members of the medical corps of the army for duty in command of base hospitals at national guard and national army cantonments as follows: Major Ernest G. Bingham, Fort Des Moines, Iowa; Captain Jay D. Whitman, Camp Upton, Yaphank, Long Island; Captain William L. Sheep, Camp Travis, Fort Sam Houston, Tex.; Captain Omar H. Quade, Camp Meade, Annapolis Junction, Md.; Major Ferdinand Schmitter, Camp Lee, Petersburg, Va.; Captain Joseph A. Worthington, Camp Taylor, Louisville, Ky.; Captain Shelley U. Marietta, Camp Gordon, Atlanta, Ga.; Captain William H. Smith, Camp Green, Charlotte, N. C.; Captain William H. Allen, Camp Wadsworth, Spartanburg, S. C.; Captain Roy C. Heflebower, Camp Hancock, Augusta, Ga.; Captain James S. Fox, Camp McClellan, Anniston, Ala.; Captain Arthur O. Davis, Camp Cody, Deming, N. Mex.; Captain Charles C. Demmer, Camp Wheeler, Macon, Ga.; Captain Sanford W. French, Camp McArthur, Waco, Tex.; Captain John M. Willis, Camp Logan, Houston, Tex.; Captain Thomas E. Scott, Camp Sevier, Greenville, S. C.; Captain Philip B. Connolly, Camp Doniphan, Fort Sill, Okla.; Captain George E. Pariseau, Camp Bowie, Fort Worth, Tex.; Captain Chester R. Haig, Camp Sheridan, Montgomery, Ala.; Captain James E. Baylis, Camp Shelby, Hattiesburg, Miss.; Captain George F. Lull, Camp Beauregard, Alexandria, La.; Captain Robert W. Kerr, Camp Kearny, Linda Vista, Cal.; and Captain Addison B. Davis, Camp Fremont, Palo Alto, Cal.

* * * * *

Colonel George E. Bushnell, of the medical corps of the army, was transferred to the retired list, on September 10th, upon reaching the retiring age of sixty-four years. Colonel Bushnell is one of the tuberculosis experts of the regular army, and for a number of years he was in command of the army tuberculosis hospital at Fort Bayard, N. Mex. He now is on duty in connection with his specialty in the office of the surgeon general of the army, and he is continued on that duty following transfer to the retired list. Colonel Bushnell is a native of Massachusetts, and he entered the army as an assistant surgeon in February, 1881. He reached the grade of colonel in May, 1911. During the war with Spain, he served as major and chief surgeon of volunteers. He holds the degree of A. B., 1876, and M. D., 1880, Yale University.

* * * * *

The sanitary corps of the army, which is being organized as a branch of the medical department in pursuance of an executive order issued some weeks ago under authority of provisions contained in the army draft act of May 18, 1917, not only is intended to have in its personnel sanitary engineers and other experts to look after sanitation generally, as its name implies, but also business men and experts in other lines to take care of certain special work coming under the medical department.

One feature of the work of the new corps pertains to the handling and distribution of medical supplies, particularly in the zone of the rear in France, and this requires, among others, experienced business men that are familiar with the drug trade. The medical supply activities of our army in France are under the general supervision of Colonel Francis A. Winter, of the Army Medical Corps. While in Washington preparing for his work in France, he asked the Council of National Defense to recommend an efficient man conversant with the drug trade for service as his assistant. This was done, and as a result Kiefer Meyer, of a large wholesale drug house in Indianapolis, was appointed a captain in the sanitary corps, and he now is in France with Colonel Winter. He took with him as his assistants, J. K. Lilly, Jr., son of the head of the house of Eli Lilly & Co., and Russell A. Coles, of the city of Indianapolis, who were first commissioned first lieutenants in the corps.

* * * * *

The important subject of gas masks also comes under the sanitary corps, and Major Bradley Dewey, a member of this corps, who devised the mask to be used by our troops, is in general charge of the work. The provision of gas masks requires men that are experienced in chemistry and in manufacturing, rather than physicians and surgeons, and it is this class that is being drawn upon for appointments to the sanitary corps for work pertaining to gas masks.

Captain Mayo Smith, of the sanitary corps, is engaged in organizing a force to go to France to take care of work pertaining to gas masks, including their receipt, issue, repair, disinfection after use, recharging with chemicals, and reissue. The force will include the following sections: Administration, receiving, disinfecting, inspection, chemicals, repairs, and stores including assembly and shipping, and it also will include as instructors those conversant with the use of the masks. In order to obtain a force of instructors, a gas mask school has been established at Fort Sill, Okla., to which are being sent for instruction, selected members of the medical reserve and sanitary corps.

THE PETITION FOR SELECTIVE DRAFT OF THE COMMITTEE ON NATIONAL DEFENSE.

New York, *September 10, 1917.*

To the Editors:

In its issue of August 25, 1917, page 653, the *Journal of the American Medical Association,* on the request of the chairman of the New York State Committee of National Defense, Medical Section, printed the petition for selective draft drawn up by that committee.

The *Journal* preceded the copy of the petition by an explanatory introduction which states that "a committee was appointed to draw up a petition to the Congress of the United States to be circulated for signatures and then presented to Congress." Note, please, the last four words. The introduction also states that "Letters have been drafted . . . presenting the petition and urging that it be signed and presented to Congress." Again, note the last four words!

The point is just this: The New York State Committee of National Defense has never urged upon any man, or organization, or institution, that this petition be presented to Congress, and any statements to the contrary are incorrect.

Furthermore, it is not and never has been the intention of this committee to present to Congress the petition for a selective draft of physicians. On the contrary, it was and is the intention of this committee to present the petition, after securing all the available signatures of physicians in New York State, to the Medical Section of the Council of National Defense.

Undeniable and (to a careful observer) unmistakable evidence of that intention was expressed in the minutes of the committee meeting on July 2nd at which the petition was authorized. A copy of the minutes was sent to the Medical Section of the Council of National Defense on July 10, 1917, and the paragraphs referred to are quoted below exactly as they appear in these minutes:

> The Secretary moved that: The New York State Committee of National Defense recommend to the Medical Section of the Council of National Defense the institution of a Federal classification of physicians similar to that of New York State and that measures be instituted to secure the necessary Federal legislation authorizing a selective draft of physicians based upon such classification, which draft shall provide exemption of:
>
> 1.—Those with too many dependents—75 per cent. dependent on their professional income.
> 2.—Those disqualified by health or age.
> 3.—Those needed for public health continuance.
> 4.—Those needed for medical education.
> 5.—Those needed for hospitals and clinics, and
> 6.—Those needed for isolated communities,
> provided that such draft automatically exempt physicians as a class from the provision of the present general draft law.
>
> There was explanation of the motion as follows: That it had no reference to the necessary 2,200 men from New York State at the present time, but that it was a measure for the eventual fair selection of the men that will ultimately be required.
>
> * * * * *
>
> In order to get the matter of a selective draft of physicians properly before the Council of National Defense as representing not alone the unanimous opinion of the State Committee but also the overwhelming opinion of the profession at large, it was suggested that the Committee draw up a strong petition to the President of the United States and to Congress which petition the members of the Committee should sign and which should be circulated, through the County Committees, for the signatures of the great body of physicians in the State of New York.

Enough misunderstanding of the object of this petition has arisen to make desirable an authoritative statement that this is in no sense an attempt to have conscription forced upon the medical profession from outside—as some men have apparently believed. On the contrary, its adoption will preclude the possibility of any such undesirable action and will at once afford an orderly system of furnishing those fittest for medical officers to the army and of retaining in their communities those physicians most needed at home.

The New York State Committee of National Defense, Medical Section, requests you to publish this statement in justice to the twelve hundred or more physicians of this State who have already signified their approval by signing this petition.

Any further information that you may desire will be gladly furnished by this committee.

New York State Committee of National
Defense, Medical Section.
Frederick T. Van Buren,
Acting Secretary.

Editorial Notes and Comments

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and The Medical News
A Weekly Review of Medicine

EDITORS
CHARLES E. DE M. SAJOUS, M.D., LL.D., Sc.D.,
Philadelphia,
SMITH ELY JELLIFFE, A.M., M.D., Ph.D.,
New York.

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THE MEDICAL OFFICERS' TRAINING CAMP.

The Scot's prayer, "God give us a good opinion of ourselves," has been answered in the case of many physicians, as is quite natural from the relation in which they stand to their patients. After a man has been accustomed for years to dictate the conduct of life to others, after he has been accustomed to have his slightest word regarded as inexorable law, it is natural that he should come to look upon his own attainments and personality with a certain degree of the respect which is shown him by others.

The medical reserve officer assigned to duty at the medical officers' training camp, is sure to have this bladder of selfesteem punctured on his arrival in camp. His orders read, "Report in full uniform with side arms to the commanding officer of Camp ————." Woe to the unlucky doctor who construes the order literally and appears in full uniform with side arms. His unaccustomed sword and his heavy pistol will become a monstrous incubus by the time he has paraded the full length of the road down which he must march from the trolley line to the headquarters of the camp. Particularly unfortunate will he be if he arrives just after the officers who have preceded him have finished a meal and are grouped along the driveway leading into camp. Filled with a high sense of patriotism, realizing fully the great sacrifices which he has made for his country, and with a pleasing consciousness of the effect of his new uniform, he is apt to throw his shoulders back a little to present some evidence in his gait of his high appreciation of the importance of the task about which he is set. Great is the shock therefore he experiences on hearing half a dozen friendly voices shout: "Hey, Doc," to which informal greeting he will involuntarily respond by turning his head to find a grinning row of youngsters facing him. From among the group will come the order, "'Tention, turn out the guard, here comes the general," while others will exasperatingly keep time to his march with a "Hep, hep, hep."

The headquarters is only one of a bewilderingly uniform number of unpainted wooden shacks and bears no label. After diligent inquiry he finds in it refuge from the ribald jeers of his fellow officers and presents his order to the adjutant. This tired and busy young man, wholly unimpressed by the rank or professional standing of the celebrity who stands before him, hurriedly scribbles his name on a list, initials the order and says in a flat, level voice: "Give me your baggage checks—get a card in the next room—report Companv 9." In the next room privates in uniform write out cards on clattering typewriters, barking the necessary questions at the newly joined officer: "Age? Specialty? Home address?" And finally the instruction: "Report Company 9." The officer is left to his own devices to find Company 9, which is never by any chance where it is expected to be, and by the time he has found the bare wooden cantonment which is to be his home for the next three months, his shoes are full of black dust or sticky mud, as the case may be, his collar and cuffs are wilted, and his uniform soaked with perspiration.

The doctor has taken the first step toward becoming a cog in that big and wonderful machine known as the United States Army. His selfesteem will suffer many shocks. His body will undergo many unaccustomed hardships, but he will come out of it the better man and the better physician because of the contact with another phase of life and with the discipline of mind, spirit, and body to which he has been subjected in order to convert him from a civilian doctor into a military surgeon. The surprising part of it all is the good spirits and camaraderie which prevail at these camps without in the least interfering with the serious attention required by the intensive program of drill and study.

The wisdom of the establishment of the medical officers' training camps must be apparent to all and even the most doubting Thomas would be convinced of the value of the training if he could but see the men at work. Whether at Fort Benjamin Harrison, at Fort Oglethorpe, or other instruction camp, the work of the medical officers' training camp is of vital importance to the welfare of every man who is to constitute the Army of the United States, for the preservation of his health and of his life itself will depend on the thoroughness with which the medical officers are trained.

PROPHYLACTIC TREATMENT OF TETANUS.

The surgical writers of the present war lay great stress on the immediate prophylactic injection of antitetanic serum, and very favorable results are reported from its use. The serum is given in all the armies. All writers recommend a massive prophylactic dose. Von Behring speaks of 20 A. E.—one A. E. equalling 115 American units. Bacon gives subcutaneously from fifty to sixty c. c. in one injection for six days, one c. c. corresponding to about 100 units. The British War Office advises for the first two days 10,000 units intrathecally and 8,000 units intravenously; for the third and fourth days 8,000 intrathecally and 4,000 intravenously; for the fifth, seventh and ninth days 2,000 a day subcutaneously. Our American authors propose a prophylactic dose of 2,000 units. Nicol reports twenty cases of tetanus treated with antitetanic serum, sixteen patients recovering; the dose was from 2,000 to 5,000 units intraspinally, 10,000 units being given intravenously at the same time. The intraspinal dose was repeated after twenty-four hours. Kempf and von Behring advocate endoneural injection; Grundmann, injection into the tissue near the wound. The delay of a few hours may mean the loss of life, and, as immediate attention is often impossible in war, we do not find the use of the serum an infallible prophylactic measure. The duration of protection from antitetanic serum is very short and injections have to be repeated. A person who has once had tetanus should receive prophylactic injections before an operation even years later.

In Italy Baccelli's method of prophylaxis against tetanus is preferred. Lavini states that the mortality with this treatment is seventeen per cent., while serum treatment gives from fifty- to seventy-eight per cent. mortality. Kocher remarks, however, that Baccelli's method can not be relied upon; Sir David Bruce had a mortality of 63.6 per cent. Joly favors serum treatment as a prophylactic, and as a general treatment Baccelli's method. The American method of Meltzer and Auer has been highly endorsed in Germany. Several authors favor a combination of serum and magnesium sulphate treatment, among them Simeon, Barnsby, and Mercier.

The fact that tetanus sores do not develop in oxygen led Howitt and Jones to inject oxygen into deep tetanic wounds of guineapigs; they state that they had fifty per cent. cures. For three consecutive days, Kellermann injected ten c. c. of three per cent. hydrogen dioxide under morphine directly into the wound following the path of the bullet with quick recovery; serum treatment had been unsuccessfully applied subcutaneously and intravenously. Sutton advises washing the wound with water first, then with hydrogen dioxide, and finally with tincture of iodine; an iodine pack is put into the wound and renewed every twenty-four hours until all danger of infection is passed.

In addition to this therapeutic treatment, there should also be symptomatic treatment—"quiet, darkened room and care of a sympathetic and capable nurse," removal, if possible, of the foreign substance, and sedatives by mouth or rectum. We thus see that the emphasis laid by the American profession upon immediate prophylactic injection of a biological product in any injury in which tetanus may appear, has been fully justified.

MASS VOLUNTEERING VERSUS INDIVIDUAL VOLUNTEERING.

On another page of this number will be found a communication from the Medical Section of the New York State Committee of National Defense. It describes the origin of their Petition for a Selective Draft of Physicians, states its object, and points out the error that has arisen from a common misinterpretation of its expression.

In spite of the fact that this misunderstanding has aroused a certain amount of natural opposition, it appears that this petition has already been approved and signed by about ten per cent. of all the physicians in New York State. Among the signers are many of the leaders of our profession, and these men do not seem to have regarded it as an attempt to force conscription upon them. On the contrary, their signatures may be looked upon as a guarantee that this petition is no more nor less than an invitation to their colleagues of the profession to subscribe to the principle of universal service in time of war; a principle based upon the obligation each man owes to the Nation whose opportunities and protection he has enjoyed.

In war time the medical profession is faced by the duty of furnishing to the army an adequate number of physicians fit to become medical officers as well as by the duty of continuing the medical care of the civil communities at home. And it is obvious that, in an emergency like the present, when a large percentage of the physicians of this country are needed as medical officers for our own army and to aid the armies of our allies, whose available supply of new medical personnel is practically exhausted, an orderly and efficient plan for their selection is desirable and will sooner or later become necessary. It is obvious, also, that not all physicians are fit to become medical officers.

Such a plan, to be effective, must include two essentials: an adequate classification upon which to base the selection of those who are fittest for the army and those who are most needed at home; and adequate authority to furnish the former individuals to the army and to retain the latter at home.

Thanks to the recent special medical census, the physicians of this State are completely classified and the State Committee is asking their help in urging the extension of the classification throughout the country. The petition for this purpose deserves the support of every physician who believes that he owes his service to the Nation and who desires to render that service most effectively, whether it be at home or with the army.

LEGISLATIVE INTERFERENCE WITH ADVERTISING.

The goal of medicine should be that same ideal of progress which is realized and attained through self-control based upon knowledge. This is the ideal of perfect health. Legislation should promote and safeguard the attainment of this goal. It is too often hampered and misdirected by ignorance, prejudice, or false ideals which are based on a timid shrinking from facts. This is a fruitful source of legislative interference with the diffusion of knowledge which is practical and wholesome and is only offensive to a public which is on the defensive against facts which need correction.

An amendment to the penal law of this State has just gone into effect, Section 1142-a of House Bill No. 302, which makes any one guilty of a misdemeanor who "publishes, delivers, or distributes, or causes to be published, delivered, or distributed in any manner whatsoever, an advertisement concerning a venereal disease, lost manhood, lost vitality, impotency, sexual weakness, seminal emissions, varicocele, or any disease, deformity, or condition of a similar nature, or self abuse or excessive sexual indulgence, and calling attention to a medicine, article, or preparation that may be used therefor, or to a person or persons from whom or an office or a place at which information, treatment, or advice relating to such disease or infirmity, habit, or conditions may be obtained." A reservation is made which exempts treatises, advertisements, and notices of scientific import or issuing from officially recognized bodies, "an incorporated hospital or a licensed dispensary or . . . a municipal board or department of health, or the Department of Health of the State of New York."

The form of advertising attacked in this amendment surely needs supervision and regulation. The crudity with which it has hitherto been displayed has served neither the public welfare nor the science of therapeutics. It has been used to the advantage of those who make gain from the credulity and sense of dependence of the public. For these things pertain to disease as it affects fundamental and vital interests, and therefore the appeal is to that deepest sense of dependence and seeking for security which man is afraid to acknowledge.

While the regulation of these advertising harpies needs restriction, true medical science and the practice of it should not be limited and hindered by a sweeping law which might be construed to apply to medical as well as to lay journals. Correct advertising in the reputable medical journals is merely part of a true education of the medical profession, and we feel assured that the attorney general will view reputable medical publications as the most efficient tools in the furtherance of the health of the people, and seek to enhance rather than limit their educational scope by applying this restriction to them. A traditional fear on the part of the public of facing facts, combined with an indolence on the part of legislators, is accountable for much unwise and meddlesome legislation. Careful and discriminative application of legislative power advances any cause and can only be welcomed by those most concerned.

BOGUS DIPLOMAS AND BOGUS MEDICINES.

The commissioner of health of the City of New York, Dr. Haven Emerson, recently unearthed an interesting diploma factory which was conducted as a side line by a group of men manufacturing and selling imitations of neosalvarsan. For the moderate sum of $1,500 one of the dupes purchased a fraudulent diploma, naming him as a graduate of the Southern College of Medicine at Atlanta, with a most impressive license to practise medicine, issued by the Eclectic Board of Georgia, and two certificates of good character signed by Manhattan physicians. In one case the victim, having become restive and demanding the restitution of his money, received checks for a portion of this sum, but the checks were returned marked "No funds."

This interesting diploma mill came to light in the course of investigations carried on by Doctor Emerson as to the origin of certain lots of fraudulent neosalvarsan which had appeared in the market. Some of these were put up in tin containers painted with aluminum to imitate the aluminum containers used for the genuine article. Others, it seems, used aluminum containers, but in these the fraudulent character of the product could be easily determined by comparing the circular with the circular accompanying the genuine article. The fraudulent circular measures 8½ by 5½ inches, which is about one eighth of an inch wider and three eighths of an inch longer than the circular with the genuine product. The word "toxicity," which appears in the fourth line from the bottom of the first page of the genuine circular, is misspelled "toxity" in the fraudulent circular, while the division of the words in the lines differs, the first word in the third line of the genuine circular being "autooxidation," while in the fraudulent circular the third line begins "oxidation." A similar discrepancy is found in the last paragraph of the descriptive circular. The first word in each line of this paragraph on the genuine circular is: Line 2, "utmost"; 3, "products"; 4, "fore"; 5, "the"; 6, "as." In the fraudulent circular these lines begin with the following words: Line 2, "care"; 3, "high"; 4, "varsan"; 5, "celency"; 6, "unimpeachable."

The question of the therapeutic value of neosalvarsan is one which is not under discussion in this particular connection. Many practitioners have the utmost confidence in it and wish to use it. We deem it important, therefore, to point out these easily recognizable features of the two lots of fraudulent neosalvarsan so that physicians may guard against being imposed upon themselves and in turn imposing upon their patrons by the purchase and use of worthless imitations.

HE DIED FOR DEMOCRACY.

Ever the man of medicine is the martyr. The first men in khaki to sail for the battlefields of Europe were the surgeons of the United States base hospital units. The first man in khaki to die for democracy is a surgeon, Lieutenant William T. Fitzsimmons, of Kansas City, Mo., adjutant of the Harvard base hospital unit, who was killed by a bomb dropped on the hospital on the coast of France, by German airmen, on September 9th. "The blood of the martyrs is the seed of the church." So the blood of this brave youth murdered by a German bomb while going about his errand of mercy will be the seed from which will spring a renewed zeal, an increased earnestness, and still higher devotion to duty on the part of the medical profession of America, which will write his name high in that worthy roll of American physicians who have answered the call of duty unflinchingly even when that call has led to death.

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News Items

Women May Be Admitted to the Harvard Medical School.—It is reported that as a war measure a limited number of women may be admitted this year to the courses of the Harvard Medical School, but they will not receive or be eligible to receive the university degree. Formal action along this line has not been taken by the corporation, but tentative arrangements are being made and will probably become effective by the time college opens for the new session.

A Hospital Supply Service in France.—An appropriation of $500,000 has been voted by the War Council of the Red Cross for the establishment of a hospital supply service under the Red Cross Commission in France. Several warehouses are now being established by the Red Cross Commission throughout France as a part of the new service. Here drugs, medicines, and surgical instruments will be available for all hospitals in the department in which the warehouse is located.

Oregon State Medical Association.—Dr. E. E. Straw, of Marshfield, was elected president of this association at the annual meeting held recently in Portland, and other officers were elected as follows: Dr. J. A. Best, of Pendleton, first vice-president; Dr. A. Tilzer, of Portland, second vice-president; Dr. H. C. Clement, of Salem, third vice-president; Dr. Clarence McCusker, of Portland, secretary; Dr. Katherine C. Manion, treasurer; Dr. Paul Rockey and Dr. A. C. Smith, councillors.

Ambulances for Russia.—The American Red Cross announces it will send to Russia shortly 125 motor ambulances and automobiles. These will equip one Russian army corps with five complete sections. Each section will comprise fifteen motor ambulances, one automobile bus for transporting slightly wounded, one kitchen trailer, one dressing station car, two touring cars for officers, three light delivery trucks, and a repair car and gasoline supply car. The machines will be shipped direct to the Red Cross Commission in Russia, of which Dr. Frank Billings is head.

Instruction in Gas Defense.—The following named officers of the Medical Reserve Corps are relieved from duty at the medical officers' training camp, Fort Riley, Kan., and will proceed to Fort Sill, Okla., and report in person to the commanding officer of that post for a course of instruction in gas defense: Captains Felix E. Ashcroft, August A. Gossow, Rutherford B. Irones, Nevin D. Ponitus, Chelsea C. Pratt, Fred F. Sprague, John S. Sweeney, and Henry C. Woltman; First Lieutenants William M. Bane, Carl L. Barnes, Bret V. Bates, Francis S. Furman, and Daniel Grant.

Personal.—Dr. Louis I. Harris has been appointed director of the Bureau of Preventable Diseases of the Department of Health of the City of New York, succeeding Dr. Bertram Waters, who resigned recently to take up other duties. Doctor Harris was formerly chief of the Division of Industrial Hygiene in the Bureau of Preventable Diseases, and, as such, took an active part in the organization of the labor sanitation conference.

Senior Surgeon George W. Stoner, United States Public Health Service, in charge of the Marine Hospital at Stapleton for the last four years and formerly in charge of the immigration medical work at Ellis Island, has been retired from active duty, having served forty years and reached the age of sixty-four years. Dr. C. H. Lavinder is now in charge at Stapleton

Public Health Administration in Connecticut.—The Governor of Connecticut has signed a bill making a radical change in the health system of that State. Through the new law the State Board of Health is abolished and a State Department of Health created, with additional duties and increased powers. The powers conferred upon the new department are similar to those exercised by the New York State Department of Health. The Connecticut Board of Health heretofore had merely inquisitorial and advisory powers, and each of the 200 health districts adopted their own regulations and methods of controlling epidemics and other health conditions. The appropriation for the coming two years is $110,000, as compared with $48,000 for the past two years.

Tetanus in Court Plaster.—A report received from the director of the Hygiene Laboratory of the United States Public Health Service states that out of the thirteen specimens of court plaster examined, two were found to be contaminated with tetanus bacilli. The specimens were secured from drug stores and were in original packages just as the product goes to the consumer. There is no ground for believing that the contamination was an intentional one. Whether contamination occurred during the process of manufacture through the use of infected ingredients, or subsequently by careless handling, remains to be determined by further investigation. It was also found that court plaster is not "clean" in the surgical sense. The report of the laboratory findings in the examination of the specimens of court plaster appears in the September 7th issue of *Public Health Reports.*

Medical Society of the Missouri Valley.—The annual meeting of this society will be held in Lincoln, Neb., on Thursday and Friday, September 20th and 21st, with headquarters at the Lincoln Hotel, and Dr. K. S. J. Hohlen, chairman of the committee of arrangements, announces that everything is in readiness for the meeting. Among the guests of the society will be Dr. E. S. Tenner, health commissioner of Nebraska; Col. J. M. Banister, U. S. Army, retired; Dr. W. H. Coon, director of health, Kansas City; Dr. E. S. Lain, president of the Medical Association of the Southwest; Dr. Abram Sophian, of Kansas City; the presidents of other State societies, and representatives of the army, the navy, public health service, and the Council of National Defense. Dr. C. R. Woodson, of St. Joseph, Mo., is president of the society, and Dr. Charles Wood Fassett, of Kansas City, is secretary.

No Poliomyelitis Epidemic in New York This Year.—The State Department of Health reports that nowhere in New York State during the past summer did infantile paralysis appear in widespread or epidemic form. During the epidemic of 1916 more than 4,000 cases were reported in the State during July, and almost 6,000 cases during August; during July, this year, there were reported only 41 cases of poliomyelitis in the entire State, 24 in New York city and 17 up State), while preliminary returns for August show but 14 additional cases in New York city and 30 cases in the rest of the State.

Close scrutiny of the cases that have appeared this summer shows them scattered over the State with no apparent centres of infection. A review of the situation the country over, as made by the United States Public Health Service, reveals a number of small and unrelated regional outbreaks; but over no large area in the United States has poliomyelitis appeared in epidemic form this year.

Brooklyn Appointments in the Health Department.—There has been established in Kings County an expanded departmental unit, and henceforth Brooklyn will supervise all health matters within its borough borders. Dr. B. Frank Knause, of 1076 Bushwick Avenue, has been appointed deputy commissioner and sanitary superintendent of the Department of Health of the City of New York. He will establish his office in the Health Department headquarters in Brooklyn. Dr. Herman Tapley Peck, of 166 Halsey Street, has been appointed assistant sanitary superintendent for Brooklyn. Both will be on full time duty. Deputy Commissioner Knause's immediate duty will be to organize the service of the department in Brooklyn on the health district basis, an important improvement in health administration. Doctor Peck is specially skilled in the diagnosis and treatment of tuberculosis and the administration and control of preventable diseases.

Bronx County Medical Society.—A special meeting of the society will be held Wednesday evening, September 19th, in Ebling's Casino. The topic for discussion will be The Public Duties of Physicians. It will be presented by Dr. S. Dana Hubbard, bureau chief of the Health Department for the Borough of the Bronx, and discussed as follows: The Work of the Department of Health, by Dr. Haven Emerson, commissioner of health; The Prevention and Control of Infectious Diseases in New York City, by Dr. H. B. Waters, formerly director of the Bureau of Preventable Diseases, Department of Health; Vital Statistics—the Necessity for and How to Secure Complete and Accurate Returns, by Dr. A. J. O'Leary, assistant registrar, Bureau of Records; The Work of the Medical Advisor and the Diagnosis of Venereal Diseases in New York City, by Dr. Lewis Chargin, chief of the division of venereal diseases, Bureau of Preventable Diseases.

Clinical Congress of Surgeons of North America.—The eighth annual session of the congress will be held in Chicago during the week of October 22d, instead of in New York as originally planned. The war has brought about so many changes in the medical world that the executive committee of the congress, after consultation with the New York committee of arrangements, decided to postpone the New York meeting until next year. An important feature at headquarters, which will be established at Congress Hotel, will be a military service bureau, where representatives of the surgeons general of the army and navy and State committees will answer inquiries and give information concerning the medical services of the army and navy. As at previous sessions of the congress, clinical demonstrations in the hospitals, medical colleges, and laboratories will occupy the mornings and afternoons and the evenings will be devoted to scientific sessions. Four war meetings will be held, at which the progress made in all branches of surgery in the war will be discussed by Dr. Alexis Carrel, Sir Berkeley Moynihan, Dr. Joseph A. Blake, Dr. George W. Crile, Colonel Thomas H. Goodwin, of the Royal Army Medical Corps, with other official representatives of the medical services of the allied nations. Dr. John G. Clark, of Philadelphia, president-elect, will deliver the annual address on Monday evening. Dr. A. J. Ochsner is chairman of the committee of arrangements and Dr. Robert T. Gillmore is secretary.

The Temple University Medical Cadet Corps.—In view of the recent decision of the War Department to allow hospital interns and medical students who have been more than one year at college to continue their work under certain conditions, Temple University, of Philadelphia, has created out of its three scientific schools, medical, dental, and pharmaceutical, a medical Cadet Corps, which will aggregate about five hundred students. The general plan adopted is that suggested some time ago by Captain Ashford, of the Medical Corps of the Army, who urged the formation of such organizations on the sound plea that "the proper place to commence the instruction of medical men for military emergencies is the medical school." While this applies to medical and dental students, pharmaceutical students will also be admitted, since suitable preparation will enable them to relieve the medical men of various nonmedical duties, of considerable laboratory work, etc., and further their just claim for commissions in keeping with their standing in foreign armies.

The military course given last year by Lieutenant Colonel Page, of the Army, will be amplified into one approximating as nearly as possible that of the Medical Officers' Training Camps and will henceforth be given by a staff of retired or reserve officers, while trained non-commissioned officers will give practical instruction in litter drill, the school of the soldier, etc. Although no additional fees will be charged, the course will be obligatory, the aim being to prepare all graduates for an emergency.

An important feature of the course is that the lectures in the various departments will include all new therapeutic measures, medical and surgical, brought out during the present war. Many of these are to be published in the The New York Medical Journal. The two hospitals of the university being located in industrial districts, ample surgical material (about 11,000 cases yearly) will be available for practical instruction besides that provided for in the regular curriculum.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

THE TREATMENT OF PERNICIOUS ANEMIA.

By Louis T. de M. Sajous, B. S., M. D.,
Philadelphia.

Lately organic compounds of arsenic have come into rather widespread use as substitutes for the inorganic preparations in pernicious anemia. While many of them are believed to act at least partly through gradual liberation of inorganic arsenic, their effects being consequently similiar to those of the latter, there is also a possibility that they may produce special effects of their own through resistance of the molecules of a portion of the dose to decomposition. In the action of arsenicals on protozoan parasites such as those of syphilis and trypanosomiasis this difference between the inorganic and organic compounds is most striking, the organic being much more toxic to these parasites and less toxic to the mammalian organism than the inorganic. The suggestion has been made that while the organic arsenicals produce only a weak effect on protozoa *in vitro,* they yield upon decomposition in the body arsenic in the trivalent form—a form which protozoa are much less easily able to withstand than they are arsenic in the pentavalent condition.

In the pernicious anemia, however, the chance of a protozoan microorganism being in more than occasional instances, the cause of the affection is manifestly slight, and the marked difference in efficiency between the organic and inorganic arsenicals which exists in relation to the protozoan parasites is no longer to be expected. Any actual clinical advantages of the organic compounds, therefore, would seem to depend largely upon other factors, such as their special behavior during absorption and the rapidity and duration of their effects on the body tissues. Admittedly less irritating than the inorganic compounds, they lend themselves well as a class to hypodermic—especially intramuscular—administration where arsenic taken by mouth has provoked gastric disturbance.

Sodium cacodylate or dimethylarsenate is believed to be only in small part reduced to inorganic arsenic in the system—two or three per cent., according to the experiments of Heffter. A somewhat greater portion—six to ten per cent. upon hypodermic administration, according to Dawes and Jackson—passes out with the urine, while the remaining large percentage undergoes only a partial decomposition, some of it continuing in the form of the volatile cacodylic acid. In experimental work in dogs, the authors just mentioned found on post mortem examination, after the use of doses insufficient to cause any symptoms, inorganic arsenic in the muscles, liver, and bone marrow. They felt sure, moreover, that cacodylic acid is also deposited in the tissues, and considered the liberation from the cacodylate of arsenous or arsenic acid in a nascent state an important factor in the therapeutic action of the drug. The dose of sodium cacodylate, which occurs as a white, soluble powder and contains about thirty-six per cent. of pure arsenic, the percentage varying according to the amount of water of crystallization, is from one half to three grains. The salt is now recognized in the United States Pharmacopœia, with the average dose given as one grain.

Disodiummethylarsenate or arrhenal is an allied substance which resembles the cacodylate in properties and therapeutic action and is given in the same dosage. According to W. H. Wilcox, 1913, a five per cent. solution of sodium cacodylate in sterile water constitutes the best mode of hypodermic use, a fifteen minim dose of this solution being given daily for three or four weeks. In all cases of the disease, even in the absence of gastric disturbance from oral use, Wilcox favors the administration of daily injections of ten minims of the solution for the first fortnight of treatment; the patient, he believes, is thus enabled better to take arsenic by the mouth.

Drawbacks of the cacodylates are the pronounced garlic like odor of the breath frequently induced, ascribed to cacodylic oxide, and probably a variability in action in different subjects, Dawes and Jackson noting that what appears to be personal idiosyncrasy plays a considerable part in the amount of arsenic eliminated in the urine during their use. Among fourteen cases of pernicious anemia treated by these observers, however, they claim five as definite cures, no recurrence of symptoms having been noted after periods of from fifteen to thirty-seven months. Five other cases were more recent apparent cures.

Sodium arsanilate or atoxyl which, unlike the cacodylates, cannot be given orally because of an increase of its toxicity through decomposition in the stomach, occurs in soluble, colorless crystals, and has been given hypodermically in doses of one third to three grains or even considerably larger amounts. Particularly efficient in trypanosomiasis by reason of certain as yet unisolated decomposition products, it has of late been relegated to a position far inferior to that of the cacodylates in the treatment of pernicious anemia, owing to the relative frequency with which blindness has followed its use. According to Steinebach, 1914, severe and permanent visual disturbances are a possibility even with the most cautious therapeutic use of atoxyl, though particularly to be expected only in cases with latent or manifest injury of the nervous system, as in cachexias, autointoxication, syphilitic nervous affections, and chronic alcoholism.

The same serious drawback attaches to sodium acetyl arsenate or arsacetin, which has repeatedly caused blindness, though, according to data at hand, only after relatively large amounts, such as 7.5 to 12.5 grains. This compound is, of course, in general used in larger doses than atoxyl. It contains a somewhat smaller percentage of pure arsenic.

Doubtless two grain doses of arsacetin are appreciably safer than corresponding amounts of atoxyl. Klemperer, however, in the cases of pernicious anemia in which he obtained rather striking effects on the red cell count, employed doses ascending from two grains to as high as ten grains.

(*To be continued.*)

The Tonsil Adenoid Operation.—Dan McKenzie (*Practitioner*, August, 1917) urges looking for hypertrophied adenoids not only in middle ear suppuration, but also in seemingly trivial attacks of middle ear catarrh. In patients in whom there is no sign of adenoids except the pain or discharge from the ear, the nasopharynx must be examined with the finger. In others the tonsils are enlarged and the adenoid hypertrophy may be assumed to be present. He warns that in acute suppuration of the middle ear the throat should not be operated on until the acute ear symptoms have subsided; otherwise the throat wound is prone to become septic. The same caution applies in acute tonsillitis. Previous to operation carious teeth should be removed, the socket wounds healed, and the mouth treated with some simple antiseptic mouth wash to guard against sepsis. Fatalities are very rare, but he has had five. One was due to the anesthetic; one to postoperative pneumonia; one to meningitis following postoperative otitis media; and two to general sepsis. Thus three were due to septic infection, the source of which was found in the mouth. As regards anesthetics, McKenzie employs none in infants under one year, prefers ethyl chloride in children from the second year till about the age of puberty, and after that age nitrous oxide, with or without ether or chloroform. He does not care for local anesthesia. Tonsils should be removed *in toto*. In children enucleation with the guillotine is an ideal operation; it removes the whole of the tonsil, yet spares the faucial pillars and part of the capsule, so that the fossa or bed of the tonsil is not obliterated by granulations and scar tissue, and the natural formation of the throat is preserved. This method does not succeed in adults, in whom he prefers to use the snare. For the removal of adenoids he prefers the La Force adenotome. Before the patient leaves the operating table the surgeon should mop out the throat and make certain that bleeding from the tonsil has actually stopped, for McKenzie believes that severe tonsillar hemorrhage is always primary. After all operations on the throat or nose the patient should not be allowed to lie on his back, He should be laid semiprone on his side with the face turned half down, the mouth and jaw not tightly closed. After the anesthesia has passed off a little oozing may be ignored, unless it is long continued, but serious bleeding is more difficult to arrest than it would have been on the operating table. Examine the throat with a good light; if one tonsil is occupied by a large clot the hemorrhage is there. If in doubt whether the tonsil or the adenoid area is bleeding hold the patient's head face downward; blood from the adenoids will emerge at the nose, from the tonsil at the mouth. If a bleeding point can be seen at the tonsil it may be picked up with a large pressure forceps and another looked for. Hold aside the anterior pillar and examine its posterior aspect, for this is a favorite site. When all bleeding points have been seized they may be ligated with catgut, or the forceps may be left on for twelve hours. When no bleeding points can be seized a tonsillar hemorrhage must be controlled by pressure. Hemorrhage from the adenoid region is rare, is usually due to incomplete removal of the adenoids, and can then be stopped by completing the operation. Otherwise it must be checked by packing the nasopharynx. McKenzie calls attention to a type of deafness apparently due to a clump of adenoids in the fossa of Rosenmueller, which is apt to escape when adenoids are removed in the usual manner, and may evade the examining finger, but are seen by means of the nasopharyngoscope as curled ringlets of adenoid tissue in the fossa, frequently associated with closure of the Eustachian orifice and œdema of its posterior lip. Its removal is a prime necessity.

Bismuth Iodoform Paraffin Paste in Recent Gunshot Wounds.—L. Colledge and Hamilton Drummond (*Lancet*, July 14, 1917) have employed this paste in connection with the surgical treatment of recent gunshot injuries in a large number of cases and set forth the following as the advantages of the method: The wound can be sutured, making prolonged drainage unnecessary and usually avoiding suppuration; no change of dressings is required, permitting prolonged rest and avoidance of pain; the facility of transport is greatly enhanced and its discomfort much decreased, especially is this true in cases of compound fracture; finally the liability to gas gangrene is diminished. The technic so successfully employed by the authors begins with a primary thorough cleansing of the entire wounded part with ether soap. The wart is then surrounded with dry, sterile towels. The superficial wounds are excised and the deeper ones opened widely; all foreign bodies and fragments of bone are removed and devitalized muscles are excised. Bleeding points are caught with Spencer-Wells forceps and the raw surface is then swabbed with methylated spirit. Following this a paste of two parts of iodoform and one of bismuth subnitrate in enough liquid paraffin to make a thick cream is smeared all over the surface of the wound, including the ends of bones, with a piece of dry gauze. The paste is well rubbed in so as to form a thin film on the surface and all excess is removed. The clamped bleeding points are then ligated, gaps in the muscles are closed by catgut stitches when necessary, and the wound is sutured with sterile fishing gut. A dry gauze dressing is applied and covered with wool. If the outer dressing becomes saturated with discharge it may be changed, but the inner layer of gauze is left in place. The treatment is usually followed by a general reaction with fever lasting for one to two days. The method has not been followed by any cases of iodoform or bismuth poisoning, probably due to the use of relatively small amounts of the paste. It has proved of great value in all forms of infected wounds as well as in amputations.

Wax Paraffin Films in Burns.—M. L. Emerson (*Journal A. M. A.*, July 28, 1917) has completed this form of treatment in 100 cases in a series of about 250, including burns of all degrees of severity. He believes that it gives as good results as any other method in the case of first degree burns, but no better than can be obtained by any of the recognized methods. For certain forms of second degree burns the treatment has the advantages of keeping the dirt and sweat out of the wounds and is otherwise about as good as other methods of treatment. For third degree burns and other forms of infected wounds the method has several serious disadvantages, among which are the fact that the wound is covered with a sealed dressing; that there is a copious seropurulent discharge under every such dressing when removed; and that it is difficult to control the temperature of the dressing so as not to cause severe pain. Further the dressing has to be changed daily on account of the continued collection of the exudate beneath it. This is true in spite of the greatest possible care to sterilize and dry the wounded surface. Not one of twenty-three cases of third degree burns was healed by the wax treatment in the author's series, although from twenty to thirty applications were made in each case The burns were healed promptly by picric acid gauze, scarlet red on oiled silk, or boric acid compresses.

Treatment of Intestinal Amebiasis with the Double Iodide of Emetine and Bismuth.—A. Lebœuf (*Presse médicale,* July 9, 1917) notes that subcutaneous injections of emetine hydrochloride, while rather efficient in acute, recent forms of amebic dysentery, has proved of much less service in chronic cases and when used for the purpose of ridding the stools of the cysts of the pathogenic ameba. A. G. du Mez, suspecting that the poor results might be due to rapid elimination of the drug, in 1915 suggested the use of emetine bismuth iodide, a brick red insoluble powder made by the action of Dragendorff's reagent on an acid one in 300 solution of chemically pure emetine hydrochloride. One gram of this compound is equivalent to 0.366 gram of emetine. Lebœuf used it in thirteen patients presenting various forms of intestinal amebiasis. Administration of the drug in 0.06 gram cachets taken three times daily, as advised by C. Dobell, proved impossible, three out of six patients having vomiting so severely as to preclude ingestion of food. Ceratin coated 0.06 gram pills were thereafter used, with complete satisfaction except in two patients, who were troubled with slight vomiting. In all cases, whether acute or chronic, in which 0.18 gram of the compound was taken daily for twelve successive days, the amebæ and cysts disappeared completely from the stools. Recurrence has been noted in but one case, an acute dysentery in which the treatment was incomplete. The oral route of administration is also much more convenient. The drug produced little or no effect on lamblia intestinalis and entamæba coli, a circumstance held to prove its specificity against the dysenteric ameba. The author favors Dale's suggestion of administering it for prophylactic purposes.

Absorbable Metal Clips for Ligatures and Sutures.—E. Wyllys Andrews (*Journal A. M. A.*, July 28, 1917) reports the results of his long experimentation to find some suitable metal or alloy of metals which can be used for clips to replace sutures and ligatures. Such a metal or alloy must be absorbable, ductile, and not brittle and must retain the shape given it when applied. Magnesium, cadmium, zinc, and aluminum are all readily absorbed without toxic effects, but they are all deficient to a greater or less degree in one or more of the other requisites. It has been found practicable and advantageous, however, to use either of the three last named for the purposes of hemostasis or to replace buried sutures. The one great advantage possessed by such metal clips is the fact that their use with clip carrying forceps requires only one motion to secure the part and hold it secured, either for hemostasis or in positions requiring suture ordinarily. This very greatly facilitates work in deep and inaccessible places and materially shortens the time ordinarily required for hemostasis and the closing of wounds. Hemostasis can also be accomplished satisfactorily by the use of nonabsorbable metal clips, but these must be attached to cords or chains for their subsequent removal. The absorbable metals also find a wide field of practical utility in the making of other appliances such as screws, pegs, plates, buttons, bone splints, wire sutures, etc. A more nearly ideal substance than has yet been found seems to be assured from the use of an alloy.

Posterior Extraction of Projectiles from the Pelvic Cavity.—Auvray (*Presse médicale,* July 9, 1917) recommends that, in such operations, a large opening be made in the soft tissues to facilitate deep exploration in the pelvis. In two cases he found it necessary to cut a large flap in the gluteus maximus combining an incision parallel with its fibres with loosening of part of the muscle at its attachment to the bone above and medianwards. Upon resuture of the attachment there was no subsequent functional disability, locomotion and bending movements being carried out normally. In each of the author's three cases exposure of the pelvic cavity necessitated some operative procedure in respect of the sacrosciatic ligaments. In the first case the great sacrosciatic ligament was detached from the sacrum, the lower part of which was resected as in Kraske's operation, thus permitting free access to the posterior rectal wall. In the second case the operator entered the pelvis through the upper part of the sciatic notch after complete transverse section of the outer half of the sacrosciatic ligament. In the third case, in which the missile entered the pelvis through the lower part of the great sciatic notch, Auvray loosened the sacrosciatic ligament from the sciatic spine and was able thus to seize the foreign body with forceps in the vicinity of the bladder. In extracting foreign bodies from the walls of the rectum he found combined rectal palpation and finger exploration through the wound itself of great advantage. The rectal finger served to keep the rectal wall in contact with the other finger and to steady the viscus during incision into the shell of tissue surrounding the foreign body.

Surgery of the Bile Passages.—Daniel N. Eisendrath (*Journal of the Kansas Medical Society,* June 1917) discusses the newer pathology of the biliary tract and points out the great need for more thoroughness in operating on the bile passages. He urges the need, not only of draining the gallbladder and of excision of the viscus when seriously or chronically inflamed, but also the great value of incising, examining, and draining the common bile duct in order to prevent recurrences of calculus formation. The technic of the latter operation is described in detail. The duct should be opened, 1, when there are many small stones in the gallbladder or the cystic duct; 2, when the common duct is enlarged and its walls greatly thickened; 3, when chills, fever, and jaundice were present before the operation. The drainage of the common duct is not difficult, does not add materially to the severity of the operation, and greatly reduces the probability of recurrence of trouble and the need for secondary operation.

Classification of Hay Fever Pollens from a Biological Standpoint.—William Scheppegrell (*Boston Medical and Surgical Journal,* July 12, 1917), after a consideration of the various groups of plants which are competent to induce hay fever in certain persons, concludes that the efficacy of pollen therapy requires accuracy as regards the pollen to which the patient is sensitive. The test of a hay fever subject should be directed to the pollens to which he is exposed. Atmospheric pollen plates give definite information regarding atmospheric pollen in any locality, and should be used before testing the hay fever reaction, or applying pollen therapy. While there are hundreds of varieties of hay fever plants, carefully conducted tests have shown that the majority of these may morphologically be divided into four groups, the members of which are sufficiently alike in their chemical and biological reaction to warrant the same pollen therapy.

Combined Sulphur and Mercury Treatment in Syphilis.—M. Loeper, A. Bergeron, and K. Vahram (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris,* February 8, 1917) deem this combination of special therapeutic value in various manifestations of syphilis. The addition of the sulphur distinctly increases the tolerance of the patient to mercury, patients suffering, for example, with stomatitis, intestinal disturbance, and even vomiting and mucorrhea from 0.01 gram doses of the biniodide or cyanide taking such doses or even larger ones without trouble when daily sulphur injections were added. To facilitate the combined treatment the authors now employ ampoules each containing 0.001 or 0.00033 gram of colloidal sulphur and 0.001 gram of colloidal mercury. Diluted to twelve or more c. c., this is injected into the gluteal muscles or into a vein of the arm. The authors have already given 500 intravenous and 1,500 intramuscular injections of this type. The intravenous injections are the more active and may at first cause a febrile reaction with restlessness and headache; this reaction varies according to the amount of sulphur used. In sensitive subjects the intramuscular route may suffice. In syphilitics the combined injection causes a marked increase in the red cell count. The blood pressure is also somewhat raised, especially by the first injection. Among the 166 cases treated, comprising all stages of syphilis, results were very good in eighty per cent. The Wassermann reaction was rendered negative in eighty-six out of 121 cases. The treatment was especially effective in previously rebellious lesions of the lips, mouth, and genitalia, in leucoplakia, in keratitis and iritis, in joint involvements, and in syphilitic arteritis and nephritis. Under arteritis are classed seven cases of cerebral arteritis with paretic disturbances, vertigo, or headache, and six cases of aortitis. In six out of ten cases, syphilitic albuminuria disappeared under the treatment. In several instances, mercury biniodide and benzoate and arsenobenzol had previously failed.

Chloramines as Nasal Antiseptics.—E. K. Dunham and H. D. Dakin (*British Medical Journal,* June 30, 1917) conducted a series of experiments on normal men to determine the possibilities of the chloramines as disinfectants of the nasal cavity in carrier cases. They suggest the following plan of treatment: The nose should first be cleansed by irrigation with salt or a 0.25 per cent. aqueous chloramine-T solution, or by repeated spraying alternating with blowing of the nose. The same chloramine solution should be used as a gargle at the same time. When the increased nasal secretion has subsided after this cleansing a two per cent. solution of chloramine-T in chlorinated eucalyptol and paraffin oil should be sprayed thoroughly into all portions of the nose with an oil atomizer. At least four oil treatments should be given daily, or one every two hours if the treatment is to be intensive. The oily solution maintains a sufficient concentration of the chloramine for about two hours, but not for longer.

Tetanus in Home Hospitals.—David Bruce (*Lancet,* June 30, 1917) presents an analysis of his third series of 200 cases to show the influence of treatment. In the first series the mortality was about fifty-seven per cent., in the second about forty-nine per cent., and in the present series only 36.5 per cent. The recommendations for treatment are as follows: Put the patient in a darkened, quiet room with a sympathetic and competent nurse. Provide rest, sleep, and food as the first essentials of treatment. Thorough surgical treatment should be carried out from the inception of the wound, and would enormously reduce or totally eradicate tetanus if always done early enough. Foreign bodies and necrotic tissues should always be removed at once, but if tetanus has developed from neglect, then the wound should not be interfered with until the tetanic symptoms have been controlled. In developed cases at the appearance of the first evidence of tetanus large intrathecal doses of a concentrated antitoxin should be begun and supplemented by intramuscular and subcutaneous injections. Sedatives should be used in addition, if necessary. Morphine in 0.25 grain doses every four hours is probably the best, but chloral, chloretone, and others may be used. Every wounded man should receive a prophylactic dose of antitoxin at once, repeating it one or more times.

Miscellany from Home and Foreign Journals

Renal Pain.—Ernest M. Watson (*Buffalo Medical Journal,* August, 1917) says that the routine of a kidney study should begin with a careful examination of the bladder urine in a centrifuged specimen from the third glass of that voided. This is followed by a plain x ray of the kidneys, ureters, and bladder. If these are negative or if suspicious shadows are seen, stereoscopic plates should be made, as shadows that are small and faint in the plain negatives often assume importance in the stereoscopic. Next a functional test of both kidneys should be made, preferably with phenolsulphonephthalein, which will determine the total working capacity of both kidneys. Following this a cystoscopy and a ureteral catheterization is in order to determine the character of the urine and the functional capacity of each kidney separately. In this regard the color of the urine, the amount, and the microscopic elements, with a study for infection and the urea content, are necessary. The phthalein test also is used, for while the total phthalein may be normal because of a compensatory activity of the well kidney, the divided function in unilateral disease will reveal a reduced output on the affected side. If the foregoing studies are negative or if there is need of additional information, pyelograms should be made of the renal pelvis and ureter on the suspected side. These are best made after an injection by gravity of a fifteen per cent. solution of thorium. In certain puzzling cases ureteral calculi too small to cast shadows on the x ray plates may be located by the passage of the wax tipped ureteral catheter.

Observations on Trench Fever.—E. R. Grieveson (*Lancet,* July 21, 1917) believes in the theory that the body louse is the agent of the transmission of trench fever and supports his belief with some observations on the distribution of this troublesome disease. When the cases coming under his observation were grouped according to their platoons it was found that as many as sixty per cent. of some platoons would fall ill of the disease within a month while in others there were practically no cases. The members of any given platoon usually slept together in small groups and when the cases were studied with reference to their sleeping mates the likelihood of a man's becoming infected was fifty times greater in some instances than in others. The blanket mate of a man who had trench fever shortly before was almost certain to acquire the disease promptly. These facts, together with the fact that the vast majority of the men were infested with lice, pointed strongly to this parasite as the agent of the transmission of the disease. Since the transport was practically free from lice, the fact that only one case developed among its numbers in two months lent weight to the louse theory, as did the far smaller number of cases which occurred among the headquarters company, which lived under more sanitary conditions and had fewer louse infestations. The fact that some very lousy men did not contract the disease, although their mates, even when fairly free from lice, did fall ill, was explained by the fact that some persons seem immune to louse bites, although they may carry large numbers of the insects. In addition to these observations as to the mode of transmission of the disease several interesting points in its course and diagnosis were observed. In the first place a number of men repeatedly reinfected themselves at intervals of two weeks, and seemed, therefore to be carriers. Secondly the appearance of the tongue is absolutely characteristic in about eighty per cent. of the cases and has not been described. It shows a red margin one fourth to one eighth of an inch wide, while the rest is covered with a thick, bright yellow fur. This appearance persists during the first week or two and in some cases very much longer. Finally an important point in the symptomatology of the disease is the rapid heart rate and the tendency for the heart to remain very susceptible to increases in rate to very great heights for many weeks if but slight exertion is made. In spite of this continued tachycardia the men do not seem to have been seriously injured and are usually found quite capable of performing light duties without injury.

The Fourth Disease.—A. Lesage (*Presse médicale,* July 12, 1917) presents a critical review of the various arguments advanced to prove or disprove the existence of the fourth or Dukes's disease as a separate clinical entity, but reaches no definite conclusion. He calls attention to a group of cases he has been encountering in the last ten years, which corresponds neither to scarlet fever nor to scarlatiniform rubeola, and which he believes should be set apart along with Dukes's disease, without, however, confusing it with the latter. It is an epidemic disorder, not apt to be transmitted very widely, affecting a few members in a given family and sparing the very young. The symptoms, which are very constant, commence with slight malaise for a single day, with rise of temperature to 38° C., followed by a day of complete apyrexia, and on the next day a mild scarlatinal eruption, diffuse though not affecting the face, but accentuated in certain variable zones. The eruption passes off completely in a day or two, with slight, immediate desquamation in the zones of accentuation of the eruption. About the fourth or fifth day there is sometimes a rise of temperature to 38° C., followed in twenty-four hours by a fresh eruption identical with the first. There is complete absence of itching, of involvement of the ocular, nasal, and bronchial mucosa of the congested state of the face characteristic of rubeola, of disturbances of the alimentary tract, including the mouth, of glandular enlargement, and of any other eruption. The urine becomes greenish and scanty by the fourth or fifth day. The disease is always mild, lasts but a week, and has an incubation period of fourteen or fifteen days. It is apparently not a mild form of scarlet fever, for the characteristic throat, tongue, and digestive disturbances, which the author deems more essential to scarlatina than the eruption itself, are not present.

Distortion of the Anteroposterior Arch of the Foot in Small Children.—Ethan H. Smith (*Pacific Medical Journal,* August, 1917) asserts that much information may be gained by radiography as to the cause of flat foot—the "weak foot" of surgical literature—in children. Delayed development of the mediotarsal bones is the cause of the condition. Frequently there is marked deficiency of the epiphysis of the base of one or more metatarsals. It may be so pronounced that these bones seem entirely absent. Such feet require support and prolonged, careful treatment. Overcorrection in plaster for about eight weeks is indicated, to allow the tibial muscles to recuperate and to get the contraction out of the calf and peronei muscle groups. Soft felt, leather covered, normally shaped arch supports may be used indefinitely. Metal arch supports should never be allowed.

Pathogenesis of Anxiety as a Nervous Symptom.—Lépold-Lévi (*Presse médicale,* July 12, 1917) considers nervous anxiety a bulbar manifestation, the centre presiding over which—"the safety centre"—corresponds to the points of origin of the vagosympathetic nerve distribution in the medulla. More or less predisposed to react to influences of variable nature, this centre is made sensitive by ductless gland secretions, especially those of the ovaries, adrenals, and thyroid, the last in particular. Attention is called to the frequency with which symptoms denoting thyroid instability occur among subjects troubled with anxiety, to the presence of anxiety in exophthalmic and endogenous goitres, and to the appearance of anxiety as a result of thyroid feeding. Small doses of thyroid substance, administered on the basis of these views in appropriate cases, completely transformed the condition of a large number of patients.

Early Diagnosis of Renal Tuberculosis.—J. C. Blakistone (*Virginia Medical Semi-Monthly,* July 13, 1917) has been impressed with the unreliability of the symptoms of renal tuberculosis. They serve only to call attention to an infection of the urinary tract, and should not be depended on as a basis for diagnosis. An early diagnosis is rather easily made, however, by recognition of the tubercle bacillus in smears made from centrifuged urine. Almost any centrifuge will throw down enough organisms to be easily recognized in specimens stained by the ordinary Gabbett method. The smegma bacillus, probably not present in the bladder urine except by contamination and extremely unlikely to occur in urine obtained by ureteral catheterization, can hardly be a source of error upon repeated examinations and in view of the clinical findings. Where there is the least doubt after cystoscopic examination and ureteral catheterization, guineapig inoculation should be done by the rapid method of J. J. Morton. The animal is first exposed to the x rays for several minutes to lower its resistance to the tubercle bacillus; inoculation with suspected urine is then often followed by tuberculosis in seven to nine days. An x ray plate taken with collargol *in situ* is useless in early cases, no recognizable change in the renal pelvis existing. Even the smallest focus of renal tuberculous infection may cause bladder irritation and load the urine with bacilli.

Blood Coagulation in Protein Intoxication.—H. F. Shattuck (*Archives of Internal Medicine,* August, 1917), as a preliminary step in an investigation of the influence of peculiarities in blood coagulation in the serum treatment of urticaria, presents a study of the blood in anaphylactic guineapigs and in cases of serum sickness in man. The guineapig blood showed a delay in coagulation of the whole blood and in the prothrombin time. The antithrombin content apparently showed a tendency to rise. The blood of patients with serum sickness showed a marked delay in the whole blood coagulation time, and of the prothrombin time during the sickness, with a later fall to nearly normal figures after disappearance of the sickness. Results with the antithrombin content were inconclusive. The blood of patients with chronic urticaria showed a delayed coagulation time and prothrombin time in four out of five cases, with an approach to normal in three cases out of four after intravenous treatment with autogenous or heterogenous serum.

An Epidemic of Dysentery at the Boston State Hospital.—Mary Elizabeth Morse and Geneva Tryon (*Boston Medical and Surgical Journal,* August 9, 16, and 23, 1917) give a very full account of this epidemic, in which are discussed at length the epidemiology and clinical characteristics of the disease, results of prophylactic vaccination, skin reactions, leucocytic reaction, bacteriology, agglutinations, pathology, and results of animal experimentation. The epidemic appears to have been one of an acute, very contagious disease, of short incubation period, which appeared in three forms: the dysenterosepticemic pneumonic; the pure dysenteric; and the diarrheal. The conditions found in the fatal cases were a membranous ileocolitis, septicemia, and a pneumonia with miliary abscesses and large areas of necrosis. The severer forms of the disease occur in debilitated persons. Immunity is of short duration and mild recurrences are frequent. The causative organism was found to be a member of the paratyphoid enteriditis group, shown by agglutination tests to be more closely allied to paratyphoid B, Bacillus suipestifer, and Bacillus enteriditis than to A, but not identical with any of them. The disease was limited to certain buildings. The epidemic was preceded by mild diarrheas among patients and attendants, then broke out violently in one ward, and was passed from person to person by contact. The source of infection was not determined, but a hypothesis is suggested which connects it with an outbreak of hog cholera during the previous summer in a neighboring piggery. Possibly food was infected by rats, and then grossly contaminated by a human carrier, the difference in the severity of the disease depending on the physical condition of the persons attacked, and perhaps also on the rapid transfer of the virus. Prophylactic inoculation did not suppress the disease among feeble patients, though it may have had some influence in mitigating its severity, but appears to be of more value among strong persons. Vaccine treatment gave good results. A polymorphonuclear hyperleucocytosis occurs after both the prophylactic and the therapeutic administration of vaccine, which is more marked in strong than in feeble individuals. Agglutinin formation is very moderate.

Proceedings of National and Local Societies

THE NEW YORK ACADEMY OF MEDICINE.

Meeting Held April 5, 1917.

The President, Dr. Walter B. James, in the Chair.

Care of the Sick in a Modern Community.—Dr. S. S. Goldwater said that the care of the sick in a community might briefly be said to depend on, 1, official public health work; 2, hospital and dispensary work; 3, home or domiciliary care; and, 4, measures to obviate neglect. Aside from the handling of epidemics and measures of prophylaxis, public health authorities had begun to manifest an active interest in diagnosis. The health department of this city conducted diagnosis laboratories whose resources were available to the entire community. It supplied antitoxins, school inspection, diagnosis clinics, tuberculosis clinics, and occupational clinics. But there were larger opportunities within the scope of health department activities, particularly in the general supervision of disease. It could also be a factor in popular education in health measures as well as in the knowledge of what medicine could do. People who had been taught to understand the meaning of medicine, what it did, and what it might do would support movements to bring about better conditions. Publicity that appealed to the intelligent and the thoughtful should be encouraged.

Hospital and dispensary work was in need of organization. There was also need of cooperation between the hospitals and between them and the city authorities, for without this the whole community could not be included in the proper care and distribution of cases of illness. There were many hospitals in this city, but their growth had been haphazard and not according to the needs of the locality in which they were situated, and not being under supervision or cooperation, one or two hospitals were frequently overcrowded while many others had numbers of beds unoccupied. The city contributed support toward a large majority of the so called philanthropic hospitals, despite a general belief to the contrary, and the city authorities should be empowered to exercise the necessary supervision over them all. There was room in New York for only a single hospital standard, and that the best. High standard of hospital service included subsidization; cooperation with other hospitals; supervision by city authorities; a high standard of equipment; a high standard of nursing instruction and service; a sufficient number of attendants; adequate clerical assistance; social service workers, and more clinical cooperation among the physicians themselves. These points applied to dispensaries also. In addition, a general dispensary was better than a special dispensary, particularly if all the specialists attended during the same time of day so that the patient could be referred from one to another when necessary. Standardization of space, time, and equipment should be instituted.

It could be estimated that for each person sick in hospital there were ten more sick in the community. These were being selftreated not often well, and treated by the private practitioners. This consideration involved the limitations of the individual practitioner, who did splendid work but who could do it more effectively in cooperation with others having more technical training or with an organization of trained specialists behind him. If medicine were properly organized this cooperation would exist for the great number of people too poor to pay the high fees of specialists and yet able to pay something. Compulsory health insurance would accomplish this, but it would be necessary to amplify some of the provisions of the proposed bill to make it of value to a sufficient number of the members of the community.

Without some sort of organization medicine would never be effectively brought to bear in its best way for the entire people. Medicine should also be standardized; there was only one right school of medicine and it was nonsense to allow the others to exist. By continuing to do so, the community was standing by and allowing many of its sick members to be, as far as results were concerned, neglected.

Dr. Richard C. Cabot, of Boston, said that he agreed with Doctor Goldwater on all the points brought up except one, and that the minor one of medical education. It was his opinion that the greatest faults among medical practitioners were not the results of education or the lack of certain elements of education, but of personal qualities. It was rather a matter of ethics than of education. There was no question but that medical education should be improved, but this should be accompanied by the removal of many evils now existing just as many evils had been removed in the past. The present state of the practice of medicine was better than it had ever been before, but there was great room for improvement, and the means for this improvement were to be found in the great mass of medical knowledge which thus far had not been generally and intellectually aplied in caring for the health of the community. The greatest opportunities lay in the application of known medical facts rather than the discovery of new ones, and this could properly only be done through education and organization.

Organization meant the application to all medical work of the principles applied in all the great branches of industry and labor; there should be a specialization of function and a cooperation of specialists, instead of the practitioners of medicine attempting, as now, each in himself to do all the work of prophylaxis, diagnosis, and treatment. Each could be kept fully occupied by doing that which he had best fitted himself to do. In addition to his medical work, the doctor now did many things which someone else—the nurse, the social worker, the clerical assistant—could do just as well. There was no reason why the nurse could not take over all the duties reduced to routine; and in addition, the highly trained nurse should not be expected to do the manual labor which could be handed over to ward assistants. The first step in the stratification of medicine was handing over to an assistant whatever did not require specialization of function.

There were four groups of workers, the doctor, the nurse, the ward assistant, and the social worker, who cooperated in the care of the sick in hospitals where medical organization existed to the benefit of all concerned. But in the general organization of medicine there would be necessarily an additional factor; the health officers, municipal, state, and national, would have to be relied on in more directions than they now were. The indications for this had been pointed out by Doctor Goldwater; the health officer was just beginning to come into his own. Twenty years ago the efficient medical man cared nothing for this office, at that time confined chiefly to matters of sanitation but now for several years continuing to be more and more concerned with the general health of the community.

The organization of medicine in hospitals, industrial groups, and some of the universities had shown the possibilities of the organization of medicine generally. Great industrial plants, the Mayo Clinics, the University of California, two clinics in Boston, etc., had demonstrated that by the group system, adequate medical attention could be given to patients on the payment of nominal sums of money. There were possibilities in the matter of the future public health of the community in school inspection alone. As matters stood, diagnoses were made, but there was no provision for treatment, except perhaps in Los Angeles and in Great Britain. There had already been types of group medicine in the campaigns against tuberculosis, infant mortality, and venereal disease. However, in connection with this it was well to remember that there was a distinction between preventive medicine and palliative or curative medicine. Much had been said about the prevention of disease in recent times, but the great majority of diseases could not yet be prevented. The work of prevention could at the present time be best carried out by caring for the cases of acute illness; palliative and curative medicine was often the best preventive measure there was in such diseases, for instance, as syphilis.

Hand in hand with organization, and leading up to it, was the education of the community, the dissemination of knowledge of hygiene and medical subjects through newspapers, magazines, the work of health boards in schools, literary propaganda, and the activities of hospitals, industrial plants, and department stores. This would lead to the abolishment of private practice and the establishment of group medicine, and eventually this would point the way of taking hold of diseases and taking care of the sick of the community with the efficiency which was rightfully expected of those who had taken this charge upon themselves in practising the profession of medicine.

Dr. HERMANN M. BIGGS said that there was another side of the subject worth referring to. As Doctor Cabot said, the care of the sick was better conducted today than it had ever been before; but in addition to this, it was better done in the large cities of this country now than anywhere else in the world. Enormous advances had been made here on all the lines Doctor Goldwater referred to—the home treatment of disease, the hospital treatment of disease, and the group and organized treatment. Not only had these advances been made here, but they had pointed out the way to other countries, except possibly Great Britain and some of her colonies, which had been very progressive in social and health legislation. The contrast had been most strikingly brought home to the speaker in comparing the situation as it exists in New York with that in France, in Paris. Without the facts at hand, one could hardly conceive of the difference. Just here, exception might be taken to what Doctor Cabot said about preventive medicine, if what he said was correctly understood, in regard to the limit having been reached in preventive medicine. The statement that it had not had an enormous influence on the morbidity or mortality rates could be disproved by the facts, such as the contrast between the situation in France and that in England and the United States. France was today with reference to preventive medicine where this country was nearly twenty-five years ago; her death rate in some cities was what it was here twenty-five years ago. Contrast the situation in Havre, with a population of 140,000, with that of New York with a population of 5,500,000. There was no density in Havre; here, the density was the greatest in the world. There the people were solely French; here, they were of every nation in the world. There the death rate was 26.5 per cent.; here it was 13.8. There the death rate from tuberculosis was 5.5 per cent.; here it was 1.6. These figures could not be surveyed without conveying the impression of something having happened here which had not happened there, and that was the work of preventive medicine, for there was nothing in France to correspond to the activities here.

Another word might be apropos in relation to the venereal diseases, the care of which in this country left so much to be desired. A few years ago at the British Medical Association meeting on referring to methods adopted in New York for the control of tuberculosis, the speaker was told that such things would not be permitted in England, as they would be considered to be a violation of the personal liberties of Englishmen. Today the whole sentiment of England had changed. They had done not only what was being done here, but more. They had gone beyond the best here, and in no way more strikingly than in caring for venereal disease. In England, four procedures had been adopted. Broadly speaking, they were: 1, free laboratory diagnosis; 2, efficient dispensary treatment of venereal diseases; 3, hospital care of venereal diseases, and, 4, use of salvarsan, or neosalvarsan, and all without charge. In London there were twenty-one hospitals where patients with venereal disease might receive care entirely without charge, and they even furnished this without the names and addresses of the patients being known. This was done under a general act applying to England, the expense being borne partly through government subsidy and partly through local municipal support. If these facts showed nothing more, they would serve to prove how rapidly social legislation in England was extending.

Dr. HAVEN EMERSON said that he agreed with Doctor Cabot in that improvement in general health rested in organization of the medical profession for diagnosis and treatment of disease, and that preventive medicine through treatment of disease had about reached its limits. Of greater importance at present was the recognition that the preventive medicine of the future must be along psychological and pedagogical lines, for much could be accomplished through the education of the community in personal habits. In doing this the frame of mind of the community at the time, the general psychology of races, trade groups, etc., would have to be considered. Doctor Biggs had shown that England's attitude toward venereal disease had changed in the interest of a nation under the stress of social unrest and the great stimulation of war. Personal habits of life were of quite as much importance as the control of communicable diseases by administrative measures or improvement in environment by general sanitation.

The higher professional standards of physicians must be maintained so that the public, understanding the limitations of a physician's service to the community, would not be hoodwinked by charlatans and advertisers promising to do what honest physicians knew to be impossible. The various so called medical cults were occupied mostly with fads of treatment, but the contribution by the medical profession to preventive medicine was through their training and skill in diagnosis and quick and accurate recognition of the differences between normal and abnormal functions and structures. People should be taught to go to a physician to find out whether they were sick or well, and the speaker hoped and believed that the habit of regular, periodical examinations was going to spread throughout the community. If physicians did not organize themselves of their own accord for the sake of making available a higher grade of medical service for diagnosis and treatment, the community would believe that they were not willing to carry out the traditions of the profession and would insist on the representatives of the community, the department of health, organizing for the benefit of the community clinics for the diagnosis and treatment of disease. Even now the department of health was constantly being appealed to by groups in the community throughout the boroughs, who wished to have pay community clinics.

THE MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK

Stated Meeting, Held March 19, 1917.

The President, Dr. THOMAS S. SOUTHWORTH, in the Chair.

Thromboplastin in Hemorrhage.—Dr. ALFRED F. HESS, of New York, said that for many years it had been known that tissue juice acted as a coagulant of blood but no practical use was made of the knowledge. In Baltimore, Howell had worked on this subject and isolated a substance which had strong coagulative properties. Doctor Hess took up the subject to see whether a practical coagulant could be made on the basis of this knowledge, and thromboplastin was the result of his study. It was a very simple substance, being merely a watery solution and suspension of brain tissue. It had been found that the thromboplastic material does not stand boiling or heating in concentrated form; if diluted it will stand heating, however, with only a slight loss of potency. It will also stand being mixed with 0.3 per cent. solution of tricresol without losing its coagulability. It was thus a tissue extract which could be made sterile and could be kept for at least six months. This had been made for the past year at the Research Laboratory of the Department of Health of this city, and had been given out to various hospitals and individuals that cared to try it. The thromboplastin had been used more especially in work in the nose and throat for stopping hemorrhage. It has been used by Doctor Cronin of this citv in some thousand operations in the nose and throat clinics with far less bleeding and more rapid healing of the wounds than previously. It acted as a direct coagulant of the blood; it may have a slight effect on the vessels, but this had little to do with styptic action. If it was diluted in 1,000 parts and with a little calcium a drop was added to plasma it would aid coagulation; if added in 1:100 parts, it would cause almost immediate coagulation. It acted almost as well in actual practice, so that in normal cases this should aid coagulation if it could be brought into direct contact with the bleeding point. If, however, it was not brought into direct contact with the bleeding point no result would be obtained.

It had been used successfully in the following cases: in nasal and throat hemorrhage; in abdominal work, to a certain extent; in parenchymatous hemorrhage coming from injuries to the liver; in gallbladder surgery, where the gallbladder had been separated from the liver; in spinal cord surgery, where there had been considerable bleeding; in deep wounds and sinuses where the hemorrhage was difficult to reach; in bleeding of the newborn, where there had been bleeding from the cord, from the vagina, or from the roof of the mouth. In some instances it had been injected instead of being put in apposition to the bleeding spot. In one case of leucemia where the teeth had been extracted in which bleeding had existed for some time, after the application of thromboplastin had failed to stop the bleeding, the idea occurred to the physician to inject it into the gums whence the bleeding proceeded, with immediate cessation of the hemorrhage. Favorable results had been reported of its use in cases of gastric ulcer. If it came into contract with the ulcer itself there was no reason why it should not stop the hemorrhage. If there was a large amount of acidity present, it might be well to precede its use with some alkali. Whether it would be of any value lower down in the tract, in the ileum in cases of typhoid, was not known. Possibly it would be digested and would have no effect.

The speaker said he knew of no contraindication to its use. A teaspoonful to a tablespoonful might be given every half hour by mouth; but as had been said about pulmonary hemorrhage, it was difficult to tell what progress was being made in gastric hemorrhage. The hemorrhage ceased and it could not be ascertained whether the cessation was spontaneous or was due to the thromboplastin. He had used it in several cases of hemophilia. This was due primarily to a lack of coagulability of the blood, and as this remedy was par excellence a blood coagulant, it was almost a specific for local use in this condition. It could be used in the rectum by saturating gauze with the thromboplastin and inserting in the rectum. Sterile gauze saturated with thromboplastin was now prepared for insertion into wounds.

It was questionable whether it had value in distal hemorrhage if given intravenously. He had it tried in two sanatoriums, and in one the reports had been favorable; in the other not. On the other hand, very critical and careful physicians who had tried it in cases of hemorrhage that had lasted for years with attacks of bleeding from time to time, reported very favorable results upon it. As yet no conclusions could be given as to its distal use, but it was not harmful if given in weak dilutions, and it could be tried in from one to five per cent. solutions subcutaneously. Doctor Hess did not at present think it advisable to use it intravenously. It affected wound healing. If put on a sluggish ulcer, the tissue juice aided healing. This was first brought to his attention in a remarkable case of family congenital telangiectasis of the nose. One member of the family who had telangiectasis and continual bleeding with ulceration, used the thromboplastin and for the first time in months these ulcers in the nose had healed. Thromboplastin had a place in the bleeding of hemophilia, in the bleeding of the nose and mouth common in hemophilia, in local hemorrhages in the nose and mouth, in normal individuals, in operative work, and in the various cavities where other measures such as ligature could not be resorted to.

Control of Nose and Throat Hemorrhage.—This paper, by Dr. Lewis A. Coffin, was published in the August 4th issue of the Journal.

Control of Uterine Hemorrhage.—This paper, by Dr. Asa Barnes Davis, was published in the July 28th issue of the Journal.

Control of Gastric and Intestinal Hemorrhage.—This paper, by Dr. Edward Leland Kellogg, is published in this issue of the Journal at page 487.

Control of Pulmonary Hemorrhage.—This paper, by Dr. Dwight Clifford Martin, will be published shortly in the Journal.

Dr. H. L. Lynah said that the symposium was most timely in consideration of the present outlook and the demand for preparedness. It was thought that there was a small quantity of antithrombin present in normal blood which rendered the thrombin inactive, but when blood was shed or flowed over wounded tissue the other element, thromboplastin, was formed, which neutralized the antithrombin. Thromboplastin had been given to us by Doctor Hess in its simplest form. While a great deal had been said in all the papers about the control of hemorrhage, no one so far had mentioned any attempt at prevention. Doctor Lynah said that in operating on patients at the Willard Parker for the removal of tonsils and adenoids he had noted that there was apparently little bleeding in those who had received horse serum on admission and had had serum rashes prior to the time of the tonsillectomy. He then reported the case of a young woman who had been operated on for the removal of adenoids. He refused to remove the tonsils even though the family physician said that the blood count and clotting time were normal. The puncture for clotting time was made, however, from the finger and not from a mucous membrane. After the removal of the adenoids there was a very sharp hemorrhage, which was checked only by a tampon of the posterior nares. There was a constant ooze, however, which continued for ten days. After this accident, the family physician admitted that the brother had died of hemophiliac peritonitis following a slight injury, but that he felt perfectly safe in regard to the female members of the family, as they seldom suffered with hemophilia. Four hundred c. c. of horse serum was administered in this case in one dose. There was a very severe reaction at the end of the fifth day, accompanied by giant urticaria and an enormous collar of brawny swelling about the neck. There was no anaphylactic shock following the initial injection. The patient, while having very stormy symptoms for two weeks after the injection, subsequently made a perfect recovery, but still had her tonsils. Recently he had learned that her tonsils had been removed successfully with very little hemorrhage. For this reason he brought up the question of horse serum as a method of preventing hemorrhage. He had also seen other cases of hemorrhage in which the clotting time of the blood was normal. Doctor Coffin had seen such cases, and recently Dr. Lee M. Hurd had reported a case in a bleeder in whom the blood formed a firm clot, but bleeding continued under the clot at the same time, showing that there must have been something in the vessels, besides the condition of the blood, that caused the excessive bleeding. Doctor Lynah asked the opinion of Doctor Hess on horse serum as a preventive of hemorrhage, and also if the thromboplastin had any effect on the intima of the vessels. Doctor Lynah said he had been using the Hess thromboplastin with marked success in all his tonsillectomies, and in over 100 cases in which it had been given a thorough trial there had been no hemorrhage at the time of operation and no secondary hemorrhages. His method of operation on all of these cases was with a dull Arrowsmith tonsillectome. The tonsil was thoroughly dissected by means of the dull blade but not entirely removed from its bed. Then the guillotine was removed from the tonsil and the tonsil pressed back into the fossa by means of a sponge soaked in Doctor Hess's thromboplastic substance and held there for at least five minutes. The tonsil was then grasped by forceps and removed by the snare method. He had been surprised at first to see practically no hemorrhage following this technic; while the operation required a little more time, it was well worth the difference.

Dr. Anthony Bassler, of New York, said he would confine his remarks to the control of hemorrhage from the gastrointestinal tract. When he was an undergraduate he was taught that opium, among its other therapeutic effects, was the best internal hemostatic available. After that in his hospital and private work morphine was used in hemorrhage of the lungs, stomach, intestine, etc. After considerable experience he has become very partial to it, and it would take much to make him change his belief in regard to the efficacy of morphine in the control of hemorrhage which could be reached locally. It was argued that morphine would relax the gastrointestinal canal, but if morphine had any effect, it was very slight and in some instances of hemorrhage, such as that from the stomach or duodenum, its tightening effect upon the pyloric muscles which was a definite physiological action, might be well worth while to bring about. In profuse bleeding in duodenal ulcer the shutting up of the pylorus by a dose of morphine saved irritation of gastric contents. Apart from the argument of its effects upon the gastrointestinal canal, in frank hemorrhage physical and mental rest were essential. What agent other than morphine could bring about the proper state of mind and body? It was a question whether the use of all normal saline solutions in bulk in the body would reduce the coagulability of the blood. The coagulability of the blood was not dependent upon certain physiochemical factors, and these were not interfered with in their action even if the quantity of suspension was increased. Finally, in regard to horse serum, it really took somewhere between six and twelve hours for this agent to have any effect upon the blood in the case of hemorrhage, and in the average case we could not wait as long as that. Horse serum might be used as a preventive shortly after a hemorrhage, but it was of no use to check the initial hemorrhage. This brought up the question of coagulability. He believed that in frank hemorrhage more was being said about coagulability, methods to increase it, and so on, than the subject deserved from a clinical standpoint. A hemorrhage took place because a vessel was ruptured, not necessarily because blood was deficient in coagulability. Why then pay so much attention to coagulability? This was his position on the use of coagulose or thromboplastin. While he had no objection to the use of these and other measures which were supposed to affect the coagulative time of the blood, he wished to emphasize the fact that the ruptured vessel was the primary consideration. Many hemorrhages ceased when the patient was enough bled out, and the vessel would bleed till Nature said that his body would not permit any further loss. This faculty of Nature was a real godsend for which the best of us should be grateful.

Dr. W. B. CHASE said that the question of uterine hemorrhage had been alluded to only in puerperal conditions, but that the field outside of that was large. Doctor Davis had presented his subject in a most admirable and scientific way and had given much food for thought. He had pointed out the risks of interference, and these were every day becoming more and more impressive to those who practice gynecology. We must trust more to nature and less to art; but when the indications for interference arose, it must be promptly instituted.

Doctor HESS said that apparently the main question which had risen was in regard to the value of horse serum and its action. This was somewhat apart from his topic, but he would say a few words on the subject. There was no doubt that in a certain number of cases horse serum was efficacious; in a large number it was not. It required from twelve to eighteen hours to take effect. In some research laboratories it was found that the value of the horse serum lay in the euglobulin fraction. It was well known that serum contained euglobulin, pseudoglobulin, and albumin. The antitoxin form was associated with the pseudoglobulin, and diphtheria antitoxin of high potency was prepared by separating this protein fraction. However, pseudoglobulin had no effect on aiding coagulation; this function of the serum was closely associated with the euglobulin. At the Department of Health a euglobulin preparation to be used for distal hemorrhage was now put up. The advantage of this was that it contained one third as much protein as the whole serum, and therefore to this extent protein reactions, anaphylaxis, were avoided. Doctor Lynah had asked if thromboplastin had any effect on the intima of the vessels. It had some, but probably not much. Its greatest effect was directly on the blood, given even in a dilution of 1:500 or 1:1000. Doctor Hess said that he has used it with adrenalin in order to get an effect on the vessels and on the blood, had mixed and applied them both together.

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Book Reviews.

[*We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.*]

Laboratory Technique. The Methods Used at St. Luke's Hospital. By F. C. WOOD, KARL M. VOGEL, and L. W. FAMULENER. New York: James T. Dougherty, 1917. Pp. 172. (Price, $1.)

Seldom does a book bespeak such perfect mastery of its subject matter as does the little laboratory manual issued by the Clinical Pathological Staff of St. Luke's Hospital, New York. This handbook has plainly been written by men in intimate daily contact with the technic set forth. The book is meticulously free from padding, and every page is covered with a succinct exposition of approved laboratory methods. One feels that the authors are to be complimented on their reserve in detailing only standard methods, while omitting all argumentative discussions. Moreover, it is always commendable for masters of detail to give in condensed form the results of their labors.

The ground covered by the manual is of a composite nature, and all the routine procedures within the repertoire of a first class hospital are described, including paraffin sectioning, frozen sectioning, staining, examination of blood, urine, feces, secretions, and exudates; also those quantitative methods which yield data for the McLean or Ambard coefficient; and finally, an irreducible minimum of bacteriology and serology. This is a comprehensive program for a book of 172 pages, but the actual worker in the laboratory will be grateful for a book giving the meat of these subjects without lengthy discussions.

A valuable and original method is exemplified by the chapter on quantitative determinations of sugar, creatinine, urine, etc., in the blood and in the urine. At the head of each section, a list of needed apparatus and chemicals is given, so that any pathologist who contemplates making the tests can tell at a glance whether his facilities will suffice. This list also helps in the assembling of the apparatus.

It is noteworthy that in each procedure the underlying principles are first briefly set forth. Then follows a statement in proper order of how to go about the successive steps of the procedure. The practical value of this method is shown by the technic described for the Widal reaction. Of course, every book gives the technic for this test, but unless one is foresighted, he is likely to turn up at some stage of the test with an extraordinary number of infected utensils and no place to put them. These authors, however, detail the various steps of the procedure consecutively, and even in carrying out the test for the first time the student will find that the infected apparatus seems to take care of itself. The technic for differentiating the type of pneumococci is given adequately, and in such simple form that one who has not tried it before would be encouraged to do so. The familiarity of the authors with their ground is here also evidenced by the explicit directions concerning the disposal of all the infected material. Many laboratories are poorly supplied with helpers or janitors; hence the directions as to the neatest way of making the test will be appreciated because entailing so little aftermath. Other useful procedures described in this manual are the colloidal gold test, the Schick test for susceptibility to diphtheria, tests for determining the suitability of blood for transfusion, the Wassermann reaction, and methods for the identification of practically all the pathogenic bacteria. The outstanding fact about the book is that it is practical.

La Trépanation. Par le Docteur HENRI BRODIER, ancien chef de clinique chirurgicale de la Faculté de Paris, médicin-Major de 1re classe. Paris: A. Maloine et Fils, 1916. Pp. 95.

The author bases this short work on 400 cases of wounds of the head which came under his observation as head of a military hospital at Verdun during the present war. Of these cases 200 required trephining. He proves in a convincing way the great value of early interference for the purpose of decompression, removal of foreign bodies and splinters of bone, disinfection, and prevention of intracranial suppuration. A description of individual cases demonstrates the clinical course and prognosis of these severe injuries and the value of the author's methods of operation and postoperative care. Numerous drawings and diagrams give a very clear idea of the mechanism of the damage done to the soft parts and bone in these cases, and the technic of the operation. The book will be of service to those wishing to acquire practical knowledge of the best plan of procedure in this most important class of wounds.

The Biology of Tumors. By C. MANSELL MOULLIN, M. A.; M. D. Oxon.; F. R. C. S.; Lieutenant-Colonel R. A. M. C. (T); Consulting Surgeon to the London Hospital; Late Vice-President Royal College of Surgeons; Fellow of Pembroke College and Radcliffe Traveling Fellow, Oxford. London, W. C.: H. K. Lewis & Co., Ltd., 1916. Pp. 55. (Price 2s. 6d. net.)

This short essay was written with the object of dealing with the biology of tumors in a more thorough manner than was possible in the Bradshaw Lecture delivered before the Royal College of Surgeons in 1912. In many particulars the views expressed are original and will command the attention of the pathologist and cancer investigator. It is a scholarly contribution to the biological processes concerned in tumor development and as such is another step in the direction of a clearer understanding of the nature of these obscure manifestations of morbid growth.

An Inquiry into the Principles of Treatment of Broken Limbs. A Philosophicosurgical Essay with Surgical Notes. By WILLIAM F. FLUHRER, M. D., Consulting Surgeon to Bellevue and Mount Sinai Hospitals. New York: The Rebman Company, 1917. Pp. xi-128.

Looking back over an active experience in treatment of fractures in Bellevue Hospital beginning in 1872 and continuing up to fifteen years ago, the author has written an interesting account of methods which he found useful and some of which is devised or improved. A résumé of this kind from the pen of one of the old school is of great interest and historical value in showing the development of methods of procedure the best of which have remained in use today. Intermingled are interesting personal observations and reminiscences, including those of the preantiseptic horrors in connection with compound fractures treated at Bellevue in the seventies.

Official News.

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending September 5, 1917:

BANKS, C. E., Senior Surgeon. Directed to proceed to Manhattan, Kan., for special temporary duty.

HARRINGTON, F. E., Assistant Epidemiologist. Directed to proceed to Anniston, Ala., on special temporary duty.

HOMMON, H. B., Sanitary Engineer. Directed to proceed to Leavenworth, Kan., on special temporary duty.

LAKE, G. C., Assistant Surgeon. Directed to proceed to Montgomery, Ala., for temporary duty in bacteriological investigation.

LAUGHLIN, J. B., Assistant Surgeon. Directed to proceed to Greenville and Spartanburg, S. C., on special temporary duty.

SHOUB, H. L., Sanitary Bacteriologist. Directed to proceed to Newport News, Va., on special temporary duty.

STIMPSON, W. G., Assistant Surgeon General. Directed to attend meeting of the American Hospital Association, Cleveland, Ohio, September 10-15, 1917.

SULLIVAN, M. X., Biochemist. Directed to attend a meeting of the American Chemical Society, Boston, Mass., September 11-13, 1917.

TREADWAY, W. L., Assistant Surgeon. Directed to deliver addresses on school and mental hygiene at the Teacher's Institute, held at Maysville, Ky., September 4-6, 1917.

Boards Convened.

Surgeon J. O. Cobb and Passed Assistant Surgeon F. A. Ashford detailed for duty on Coast Guard Retiring Board at the Marine Hospital, Chicago, Ill.

Assistant Surgeon H. E. Settle and Acting Assistant Surgeon J. G. Stanton detailed for duty on Coast Guard Board at New London, Conn.

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Births, Marriages, and Deaths.

Born.

PATE.—In Macon, Ga., on Thursday, September 6, to Dr. Julien C. Pate and Mrs. Pate, a son.

Married.

INGRAM-SUMMY.—In Marietta, Pa., on Wednesday, August 29th, Dr. Theodore E. Ingram and Miss Mary Summy.

Died.

BOLAND.—In Carbondale, Pa., on Wednesday, August 29th, Dr. Patrick S. Boland, aged forty-four years.

DAYTON.—In Cincinnati, Ohio, on Tuesday, August 28th, Dr. George M. Dayton, of Chattanooga, Tenn., aged sixty-seven years.

FOLTZ.—In Akron, Ohio, on Wednesday, August 22d, Dr. Abner E. Foltz, aged seventy-seven years.

GADDIS.—In Uniontown, Pa., on Saturday, September 1st, Dr. Levi S. Gaddis, aged sixty-seven years.

JOHNSON.—In East Hampton, N. Y., on Tuesday, September 4th, Dr. Alexander Bryan Johnson, of New York, N. Y., aged forty-seven years.

KNODE.—In Burns, Wyo., on Thursday, August 23d, Dr. Robert C. Knode, of Gering, Neb., aged forty years.

MARTIN.—In Memphis, Tenn., on Sunday, August 26th, Dr. Zachary T. Martin, aged seventy years.

MCINTYRE.—In Dorchester, Mass., on Sunday, September 2d, Dr. David McIntyre, aged sixty-nine years.

MOXOM.—In Springfield, Mass., on Thursday, September 6th, Dr. Philip W. T. Moxom, of Brooklyn, N. Y., aged forty-three years.

RICE.—In Zephyr Hills, Fla., on Saturday, August 25th, Dr. Wilbur C. Rice, aged thirty-seven years.

RUSSELL.—In Pittsburgh, Pa., on Friday, August 31st, Dr. John McDonald Russell, aged forty-five years.

SHERBINO.—In Abilene, Tex., on Sunday, August 26th, Dr. George W. Sherbino, aged seventy-three years.

VAN ZILE.—In Brooklyn, N. Y., on Monday, September 3d, Dr. Benjamin S. Van Zile, aged seventy-three years.

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Original Communications

THE QUESTION OF BLOOD PRESSURE.*

A Résumé.

By Robert Franklin Ives, M. D.,

New York.

To the student of cardiovascular disturbances and to the physician at large, the question of the truth of blood pressure testings in the formulating of positive opinions is of paramount importance. For the progressive practitioner to omit from his clinical data the information to be obtained from the examination of the blood pressure in his patients past middle life casts a reflection upon the accuracy of his clinical findings. The whole subject of blood pressure, including its significance, the methods of its determination, the physiological data upon which it is based, and its clinical value, is so recent that few have wholly grasped its meaning or have been able to apply fully its teachings to clinical medicine.

The first U tube mercurial manometer dates back to the days of Poiseuille in 1828. Many modifications were made, but it was not until 1876 that Marey finally evolved an instrument that determined both the systolic and the diastolic pressure. No general use was made of the apparatus until eleven years later, when von Bosch in 1887 perfected an instrument with which readings were obtained from the radial artery. This constituted a marked advance in practical technic. All modern types of the mercurial manometer, however, date from the year 1896, when Riva-Rocci in Italy employed an elastic cuff which encircled the arm and connected with a mercury reservoir by rubber tubing. He used an upright capillary tube, alongside of which was placed a graduated millimetre scale. Air pumped into the cuff compressed the brachial artery, until the pulse below was obliterated. From this instrument of Riva-Rocci our present instruments were elaborated. The cuff associated with the mercurial manometer gives the most accurate readings, the height of the column of mercury being read in millimetres. The mercury apparatus, therefore, is accepted as the standard type of instrument from which accurate readings are to be obtained.

Method of estimating blood pressure.—At the present time, the auscultatory method of Korotkow, described in 1905, is recognized as the simplest and the most satisfactory method of estimating blood pressure. The tones are distinguished with the aid of the stethoscope placed over the brachial artery. It may be incorporated in the cuff itself if a stiff leather cuff is used, thus reading from the artery above the elbow, or the cuff may be used separately and the stethoscope applied over the artery just below the bend of the elbow. It is important to recognize that the series of tones heard over the brachial artery are clear cut only over normal vessels; for the intensity and quality of the sounds depend upon several factors, namely: the heart's force, the state of the vessel walls, the pressure exerted by the bell of the stethoscope, and the keenness of the operator's ear.

It is accepted that the systolic reading is to be taken with the first audible sound heard upon the pressure release and the diastolic pressure reading at the sudden transition of the third clear tone to the fourth dull tone, and not at the disappearance of all sound. Experience has proved the wisdom of always obtaining the systolic reading by raising the pressure well above the reading point and carefully listening for the first sound that escapes beneath the cuff; and of obtaining the diastolic reading by starting low and while slowly raising the pressure, listening for the transition point described. Accuracy and expedition are readily acquired by this method.

An important point to be noted in passing, well stated by Goodman and Howell(1), is that the fourth tone may persist at times even to the zero on the scale, such persistence being pathognomonic of aortic regurgitation. Taussig and Cook (2) have shown that in such cases, by permitting the pressure to fall below the possible diastolic point of pressure and gradually raising the pressure, the continuous dull tone of the artery is suddenly replaced by the sharp tone which marks the point of the diastolic reading. This is a technical point of great value.

Circulatory physiology.—In order to utilize blood pressure determinations and to make them of real value, it is necessary to understand the factors upon which they depend. To carry on the circulation and to maintain a mean pressure between the arterial system on the one hand and the venous on the other, the heart must do a certain amount of work before it succeeds in overcoming the resistance at the aortic valves. This amount of work is represented in figures as a force required to raise a column of mer-

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*Read before the Medical Association of the Greater City of New York, February 6, 1917.

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cury eighty to ninety millimetres. This is the dead weight which the heart must always overcome before the aortic valves can open. The force over and above that required to open the valves is actually needed to keep the blood in circulation. The real head of pressure, therefore, hydrostatically speaking, that is used to force the blood to the periphery is represented by the force exerted from the time of the opening of the aortic valve to the end of the systole. In other words, the full muscular force exerted by the heart contraction represents the systolic pressure, whereas the peripheral resistance is represented by the diastolic pressure; and the pulse pressure, the vital element in prognosis and clinical application, which is the difference between the two, measures the actual head of the propulsive force in the arteries, at the base of the heart.

The present position of sphygmomanometry in the field of practice hinges upon the clear conception of pulse pressure, its determination and application. This implies an accurate knowledge of the diastolic pressure. Scientific advancement has always been intimately associated with the introduction and use of instruments of precision. Thus the ability to obtain this pulse pressure by means of the sphygmomanometer permitted progress in cardiac and arterial disturbances. The determination and application of pulse pressure in blood pressure work have changed the entire conception of cardiovascular disease, so that now its application to general medicine is wide and of a most practical nature, directing us to a right diagnosis, favoring a prognosis, and providing means for carrying out a practical and scientific treatment.

Faught (3) directs our attention to the fact that pressure readings vary from time to time in a normal individual, meaning a person with normal heart, arteries, and kidneys; and that both systolic and diastolic pressures while maintaining an approximately normal ratio tend to rise upon exertion. Extreme exertion by increasing the systolic output will in a normal heart cause the systolic pressure to go up more rapidly than the diastolic. The result is a greater pulse pressure. On the contrary, in a person with a defective cardiovascular system and kidneys there will be noted a reversal of this physiological principle. Here there may be a rise in the systolic pressure, but it is not accompanied by the normal relative change in the diastolic pressure, and so does not maintain the normal pulse pressure ratio. Herbert Schoonmaker (4), of Clifton Springs, makes use of this disturbance to determine myocardial efficiency, his attention having been called to the fact that variation in systolic pressure, diastolic pressure, and pulse pressure in relation to posture and exercise may be interpreted in terms of myocardial efficiency. This method grows in favor. After taking the findings while the patient is relaxed and reclining, he has the patient walk at ordinary speed about seventy-five feet, and then takes the findings standing. The exertion is not sufficient to cause the symptoms of dyspnea, palpitation, or chest pain unless the heart and arteries are much impaired. His conclusions are as follows: 1. An increase in systolic pressure, together with a stationary or increased pulse pressure, is suggestive of a fairly good myocardial efficiency. 2. A decrease in systolic pressure, together with a decrease in the pulse pressure, is suggestive of poor myocardial efficiency.

Faught likewise insists that any condition which interferes with the forward movement of the blood in the arterial system will cause a rise in the systolic pressure, and the more rigid, or arteriosclerotic, the arteries, the less will the diastolic pressure tend to follow. The result is the production of an abnormally increased pulse pressure. When the arteriosclerotic change is once established, it persists more or less constantly until the terminal stage of the disease, when the pulse pressure diminishes through the exhaustion of the myocardium; the heart's output falls, and signs of right heart failure ensue. Faught believes that a ratio exists between the pulse pressure and the diastolic and the systolic pressures that remains uniform in normal cases. This may be expressed in the terms 1:2:3, meaning that the diastolic pressure should be twice the amount of the pulse pressure, and the diastolic pressure should be two thirds of the systolic pressure. In a series of individuals between the ages of twenty-two to fifty-three years, the ratio was found as stated, whereas twenty cases of cardiovascular renal disease with high pressure absolutely failed to conform to the standard stated.

It is well to bear in mind that blood pressure standards cannot be absolutely fixed, there being considerable variations in different individuals. Faught's (5) rule for calculating the normal average systolic pressure is very simple and easily kept in mind: Concede it to be 120 millimetres for a male subject of twenty, then add one millimetre for every additional two years of life.

The average normal arterial pressure determined by the auditory method and tactile systolic check is as follows. Data were supplied by G. Spencer Melvin and J. R. Murray (6).

Age.	*S.*	*D.*	*P.P.*
Under 15	107	74	33
20-40	112-125	65-80	45
40-60	125-135	80-85	45-50
60-80	135-165	85-90	50-75
Over 80. Data insufficient.			

Pathological readings.—In deciding on the normality or abnormality of any individual arterial blood pressure, the following points should be taken into consideration: 1, the average maximum above or the average minimum below the general average reading for the age in question in a large group of healthy subjects; 2, the collateral clinical evidence in the patient of the cardiovascular syndromes of hypertension and hypotension, and of the pathological causes which raise or lower the arterial pressure; 3, the conditions furnished by the individual which may modify the readings of the arterial pressure.

H. P. Woley (7) has recorded and averaged the low and high readings of the systolic pressure in 1,000 healthy subjects from the ages of fifteen to sixty-five years, observing all possible precautions. The following table is an epitome:

READINGS OF SYSTOLIC PRESSURE.

Age.	*Average low.*	*Average.*	*Average high.*
15-30	103	122	141
30-40	107	127	143
40-50	113	130	146
50-60	115	132	149
55-65	120	138	153

The average for female: 7.5 mm. lower.

If we begin the pathological readings five millimetres or so outside these high and low averages of the physiological systolic pressure, we obtain figures which conform with the pathological ones furnished by the general clinical experience, namely: above 145 or below 100 before middle life (forty), or over 160 or under 110 after. Such figures must, of course, be verified by repetition.

Pathological systolic pressure readings in hypertension may extend from 145 to 160, according to age to at least 300 millimetres, and in hypotension they may fall from 100 or 110 to sixty millimetres, or even lower. In hypertension, readings of 200 to 220 are moderately high; of 250 to 275 are very high; and 280 to 300 are quite exceptional.

The range of pathological diastolic readings is about fifty per cent. less than that of the systolic; diastolic readings of ninety to 100 in subjects under forty, and of 100 to 110 after that age, when verified on more than one occasion, should call for precautionary inquiry; and those of 120 to 130 are moderately high, of 150 to 160 are very high, and of 165 to 175 are excessively high. Always remember that the hypotonic effect of heat and the hypertonic effect of cold on the blood pressure are factors of importance. Warm weather may let down the systolic blood pressure from ten to twenty millimetres, and cold weather may raise it similarly.

To make these scientific facts of value, the practical application of the principles of blood pressure to the protection of the cardiovascular structure from exhaustion becomes paramount. We know that the heart is adjusted to work at a certain pressure, and though within certain limits it can adjust itself to variations, it cannot exceed these limits with impunity. In the acute infections the blood pressure may fall dangerously low through the vasomotor failure and collapse result, for the heart cannot carry on the circulation satisfactorily if the blood pressure is inadequate. Surgical shock has been shown by Crile to be due to vasomotor depression, a fact which though questioned by some should actuate surgeons to watch the pressure during the operative period and to avail themselves of the use of vasomotor stimulants following the operation to raise the depressed function.

To comprehend thoroughly the etiological factors in the production of blood pressure, the mechanical behavior of the heart muscle and the coats of the arteries must be understood. E. H. Starling and his coworkers at the Institute of Physiology, University College, London (8), showed that the integrity of the heart muscle depends upon the patency of the coronary vessels, and that the coronary circulation is intimately connected with the arterial pressure at the root of the aorta, rising and falling with the pressure. It is not dependent upon the total bulk of the fluid passing. They showed that the pressure is especially increased by the presence of certain nonvolatile metabolites generated by the functioning heart muscle, these products being very potent agents in the causation of coronary dilatation. They showed that the inefficiency of the heart muscle is due to a diminution of physiological tone or fitness which is dependent upon the supply of oxygen, plus nutrient material conveyed by the coronary circulation, plus these metabolites generated by the contracting muscle itself. This action of the heart muscle, they say, provides a local mechanism by which the circulation within itself is increased to meet the calls made upon its functional capacity. With this thought of the integrity of the cardiac muscle, it becomes evident that the left ventricle is the master hand in maintaining the arterial blood pressure. The height to which the pressure rises depends primarily on its integrity and on the resistance encountered in the peripheral arterial system. As a result of arterial degeneration and heightened pressure, the first step in cardiac compensation is to meet the rising resistance. Thus there occurs a stretching of the cardiac muscular fibres. This is followed by a proliferation of these fibres—a type of hyperplasia with the production of an hypertrophy. This compensating hypertrophy may maintain the circulation for years, but it ultimately drifts into inefficiency when the fibres, invaded by fibrotic or fatty degeneration, weaken and become unable to deliver the full load. The volume of the heart further increases, and the heart's action ceases from cardiac failure. This transition from compensation to decompensation is indicated by the elevation or depression of the arterial pressure, and should be followed by the physician with the sphygmomanometer.

To realize the part played by the arteries F. W. Andrews (9) shows that the fibrous, elastic, and muscular tissues are all liable to degeneration, to automatic hyperplasia, or the production of atheroma, and may be the seat of deposits of material, namely, calcium or cholesterol. In wasting diseases, as phthisis, they attenuate or soften, and become abnormally distensible; whereas after middle life, and as a result of certain pressor products, they stiffen as the years advance. In the former condition the trend of the systolic pressure is downward, in the latter it is upward. When the coefficient of elasticity fails, it may be that the walls become braced with fibrous tissue, but hyperplasia of the muscular coats is the important adjustment. Superficial arteries may become tortuous; deep arteries may become aneurysmal or dilated. J. A. MacWilliam and J. E. Kesson (10) state that marked tortuosity means that the arterial tone which resists elongation as well as transverse expansion has been deficient either absolutely or relatively to internal pressure. This muscular development takes place especially in the arterioles. Sir Clifford Allbutt terms this condition with its associated high pressure and negative kidney findings "hyperpiesis." T. D. Savill (11) designates it as "hypermyotrophy."

Angiospasms.—Clinical observation supplies data which show that those in whom the arterial pressure is supernormal, whether associated or not with arteriosclerosis, are more liable to a generalized temporary increase of arterial contraction which for a time raises the blood pressure to a higher level, or to a localized spasm of an artery which induces more or less transient disturbances in the brain or limbs. This proclivity to spasm in the arteries, says George Oliver (12), is probably an outcome of the rich endowment of muscular fibres in the hypertensive arterial wall.

Certain transient manifestations of localized arterial angiospasm are unanimously attributed to spasm of the artery supplying the affected part, which frequently becomes ischemic. Arterial spasm in the legs causes intermittent clonus, senile nocturnal cramps, or spasm of the middle cerebral artery or one of its branches, inducing slight transient attacks of aphasia, hemiplegia, or monoplegia affecting only face, hand, or arm, or convulsive attacks with or without loss of consciousness or with or without clonic spasm in the paralyzed part. Sir William Osler thus classifies these cases: "A. Healthy individuals with high blood pressure, but without signs of arterial disease. B. Patients with marked arteriosclerosis, in whom the cerebral attacks have come on without warning, sometimes as the signal symptom. C. In advanced sclerosis with cerebral changes, manifested by progressive mental and muscular weakness, all possible types of these transient seizures, including convulsions, may occur. The attacks are most frequent in the aged, but even in the fifth and sixth decades are also affected."

Biochemical and other etiological factors in the production of hypertension and hypotension.—Many are the explanations advanced to account for the heightened and lowered pressures, and it is imperative to realize that the pathological process developed is the result of many factors.

1. Evidence shows that the nervous, anxious temperaments and occupations, which involve much worry, anxiety, and nerve strain, tend to produce high levels of arterial pressure; while placid temperaments and routine occupations, especially of the physical order, dispose to the lower degrees of pressure.

2. The processes of metabolism in all their complexity must be recognized as agents of the greatest activity in the production of these morbid arterial pressures. Metabolites generated within the system act upon the somatic cells of the arteries with the production of atheroma associated with hyperplasia or hypertrophy, or the wider effect of irritation of the coats of these arterioles to produce contraction. We recognize the presclerotic stage of Houchard as a hypertonic state due to a functional disturbance, the outcome of the strenuous life. Attention given at this period, which occurs between the ages of forty-five to fifty-five years, results in great improvement. The danger signs are easily recognized, viz.: A slight increase in the shortness of breath; labored action of the heart or slight palpitation on exertion. More significant are the head signs—vertigo, especially on standing, occasional noises in the head, and an uncomfortable feeling of fatigue.

3. The theory of supraadrenalism is upheld by some, especially the French, as the *vera causa* of hypertension. Josué (*Traité de l'Artériosclerosé*) showed that injecting adrenalin into the veins of rabbits produced aortic atheroma and a rise of arterial pressure. Experimental research demonstrates that as far as the cardiovascular system is concerned, the action of adrenalin is twofold: To maintain, in conjunction with the sympathetic nerves, the normal tone to the heart and arteries; and to serve as a chemical messenger to further brace up the circulatory musculature in conditions of stress, such as fright, worry, sudden effort, etc. For the maintenance of tone the discharge of adrenalin is slow and continuous, but during physiological emergencies it discharges rapidly. We infer, therefore, that adrenalin is an important factor in maintaining the tone of the musculature of the heart and arteries. As to the condition of supraadrenalism expressing itself clinically as hypertension, true experimental evidence is lacking. Janeway and Park (13) say that the examination of the uncoagulated blood from six persons with high pressure failed to show the presence of epinephrin or other constricting substances. The pressor product, pituitrin, though possessing a similar contractive or tonic action to that of adrenalin on the musculature of the circulatory organs, is not thought to be a factor of general importance in causing high tension.

4. The recent discovery of some powerful pressor bases in the urine, one of which, isoamylamin, has been isolated as as oxalate and identified by W. Bain (14). This substance when retained in the blood may go far to explain how some forms of hypertension with cardiac hypertrophy are produced. This investigator says in his conclusions: "The normal urine of adults contains certain bases which when injected into the bloodstream of anesthetized animals produce a marked rise of arterial pressure; these bases undoubtedly arise in the intestines as a putrefaction of proteins, and their amount can be considerably diminished by a decrease in protein intake. The profession awaits full proof of this view."

5. Nephritic hypertension, Janeway (15) writes, arises through quantitative reduction of kidney substance below the factor of safety, due to a retained poison of some kind. H. B. Shaw has called attention to the fact that every case of hypertension of permanent type shows the presence of fibrosis of the kidney with the loss of kidney substance.

Hypertension.—Certain types or groups of hypertensive cases may be recognized.

1. The cerebrorenal group.—Here evidence of damage to the arteries in general and to the kidneys in particular is present. The diastolic pressure is persistently high, and if compensated for, the systolic pressure is also increased in proportion. These include cases of chronic nephritis, of the diffuse or interstitial type, with polyuria, low specific gravity, albumin, and casts. There is a tendency to urea retention in the blood. These kidneys, from the standpoint of pathological physiology, have difficulty in excreting urea and nonprotein nitrogen products of metabolism. A small percentage die of myocardial exhaustion, but the larger proportion have cerebral hemorrhage, or thrombosis. The pulse pressure ratio ranges about forty to sixty per cent.

2. The cardiac group.—W. J. Stone (16) differentiates, as a result of this pressure ratio, a group in which the systolic pressure is high, but the diastolic

pressure was little higher than normal—an average systolic of 178, and a diastolic of 93, giving a ratio of 92. This increased ratio percentage shows the increased cardiac load. This group includes those cases with damaged valves, with aortic sclerosis, aneurysm, hepatic cirrhosis with gouty manifestations, syphilis, and those with a history of long years of hard labor. Here the symptoms of nephritis are lacking. The main symptoms are fatigue on exertion, anginoid pains in chest, arrhythmia, and dyspnea. Evidently the smaller arteries are not contracted or the diastolic pressure would be higher. Decompensation is associated with a falling systolic pressure—the so called "primary high and secondary low." The prognostic point of value seems to be in the maintained height of the systolic pressure, i. e., a falling systolic is a sign of cardiac failure. Most of these patients die with symptoms of cardiac exhaustion.

3. The group of arterial cases with angina pectoris.—In angina pectoris, so much aparently depends upon the patency of the coronary orifices, as stated, and the rigidity or sclerotic condition of the first portion of the aorta, or to the presence of thrombotic obstruction in the coronary arteries themselves, that little might be expected from a prognostic standpoint obtained from the study of blood pressure. It is well to recall, however, that during a paroxysm of angina, the pressure may rise to most unusual heights. Osler, in his Lumlein Lecture of 1910 before the Royal College of Physicians, cites a case in which pressure rose to 340 millimetres during an attack. Herein lies one of the dangers to cardiac rupture as seen to accompany these conditions. Stone makes this remark prognostically: "I have come to regard with relatively greater seriousness the angina patients who have a normal or subnormal systolic and diastolic pressure. Those, in my experience, who have a sustained or exalted blood pressure have survived the longest.

Hypotension.—Hypotension is due possibly to products generated in the body, as a result of toxemia, acute or chronic, or to inadequate substances from the endocrine glands or bodies. Toxemia or deficiency seems to explain this phenomenon. It is well to recall that the undue draining of blood into the capacious splanchnic venous system, and its lodgment there, is a factor in lowering the arterial blood pressure in certain cases, such as phthisis, neurasthenia, toxemias, convalescence, or other atonic states.

I would like to call attention to the hypotension seen in the myocardial exhaustion of the acute illnesses. In acute pneumonia, erysipelas, or septicopyemia, the diastolic pressure tends to fall five to ten or more millimetres below its former level, due to the relaxing effect of the absorbed toxins either upon the arteries directly, or upon the vasomotor centre, with the result in the early stages of an apparent, though very deceptive, increase in the pulse pressure, as the systolic pressure is usually sustained at its normal height. At least this occurs if the heart is capable of normal response. When this stage of heart embarrassment is reached, from whatever cause, the systolic tends to fall, the pressure ratio is suddenly decreased below the limit of safety, and the rapid onset of cardiac failure results. Therefore, if the systolic is low and the diastolic is also low in a case of acute infection, the prognosis is grave and sudden heart failure may result. Gibson's law, depending more especially on the relation of the systolic pressure to the pulse rate, though suggestive, does not have the same significance, and can, I think, be discarded.

Difficulties in reading blood pressure.—The modern conception of the cardiac function and the controlling mechanism of the heart illuminates the cause of the many cardiac irregularities. Should the neuromuscular system become disorganized by fatty degeneration, areas of sclerosis, or calcareous plaques, etc., the more serious forms of the pathological irregularities, are manifest. The arrhythmic pulse seen in heart block, auricular fibrillation, flutter, extrasystole, or pulsus alternans present ventricular contractions varying both in time and force; these irregularities make it difficult to estimate the arterial pressure and, therefore, it is necessary to speak of the maximum and minimum limits of the average pulse pressure. In some forms of irregularities such as extrasystoles, when the interruptions are not too frequent, a fairly satisfactory reading can be made; whereas in pulsus alternans the weaker pulsation can be eliminated at a lower level of pressure, the pulse rate being thus reduced one half. The remaining stronger beat can be read off at the higher level.

Heart block.—Attention is directed to a phenomenon which is witnessed in the condition of complete heart block. Your patient may be sixty years or older; evidence of arteriosclerosis is present, and the systolic reading may be 200 millimetres or over. Yet the diastolic pressure may register at 65 to 70 millimetres, thus giving a very high pulse pressure. It is well to recall that block of a high grade is accompanied by a reduction of rate, in complete block remaining close to thirty beats a second. As a result of this retardation, a great burden is imposed upon the efficiency of the heart as a pump, but nothing is more surprising than the accommodation of the cardiovascular system to conditions which diverge widely from the normal. The dissociation of auricle and ventricle, and the subsequent establishment of a slow ventricular rhythm are followed by some degree of hypertrophy, which compensates for the loss of coordination. During the long diastole, the blood is driven from arteries to veins and a low diastolic blood pressure results, in contradistinction to the usual high diastolic seen in the condition of sclerosis.

This fact is worthy of recall, when, to the surprise of the examiner, a pulse pressure of 130 millimetres is obtained. To attempt to lower this would destroy the integrity of the circulation; whereas, should the signs of cardiac exhaustion with edema appear, an effort to raise still further the pressure, even with digitalis, should be made.

Estimation of blood pressure in auricular fibrillation.—A condition which frequently confronts the physician who takes routine blood pressure readings is that of the new clinical entity, auricular fibrillation. How shall we estimate it? It is very difficult, if indeed possible.

Hart (17), realizing that the usual method is of little value, advocates "the average systolic blood pressure." His method is as follows: The apex and radial beats are counted for one minute. Then a blood pressure cuff is applied to the arm and the pressure raised until the radial pulse is obliterated. The pressure is then lowered ten millimetres and held here for one minute while the radial is counted. The pressure is again lowered ten millimetres and a second radial count made. This count is repeated at intervals of ten millimetres lowered pressure until the cuff pressure is insufficient to cut off any of the radial waves. Between each estimation the arm pressure should be lowered to zero to prevent too long a suspension of the circulation. From the figures thus obtained, the average systolic pressure is calculated by multiplying the number of radial beats by the pressure under which they came through, adding together these products, and dividing their sum by the number of apex beats per minute. The resulting figure is the "average systolic blood pressure, viz., apex, 131; radial, 100; deficit, 30.

BRACHIAL PRESSURE.

100 mm. Hg.	O.		
90 " "	13	x90	1170
80 " "	47-13	34x80	2720
70 " "	75-47	28x90	1960
60 " "	82-75	7x60	420
50 " "	101-82	19x50	950
			7220

7220 131 55 plus.

To obtain the diastolic pressure, it is necessary to take a graphic record from the Erlanger instrument and note the pressure at which the average excursion of the pulse wave is maximal.

Hart (18) states that the clinical value of the method proves that there is a difference between the two groups of patients, showing the P. I. P. rhythm, i. e., the rheumatic and the arteriosclerotic. In the rheumatic mitral stenosis group one finds the average systolic blood pressure under 70 millimetres. These are usually cases with rapid rate over 140 and a marked degree of cardiac insufficiency. With improvement the blood pressure rises and may reach 120, but rarely 140. In the arteriosclerotic group with fair compensation, the average systolic blood pressure is usually 160 or over, and only falls below this when insufficiency becomes evident. In this group when the pressure estimated in the above manner falls below 140 millimetres myocardial failure is very threatening.

CONCLUSIONS.

The following conclusions may prove of value in the practical application of these studies and they are to be accepted as suggestive and not as dogmatic.

1. The pulse pressure is always large in aortic insufficiency. In fact, it is the largest seen in any disease.

2. In chronic nephritis the pulse pressure is always high in the stage of compensation, and in decompensation must be restored to maintain the circulatory balance.

3. In pulmonary tuberculosis the pulse pressure is low in advanced cases.

4. Hypotension with decreased pulse pressure is a bad omen in acute myocardial degeneration, a subsequent rise restoring the prognosis for immediate recovery.

5. When the systolic pressure is normal and the diastolic low, increased pulse pressure means peripheral relaxation or splanchnic dilatation.

6. When the systolic pressure is high, increased pulse pressure is normal, if the ratio is maintained. When the systolic pressure is very high, and the diastolic unusually low, giving a very large pulse pressure, the condition of complete heart block is suggested.

7. With low systolic pressure, increased pulse pressure occurs in one condition only, and that is aortic insufficiency.

8. With normal systolic pressure a gradually decreasing pulse pressure means the gradual onset of cardiac failure.

9. With low systolic pressure, decreased pulse pressure means general cardiac weakness, as seen in convalescence from long illness.

10. With high diastolic pressure a gradually falling pulse pressure means cardiac failure, as seen in the secondary low pressure of chronic nephritis.

11. With a high diastolic pressure and a moderate systolic pressure and the signs of cardiac decompensation, a rise in the systolic pressure is imperative to prevent failure.

12. With a high systolic, diastolic, and pulse pressure, arterial relaxants or vasodilators are imperative to relieve the symptoms of hyperplasia, i. e., hypertension, if symptoms manifest.

13. A rise of blood pressure is as surely a symptom demanding attention as a rise of temperature.

14. In the majority of cases of shock a rapid fall of the arterial pressure occurs, and this is the best sign of shock, and a danger signal which cannot be safely ignored.

15. To avoid postoperative collapse, which not infrequently happens, even though the patient seems in fair condition after an operation, a pressure reading should be taken before the patient is transferred to bed; for if the reading is much lower than that recorded before the operation, it indicates that the patient should be considered in danger of shock and therefore be very carefully watched.

16. The best anesthetic is that which maintains the pressure at or near the normal level, with the least variation during operation, and leaves the patient as free as possible from liability to shock. Nitrous oxide and oxygen are deemed the safest anesthetic, being practically nontoxic. (G. McCall Smith (19).) According to H. P. Fairlie (20), little alteration of blood pressure is produced by ether. It may cause a rise, it may maintain a constant level, or it may cause a fall. It causes more rapid and forceful cardiac action, with dilatation of the smaller vessels.

17. A high and rising blood pressure is an invariable and very often the earliest sign of toxemia in the latter half of pregnancy. A pressure of 160 millimetres systolic should always be considered highly suspicious and lead to careful and repeated observations. A further rise, if rapid and associated with marked headache and vomiting, should raise the question of terminating the pregnancy.

18. If in doubt whether a hemiplegia is due to

hemorrhage or thrombosis, in the former it is always high; in the latter it need not be and seldom is so.

19. Perforation in typhoid causes a rise, hemorrhage a fall in pressure.

20. A distinct indication for the application of these principles is in the early recognition of the rise of blood pressure in later life before any organic change has occurred in the arteries, and, therefore, while the case is amenable to treatment.

The subject of sphygmomanetry has opened the eyes of the scientific investigators to fields heretofore most obscure, and paved the way for their practical consideration.

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962 OCEAN AVENUE, BROOKLYN.

PHYSICAL MEASURES FOR TREATMENT OF ABNORMAL BLOOD PRESSURE.[*]

By WILLIAM T. JOHNSON, M. D.,
Philadelphia,
Instructor in Electrotherapeutics, University of Pennsylvania.

The treatment of abnormal blood pressure by physical means is of such recent origin and so wide a variety of procedures have been advocated, that the selection of measures for application in a given case is often a difficult task. This fact is readily appreciated if the intricate etiology that is frequently presented is recalled. It is the purpose of this paper to correlate certain broad rules relating to the treatment of accepted clinical entities, avoiding where possible any extensive discussion of tentative methods and the conflicting claims made for them.

According to Faught (1), normal blood pressure is maintained by circulatory mechanical factors, complex chemical changes, glandular secretions and the vasomotor mechanism. From a clinical standpoint he lists as factors involved in this regulation of pressure, energy of the heart, arterial tonus, volume of the blood, viscosity of the blood, and peripheral resistance in which might be included muscular tone. All of these factors may be affected, some of them profoundly, by various physical means; so that, granted a pressure fault accurately diagnosed, with rare exceptions some form or forms of physical treatment are definitely indicated. As practically all extensive pathological processes have a more or less definite abnormal pressure picture, we must here limit attention to the treatment of those conditions most commonly associated with abnormal pressures, or in which these pressures are responsible for a large share of the symptoms. The physical measures of service in altering abnormal pressure are: rest; exercise; massage; dietetics; hydrotherapy; electricity; Röntgen ray; venesection, and baking. Selections may be made from these for influence upon the pathological pressure, its cause, or both. Rest and dietetics are well understood and generally prescribed, and discussion of them here must be omitted beyond stating that their proper employment offers no contraindication to other appropriate physical treatments. Röntgenology occupies such a large place in diagnosis and therapeutics that its relation to this subject is at once seen, but cannot here be considered at length. It may give information about the size of the heart or liver, determine the presence or absence of visceroptosis, or demonstrate deposits affecting the bloodvessels. Whenever glandular hypersecretion is responsible for alterations in pressure, as in exophthalmic goitre, the Röntgen ray should be used for its marked inhibition of glandular activity. Properly graduated exercise is desirable in nearly all cases of abnormal tension to maintain or develop strength, to promote general functional activity, and to favor proper metabolism and elimination. The physician must prescribe exercises to meet the indications in each case, or he may make appropriate selections from one of several excellent systems of exercises that have been devised by competent workers in this field. Often the necessity of avoiding overexertion makes exercise produced by various electrical means the most appropriate. For this purpose the currents that cause contractions without discomfort are chosen, viz., the sinusoidal or static wave or static induced. During these treatments we have complete command of the situation; definite muscles or muscle groups are exercised; the rate and extent of the contractions are under accurate control; the condition of the patient is watched and the treatment stopped before untoward signs appear. With the patient at rest and limited portions of his musculature given work in this way, a highly satisfactory amount of exercise is secured with a minimum of fatigue. This method of procedure may supplant or augment massage. If massage is desired, a superior method of administration is vibrassage from an electrically driven vibratode. Space forbids descriptions of other forms of massage.

Before considering specific lines of treatment it will aid our grasp of the rationale of the use of electricity in diseases showing pressure changes to review some physical and metabolic effects of various electrical currents. The production of painless contractions has been mentioned. These contractions are not confined to voluntary muscle, but occur in all tissues capable of being contracted; so that with the wave current or sinusoidal current we can unload an engorged liver, promptly reducing its area of dullness, or stimulate the intestinal musculature, or relieve stasis and promote the absorption of exudates at various points.

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The D'Arsonval current is used in two ways: diathermically and for autocondensation. Autoconduction also employs this current, but it has been found to be inferior to autocondensation which gives the same effects in greater degree. Diathermy heats any selected region of the body, the heat being developed directly between the electrodes by the resistance of the tissues to the current. If deep heating effects are required, large currents are less effective than smaller ones applied longer and from varying angles. DeKraft (2) says: "When very strong currents are employed the reflexes are stimulated to such an extent, that all those functions which regulate heat in the body are activated"; and nature's attempt at regulation partly nullifies our efforts. Autocondensation causes warming of the whole body. Its ability to lower hypertension and its metabolic effects have been the subjects of vigorous debates, much of the confusion arising from improper selection of cases and the unskilled use of different types of apparatus. Undoubtedly better constitutional effects are produced with a thick dielectric and smaller amperages than with a thin dielectric and larger amperages. The latter give a greater sensation of heat and soon cause profuse perspiration, but the former more readily lower hypertension. That there are reasons for this may be indicated by the statement already made that the smaller currents give more internal heat; and doubtless the phenomenon of resonance also plays a part. Again quoting DeKraft: "The property of resonance plays an important part in high frequency work, and as we delve deeper into the subject and learn more of the effects of different applications, we will find the property of resonance bobbing up more and more. Each muscle, nerve, vessel, etc., of the body has a definite wave length, and to properly affect this particular part a wave of similar length or octave of that length must be used. This has been proven not only in physiology but in other branches of science. Resonance is one of the secrets of high frequency applications, and it seems to the committee that is the reason we get better results in some cases of similar conditions than in others."

The results of Matthew Steel's (3) studies of the influence of electricity in a normal man are briefly summarized:

Directional and autocondensation currents with thick dielectric.—Two treatments were given. Each treatment caused a fall in blood pressure of from four to ten mm. and a rise in pulse rate of from two to eight. The effect on the blood pressure was comparatively permanent. There was an average daily increase in the volume of urine of about 300 c.c., and an increase of from five to ten grams of total solids. During the after periods the total solids were still a few grams more than the amounts eliminated formerly, thereby showing that the improved cellular metabolism continued some days after the treatment had stopped.

Direct D'Arsonval and autocondensation currents with thin dielectric.—Here the thermic effects caused the volume of urine to be 385 c.c. less on the first day of treatment than during the fore periods. On the second day, although 300 extra c.c. of water were drunk, the quantity voided was still only 965 c.c., which was 235 c.c. less than the former daily average. In spite of the smaller volume of urine the amount of total solids increased two grams a day. This effect also persisted several days after treatment was stopped. For additional urinary findings reference must be made to Doctor Steel's report. Should the excessive surface evaporation noted in the treatment with the thin dielectric have the effect of increasing the viscosity of the blood, this would further explain the superior results obtained in hypertension by means of autocondensation with the thick dielectric.

HYPOTENSION.

Some conditions with which hypotension is associated, such as acute infections or advanced cachexias, are not a fruitful field for the routine employment of physical measures, other than hydrotherapy. In others much can be done. The underdeveloped individual with low pressure may advantageously be given massage, exercise from some electrical source, and have his metabolism aroused by the heating effects of the direct D'Arsonval current appropriately applied. Hypotension due to cardiac weakness is most often associated with myocardial degeneration, advanced arteriosclerosis or chronic nephritis. In cases of this type, diathermy so applied that the heart is warmed, relaxes the coronary arteries, thereby permitting better nutrition of the heart muscle. Elderly arteriosclerotics, feeling weak and dizzy with low pressure and often with abdominal distention, will have pressure elevated and pulse strengthened by diathermy through the abdomen, and will be relieved of many distressing symptoms.

Nagleschmidt says: "In angina pectoris it is most remarkable to see how patients in every grave condition recover immediately under the influence of diathermy. In a few seconds or minutes all trouble ceases; no oppression, no pain, no restlessness, no feeling of anguish. If we do not get a pronounced curative effect in angina pectoris, we may always suspect an aneurysm or grave myocarditis." As a result of a variety of toxic products generated in the body there may be irritation of vasoconstrictor or vasodilator nerves. Hypotension of toxic origin is relieved by autocondensation, as has been reported by DeKraft in the successful treatment of many cases of manic depressive psychosis. For securing these eliminative results the smaller currents are used, as moderate doses of high frequency currents have been shown not to influence normal blood pressure in healthy persons.

Abrams (4) says: "Empirically concussion or vibrassage over the spines of the sixth and seventh dorsal vertebræ will raise blood pressure." A low pressure may also be raised by the static bath, or the static effluve applied to the spine.

The condition known as splanchnic neurasthenia is especially amenable to physical treatment. Its direct cause is dilatation of the splanchnic vessels, usually associated with and induced by gastrointestinal disturbances. The pathognomonic findings are a reversal of the usual relations of blood pressure and pulse rate observed in sitting and recumbent positions, together with the cardiosplanchnic phenomena, in which there is resonance over the lower sternum with the patient standing and dullness when he is recumbent. A relaxed abdominal wall and enteroptosis are often found. There is usually distention of the liver. A wealth of additional symptoms may be classed as neurasthenic. This condition rapidly improves when the splanchnic congestion is relieved, and its cure is effected by correcting the cause. The liver engorgement and splanchnic distention will be reduced by the static wave or sinusoidal currents over the upper abdomen and vibrassage between the second and fifth dorsal vertebræ; the relaxed abdominal walls and sluggish digestive functions will be improved by the same electrical applications. Exercise, hydrotherapy, and a firm abdominal support are also valuable. Dr. A. B. Hirsh has reported a number of cures of this disease.

HYPERTENSION.

The greater number of abnormal pressure cases seen by the physician are those showing hypertension. Hypertension, rushing to fill the gap left by the departing "uric acid diathesis," aroused the profession to indiscriminate efforts to drag it down. The advocates of certain drugs or certain physical treatments zealously pressed their claims: but no specific appeared, and we now know that the best results are obtained by prescribing a combination of measures that have proved their value. The most marked changes with which high pressure is associated are found in arteries, heart, or kidneys. There is also a hypertension of elusive etiology in which no degenerative changes are discoverable. Toxemias, probably of varying kinds, are doubtless the primary cause in all these classes, vasoconstricting substances of obscure nature being present in the blood. The accommodating power of the cardiovascular system makes it possible for considerable vascular changes to occur before the damage is reflected in the pressure; on the other hand, at times high pressure seems to precede pathological changes. Many hypertensions are considered to be compensatory and hence their alteration is deemed undesirable. This is true provided the pressure is at the lowest compensating point, which can usually be determined only by judicious treatment. There are two horns to the compensating dilemma, and the heart may be compensating the peripheral resistance as well as the latter doing all the compensating. Faught says: "A safe rule is to watch the patient, study the effect of pressure changes upon him, and cease all measures that fail to produce benefits."

It is evident that the object of attack must be the toxemia, and equally clear that elimination is indicated. The general principles outlined and the physical measures mentioned must be applied to each case, the known metabolic effects of the procedures selected acting as a guide. The hypertension of undiscovered etiology is lowered by autocondensation. At the same time proper liver and bowel function should be aided by using the static wave or static induced or the sinusoidal current over liver and abdomen. Warm baths gradually cooled, proper diet, and exercise should also be prescribed to meet individual requirements. The high pressure that is cardiac will be improved by mild diathermy to the heart, which increases its nutrition and tone, and during treatment does not appreciably affect the pressure. Here autocondensation should be given the therapeutic test.

When arteriosclerosis exists we should also apply the therapeutic test of autocondensation. The increased metabolism thus induced favors resorption of unorganized exudates, and the physiological fever here, as in other types of high pressure, assists nature in combating the cause. Functional intraabdominal faults are corrected by appropriate electrical means. The nephritic cases are the ones in which we especially must be on our guard to avoid reduction of pressure below the compensation point. Here diathermy to the kidneys improves their functional capacity and autocondensation usually lowers the pressure. The treatment of nephritis by physical means has been a storm centre of discussion. The statements of cure have usually been received with derision by the medical profession. And yet the possibility of cure in early cases must be admitted if we accept the view recently expressed by Dr. Alfred Stengle (5), who says: "Chronic nephritis is not at all a chronic disease in the sense that it is a process which, once initiated, through the impetus originally given goes on and on as a progressive malady. There is required a repetition of stimuli or of assault similar to or the same as the original one. There is evidence to show the relation of nephritis to infections, and the probability that repeated reinfections occasion a gradually increasing involvement of the kidneys. We have clinical evidence to show that removal of foci of infections is sometimes followed by an arrest of the disease, or if the condition is not too far advanced, complete disappearance of symptoms." Dr. William Benham Snow says that autocondensation is contraindicated in parenchymatous nephritis, but as Dieulafoy's mixed nephritis is probably the most common form, it would seem safe to be guided by the therapeutic test.

Constipation is doubtless the source of supply for many toxins responsible for initiating hypertension, especially before any vicious circles are established. If it is present it should be corrected by the static wave or static induced or sinusoidal currents applied to the abdomen and liver. Other exercises, proper diet, and a requisite amount of water are also desirable. The fear of permitting some patients with hypertension to drink more than a small quantity of water is often expressed. If we recall the results from autocondensation with a thin dielectric, and the amount of liquid loaded with metabolic products that may be removed from the tissues in this way, it is evident that autocondensation and baking are especially indicated in such cases and give results greatly superior to those produced by the withholding of water. Autocondensation has been opposed on the theory that it stirs up metabolism and frees toxins without at the same time proportionately increasing elimination. If we possessed no other eliminative measure and elimination was being maintained to its full capacity, this would be a just criticism. To avoid this danger many physicians follow autocondensation with baking, and claim superior results from this combination of procedures.

In attempting to cover so large a field it has been impossible to accord deserved consideration to all methods. The omissions are largely of those treatments most widely accepted and practised, which would therefore be less profitably discussed at the present time. Today physical treatments are being administered on sound principles. Their value in aiding the control of conditions responsible for abnormal blood pressure is firmly established. The selection or rejection of these measures should not be the prerogative of those unfamiliar with their proved effects, nor should they be administered in the haphazard fashion that is a guarantee of inefficiency. With few exceptions the pressure cases are inadequately treated when physical therapeutics is neglected.

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4729 BALTIMORE AVENUE.

SEASICKNESS AND INTERNAL EAR STIMULATION.

Clinical Observations Explaining the Mode of Onset of Symptoms with Treatment.

By LEWIS FISHER, M. D.,
Philadelphia.

In conducting a large number of examinations of the vestibular apparatus in the Ear Department of the Hospital of the University of Pennsylvania, a number of individuals were encountered who were made "seasick" by the tests. The cause for the appearance of the unpleasant symptoms engaged our attention as a matter of course, and many observations were made in the hope that some light might be thrown on this obscure symptom complex. The true etiology of *mal de mer* was a subject of endless speculation, and it was not until the last decade that it came to be recognized that the immediate cause of seasickness was the movement of the endolymph within the internal ear. The history of this malady dates as far back as man's first attempts to brave the dangers of the sea. It is difficult to understand why the ease with which one succumbs to seasickness should always have been a subject of ridicule, but the fact is that the literature of all nations abounds with jibes and jests about the sufferer from *mal de mer*. Those who have been sufferers, however, can state with assurance that it is distinctly a serious matter, deserving as much sympathetic consideration as any other distressing ailment. The medical profession, appealed to from time immemorial by a suffering traveling public, could afford no relief. It is no wonder, then, that even today thousands of people would not think of going to sea without protecting themselves, as they suppose, with some remedy suggested by a friend who has considered it useful, such as a belladonna plaster on the chest, a sheet of foolscap paper, or perhaps some application over the abdomen. A perusal of the medical literature on the subject, which is enormous, shows that every drug in the pharmacopœia has been considered useful; this of itself signifies that nothing really useful has been discovered.

Without a knowledge of the true etiology of this condition, the only treatment that appeared at all rational was naturally the symptomatic; since nausea and vomiting are the most evident and predominant symptoms, everything centered about remedies which were supposed to relieve them. It is of course easy to account for the gastric theory of the causation of this malady; nausea and vomiting naturally suggested a "bad stomach." This theory, however, has come to be disregarded. Any observing clinician could no more ascribe the nausea and vomiting of *mal de mer* to a gastric affection than he could ascribe the nausea and vomiting associated with brain tumor or meningitis to a disturbance of the stomach.

The optic theory was in vogue for a considerable time and had many adherents. According to this explanation, individuals were seasick because of the ever changing images on the line of the horizon as well as of the ever changing level of the water. The fact that the administration of atropine seems to be helpful at times appeared to lend considerable credence to this view. For a while atropine blinded individuals, wearing violet tinted glasses, were quite numerous aboard every ocean bound vessel. The fact, however, that seasickness did not spare individuals who were asleep in their darkened berths soon furnished an insuperable obstacle to the correctness of this theory, and it soon lost its hold upon the traveling public. In this manner theory followed upon theory and "cure" upon "cure." Vasomotor stimulants and vasomotor depressants, nerve excitants and nerve sedatives, gastric digestants and local anesthetics—all have been tried only to be eventually discarded.

The discovery of the true etiology of seasickness appeared when the physiology of the kinetic static labyrinth and the phenomena attendant upon its stimulation became known. Many authors, among them Neumann, Bárány, Ruttin, Spira, Champeaux, Trotsenburg, Minor, Savory, and Barnett, have written excellent scientific treatises on this subject, so that it is rather surprising that a knowledge of the etiology of this condition is not universal; but as Bárány very clearly points out, the present chaotic views among not only the laity, but even the medical profession in regard to the nature and causation of seasickness must be ascribed to the undeniable fact that the mechanism of the internal ear is not yet generally understood and appreciated.

It is now universally agreed that the symptoms of *mal de mer* are brought on by the movements of the ship; in other words, rather by the movements of the patient's body caused by the movements of the ship. On this point opinion seems unanimous. Great difficulty was encountered when any attempt was made to explain how the ship's movements induced seasickness. Any one who has had experience in testing the vestibular portion of the internal ear could not but be impressed by the similarity of the symptoms that make their appearance in individuals who have been turned in a revolving chair to those of *mal de mer*. To be sure, here the identical cause, movement of the body, is operating. In the one instance the movement is produced by the tossing of the ship; in the other it is produced by the individual's being revolved in a chair. It is generally accepted that the phenomena resulting from being turned in a chair are the result of stimulation of hair cells in the semicircular canals brought on by movement of the lymph within those canals. At the outset, therefore, it is fair to assume that those vague spymptoms known as *mal de mer* are produced in the same way. Furthermore, if this assumption be correct, any agency which induces movement of the lymph within the semicircular canals should produce the same symptoms. Clinical experience tells us that this is true; lymph movement within the semicircular canal produced by douching the ear with either cold or hot water produces the same train of phenomena. Chilling the outer portion of the capsule of the internal ear by irrigating the ear with cold water causes a downward flow of the endolymph, whereas hot water causes the endolymph to rise. Prolonged douching with either cold or hot water invariably causes a normal individual to be violently seasick.

Very few individuals are exempt from seasickness; women are more susceptible than men, little children are very little affected, and infants are immune. It is striking to note that artificial stimulation of the internal ear either by turning or douching produces a more marked effect in women than in men, very little effect in little children, and no effect in infants. We have never seen vomiting result from douching an infant's ear, no matter how long the douching was continued. The violence of response to the movement of the lymph within the internal ear, whether due to the tossing of the ship or to turning and douching, is in direct proportion to the degree of activity of this organ. The vestibular mechanism of an infant is not yet fully developed, and it is for this reason that the infant is immune to seasickness.

Further analogies between the movement of the ship and the result of artificial stimulation of the ear are brought out by Bárány. In both instances the symptoms subside with the removal of the cause, the docking of the ship in the one case and a cessation of labyrinthine stimulation in the other. Alteration of the position of the head affects the intensity of the symptoms in both instances. Nervous or highstrung individuals are more susceptible in both instances. Individuals acquire a tolerance to the movement of the ship so that they gradually lose their susceptibility to seasickness; in the same way a tolerance is induced for the tests of the internal ear by repeating them a number of times. An individual who cannot be nauseated by repeated examinations of the vestibular apparatus cannot be made seasick. This fact has been repeatedly borne out in our experience. Furthermore, if a certain plane of movement of the ship affects an individual more than any other, it will be found that the particular form of vestibular stimulation which imitates the same movement will also affect the individual more than a movement in any other plane.

Any physician who has been violently seasick and has experienced the sense of utter annihilation, with violent nausea and vomiting, diarrhea, and perspiration, immediately recognizes that these symptoms are identical with phenomena seen in cases of pathological conditions of the internal ear such as the various forms of labyrinthitis—the so called "Meniere's disease." Here, then, we have clinical evidence of the similarity between seasickness and an internal ear disturbance. All these points of resemblance seem to point to *mal de mer* as being unquestionably an ear phenomenon. This is finally and definitely proved by the observations of James and Kreidl. The former noted that deaf mutes could not be made seasick under any circumstances. With this in mind, Kreidl experimented upon animals which he rocked or revolved upon a platform until they became seasick. He afterward operated upon these animals and severed the eighth nerve. After they had recovered, he repeated the same experiments, but was unable to make them vomit even by the most violent movements.

Seasickness, therefore, is an ear phenomenon. While movement of the lymph in the internal ear is the underlying cause of seasickness, nevertheless it is selfevident that the most prominent symptoms, namely, nausea and vomiting, are not ear manifestations, but rather nervous on the one hand and gastric on the other, nausea being produced by a disturbance of the central nervous system and the propulsive vomiting by a contraction of the diaphragm and the stomach. In attempting to explain how these occur it is well to recall a few salient features concerning the physiology of the internal ear mechanism. The equilibratory end organ consists of two tiny sacs, the sacule and utricle, and three minute tubes, the semicircular canals; these sacs and tubes are designed to take cognizance of every conceivable movement of the body. There are two of these organs, one on each side of the head, each one continually sending out a flow of tonic impulses to various parts of the central nervous system and also to the musculature of the entire body. Movement of the lymph in these sacs or tubes in one direction stimulates one group of hair cells, producing certain phenomena; movement in an opposite direction affects different hair cells in the end organ and results in different phenomena. This is made possible because of different nerve pathways connecting the different hair cells with individual and separate central nuclei. Some of these nerve paths have been actually traced from the ear to the various nuclei in the brain stem and cerebellum. Ordinary movements of the body produce relatively different movements of the endolymph in the semicircular canals on both sides, but there is no confusion because the brain, through countless repetitions, has learned to interpret the significance of all these movements. Experiments made on individuals in turning chairs, swings, or in rapidly moving elevators show that a continuous definite stimulation of one or more semicircular canals, produced by an uninterrupted flow of endolymph, is usually unaccompanied by any unpleasantness; disturbances occur as soon as there are reversals of the relation between the moving endolymph and the hair cells, such as occur when there are repeated cessations in the stimulation, especially if such stops and starts are carried out in quick succession. The same is true when the endolymph is set in motion by douching the ear. If the right ear, with the head back, is douched with cold water, a current is created in a downward direction to the right; if the head is then quickly put 120° forward, the current of the endolymph is reversed to the left. Putting the head back again again reverses the current. Now, an individual may not be at all affected by having his ear douched, provided it remains in one position as long as the stimulation lasts. If, however, the position of the head is changed a number of times, the symptoms of seasickness invariably appear. On board a vessel we unfortunately have such a state of affairs in which the complexity of movement is forever changing the direction of the endolymph current in the semicircular canals, creating havoc with the nerve centres. The state of brain confusion and lack of interpretation of these impulses does not last forever, and after a varying length of time, longer with some individuals and shorter with others, a readjustment occurs. The brain learns the meaning of all these stimuli, and an immunity from seasickness results. Such an immunity is not permanent and consists only of an exemption from the malady under conditions similar to those to which the individual had become accustomed; one may become immune to seasickness when aboard a large vessel sailing on the ocean, and yet when embarking on a smaller ship, on a land locked sea, the movements he is then subjected to are quite different from those to which he had become accustomed, and seasickness may again result.

The mechanism of vomiting consists chiefly of motor impulses through the vagus and phrenic nerves. Nausea is an entirely different phenomenon, and consists of a cerebral interpretation of unusual stimuli. Cumulative nausea may produce vomiting by a motor impulse from the cerebral cortex to the nuclei of the vagus and phrenic nerves. This is apparently the usual sequence seen in seasickness. An attack almost always begins with a vague unpleasantness which gradually develops into a nausea which increases in severity little by little until suddenly projectile vomiting occurs as the result apparently of the cumulative nausea. At first glance it would appear that the vomiting is necessarily the result of cerebral impulses; six clinical cases in our experience, however, show that cerebral impulses are not necessary for the stimulation of the vagus and phrenic nuclei, but that along the ear pathways alone stimuli may produce projectile vomiting entirely disassociated with any cerebral phenomena. In these six cases because of lesions high up in the brain stem, stimulation of the ears failed to produce the normal responses; prolonged stimulation produced no nystagmus, no vertigo, no pastpointing and no falling; there was no nausea, and all six patients in fact asserted that they did not in any way "feel different," and yet suddenly violent projectile vomiting occurred. This phenomenon makes it evident that there is a lower direct reflex pathway between the semicircular canals and the nuclei of the vagus and phrenic nerves. It is very easy to conceive the probable course of these pathways. Certain vestibular fibres are known to enter the posterior longitudinal bundle, which in turn is directly connected with the vagus nucleus; this is the probable anatomical pathway from the ear to the tenth nucleus. Other vestibular fibres after entering the medulla oblongata are known to descend to the motor cells of the anterior horns of the spinal cord; the phrenic nerve has its origin in the cells of the anterior horns of the spinal cord at the location of the second, third, and fourth cervical vertebræ. It is very easy to see, therefore, how impulses from the ear may travel directly to the phrenic nerve. It must of course be recognized that there are many associated and predisposing factors in the production of seasickness apart from the actual movement of the endolymph within the semicircular canals. Impressions received through other special senses may play a certain part. It is a fact of common knowledge that the presence of certain odors exert a definite influence in increasing the nausea. Many individuals feel that they could have weathered a trip in fair comfort if it had not been for certain odors, such as the smell of food, particularly "greasy" food such as pork, fat, or the so called "ship's odors." In a similar way visual impressions of the movement of the waves or of the line of the horizon, or the mere sight of other people suffering from seasickness or looking at the vomitus from another sufferer, may bring on an attack. These olfactory and visual impulses are as a rule the last straw in breaking down the cerebral attempt to keep from vomiting by increasing the nausea through the unpleasant odors or visual impressions. Cases are known, however, in which the mere sight of a ship at her moorings has brought on nausea and vomiting. Mere fear of the malady itself is at times a very potent factor; such a psychic state no doubt increases the irritability of the nervous mechanism. The essential mechanism of seasickness, however, is that movement of the endolymph within the internal ears produces nausea by means of impulses from the ears to the cerebral cortex, and produces vomiting not only as a secondary response to the nausea through cerebral impulses to the vagus and phrenic nerves, but also by direct impulses from the ears to the nerves whose hyperactivity produces the actual vomiting.

PREVENTION AND TREATMENT OF SEASICKNESS.

This much discussed subject is in one sense the most unique in the whole field of therapeutics in that we are dealing with a sickness which is not a sickness in the true sense of the word. It is a normal reaction in a normal mechanism. Seasickness is of course a misnomer; it is in no sense pathological and is not due to "what I had for breakfast" or because "I am in such a rundown condition." Such states, to be sure, may produce a nervous irritability which would predispose the individual to seasickness; but the fundamental cause itself—varied movements of the endolymph and inability of the brain either to interpret or disregard them—is purely physiological. Here lies the difficulty in prevention and treatment. It is obviously impossible to prevent the movement of the endolymph. We are confronted with this physiological phenomenon resulting from an extraordinary stimulation in a normal organ by perfectly physiological means. With the removal of this stimulation in fact the indisposition promptly disappears. The fact remains, however, that the symptoms are most distressing, and any means toward their amelioration should receive careful thought.

With the true etiology of the condition in mind, the problem presented is to find means of lessening the irritability of the end organs within the labyrinth, the conducting nerve paths, or the nuclei of the vagus and phrenic nerves. If there were, to be sure, some specific drug that could temporarily abolish the function of the internal ear or eighth nerve, seasickness would be completely "cured"; unfortunately the pharmacopœia has no drug with such a selective action, and even if there were such a drug, the individual would necessarily be stone deaf throughout the voyage. We are compelled to rely on the cautious administration of those remedies which lessen general nervous irritability and in this way also influence the nervous mechanism in question. The bromides are the most valuable of all remedies for the prevention and amelioration of seasickness. The ammonium, strontium, sodium, and potassium salts singly or in combination may be employed; strontium salts are preferable, as they are the least irritating to the stomach. It should be administered in moderate doses, such as fifteen grains three times daily, beginning one week prior to the sailing and continued throughout the entire voyage. Other nerve sedatives, especially the derivatives of opium, are also of distinct value. In a general way it may be said that all measures directed toward the elimination of nervousness, fear, and conditions conducive to lowering the vitality generally, would in a measure tend to prevent seasickness. The gastrointestinal tract should be put in the best possible condition. A brisk cathartic on the day before sailing and a very light assimilable diet prior to starting on the voyage will be found helpful. Various digestants may be prescribed and have appeared to have a beneficial influence in certain cases, but it must be recognized that they are useful only in so far as they aid in putting the gastrointestinal tract in as normal condition as possible. Swinging beds or chairs have been suggested and have been tried out, but with apparently no satisfactory result. If they were mechanically feasible, such contrivances would rob the sea of all its terrors; but when we remember the complexity of movement to which a ship is subjected, we can readily see how any swinging chair or bed to eliminate them all is an utter impossibility.

The only really effective means of preventing seasickness is to get the individual accustomed to the extraordinary labyrinthine stimulation. The sailor and seasoned traveler accomplish this by the many repetitions to which they subject themselves in their travels. We know, however, that it is not necessary to go out to sea in order to obtain the phenomena of labyrinthine stimulation. This can be easily accomplished in the turning chair and with the advantage that the amount of violence of such stimulation is under the perfect control of the doctor. An actual attack of seasickness need never be brought on; the individual can either be rotated or rocked, or have the ears douched up to the limit of toleration and the stimulation may be discontinued with the first sign of discomfort. Although such a "treatment" is more of academic than practical interest, it is perfectly possible to accustom an individual to increasing "doses" of ear stimulation, and in this way to cause the individual to develop a gradually increasing tolerance. Such experimental stimulation should enable an individual to go aboard a ship for the first time practically a seasoned sailor. This theory has been borne out in our clinical experience in that repeated stimulation of the ears in the same individual has invariably shown an increasing tolerance. Before a person goes on a voyage it is very simple by means of the turning and douching tests to determine whether or not he will be subject to seasickness; if repeated turnings with the head in different positions fails to produce unpleasant sensations of vertigo or nausea, the individual may be assured that he has nothing to fear from the movement of the waves. If on the other hand the turning tests prove disagreeable, the individual is very apt to become seasick during the proposed voyage. In other words, it is a very simple matter to determine the degree of function and stability of the vestibular apparatus in any given person. If the patient shows a high degree of irritability in the responses to the tests of the turning chair, he is then forewarned and may then be forearmed by appropriate medication before starting on the voyage.

The treatment of an actual attack of *mal de mer* resolves itself into the symptomatic treatment of the phenomena that present themselves at the time. The vomiting and retching are not only extremely distressing but may even result fatally from hemorrhage, especially in cases in which there is present a pathological condition of the stomach. Although lavage is distinctly helpful, it is well to remember that a stomach tube is not very safe in cases of violent seasickness, as the slightest abrasion of the gastric mucosa may be attended with serious consequences. The same result can be accomplished by the administration of copious draughts of some alkaline solution such as bicarbonate of soda or of a solution of salt and water. This washing of the stomach by drinking the baking soda or salt solution helps to dissolve the ropy mucus within the stomach and also tends to relieve the retching. If the retching is very violent and shows no tendency to abate, by far the best remedy is a hypodermic injection of morphine, one sixth of a grain, to be repeated if necessary. The character of the "sea" prevailing at the time should be studied and the patient placed so that the horizontal semicircular canals are the ones most affected, because stimulation of those canals is the least unpleasant. The recumbent posture in the open air should be advised if possible.

In treating the collapse which is usually felt after an attack, strychnine, or atropine, administered preferably by hypodermic injection, the latter in doses of 0.005 grain, is at times helpful. As a depressor of sensory nerves all over the body and particularly in the intestinal tracts, atropine helps to eliminate an important secondary source of distress. In addition to this the stimulating action of atropine on the medullary centres is a great aid in regulating the circulatory disturbances incidental to seasickness. Alcohol produces a temporary cerebral exhilaration so that for the time being the individual "feels better"; but it is well to bear in mind that alcohol unquestionably increases the irritability of the nervous system, and this is the very thing to avoid.

1007 SPRUCE STREET.

RHEUMATISM.*

The Nomenclatural Bogy of Modern Medicine.

BY HENRY K. CRAIG, M. D.,
Washington, D. C.

In the study of medical polemics the writer who departs from established principles invariably encounters vigorous opposition. With a veneration for antiquity not to be shaken by the promulgation of new ideas, the antiquary views the work of the iconoclast with unqualified disapprobation. The more deeply rooted the error may be, the more difficult will be its refutation. For centuries the ancients held in special veneration the fable of the ring of Gyges, the ring, according to the legend, having the power of rendering the wearer invisible. Rude philosophers, heeding not the tender feelings of the dreaming antiquaries, shattered the pretty story, for they had found out that there never was any such ring. As witnessed in the ancient writings, in the patriarchial traditions, the histories, the poems, the prophecies, and the personal narratives, man's creative fancy blended the theories of disease into a wonderful mosaic and in the hands of the patriarch, the lawgiver, the prophet, and the priest, the fantastic conceptions were clothed with the sanctity of the law and the gospel.

While it was but natural that the mythological conceptions of the ancients regarding disease should contain all that was well fitted to gratify the vulgar appetite for the marvelous, it is a melancholy fact that in some of the modern notions that have gained currency regarding morbid states of the human body there is everything that is needed to minister to the speculative wants of those who delight in having the senses fooled by the imagination, while at the same time, they fairly revel in those wild abstractions which are associated only with noxious and abject superstitions. In the field of romance the medical profession has long maintained a peculiar position. In no department of medicine is the work of the iconoclast more needed than in that reformation which shall sweep from the lexicon a host of meaningless names. There is, indeed, a feeling among the members of the medical profession that medical nomenclature, as it exists today, too often expresses so many weird conceptions, conceptions fully as weird as those with which the ancient mystics, and indeed some of the confessed disciples of twentieth century transcendentalism, loved to fill the infinite and unknown regions of the great beyond. For in moments of exuberant fancy, mankind has ever loved to contemplate disease through the medium of mysticism.

Of all the words in the verbal armamentarium of the physician, none is more deserving of condemnation than the term "rheumatism"—a term which upon a superficial examination, will be found to express nothing more than the shadowy conceits of the ancient clinicians. Almost without exception in the ancient systems of classification there is a uniform and at the same time a natural omission, that of the morbid processes and alterations which in reality constitute the disease. It is this very omission which renders the specific definition of these diseases radically defective and utterly inadequate. A clear and comprehensive enumeration of the important elements of a disease is absolutely essential in determining its nosology, and a clear and comprehensive understanding of the important elements constituting the disease known as "rheumatism" was something that the ancient physicians did not possess. The term "scrofula," from the Greek meaning hog, conveyed to the Greeks and Romans the notion of a swollen neck and diminished prominence of the chin, but at the present day science demands something more clearly expressive of the nature of the disease than is found in a word expressive only of a porcine physiognomy. Sylvius believed in the existence in the lungs of certain invisible glands which under certain conditions enlarged and suppurated—the theory of phthisis as known to the Hippocratic school. But can modern medicine countenance a nosology for tuberculous diseases in which a rigid generalization of the ascertained phenomena of tuberculous diseases is entirely left out of consideration? To the physician of two thousand years ago the term "rheumatism" was pregnant with meaning. To Hippocrates and Galen, the word fulfilled every requirement.

The time was not long since when the peripatetic philosophers strolled leisurely through the academic groves and talked much about "evil spirits" and "acrid humors" in the causation of disease, while it was left for a later generation to recount the misfortunes of poor old Job who, smitten by a hand from Plutonian shades, was covered with sores "from the sole of his foot to his crown." Their contemporaries also paid willing tribute to crafty men who propagated stories of miraculous cures at the hands of persons supposedly possessed of supernatural powers. Thoroughly imbued with the spirit of mysticism, they succumbed to the teachings of the humoral school, regarded the arteries as tubes filled with air, and, assuming that under certain conditions blood found its way into them, passed the latter conception along as a fairly decent theory of inflammation. To the older writers on medicine, the affection of the joints known as "rheumatism" was no stranger; the medical writers of the olden times, however, were well schooled in the philosophy of the purest mysticism. They believed in the doctrine of "acrid humors" generated in the brain and their defluxion to various parts of the body. The physicians of antiquity learned from the writings of Hippocrates and Galen, from the teaching of Aurelianus and Alexander of Tralles, that gout and rheumatism were but varied manifestations of the same humoral vice, and furthermore, that the acceptance of this doctrine was incumbent upon all who proclaimed allegiance to the tenets of orthodox medical practice.

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To the ancient physician, therefore, the disease at present known as rheumatism derived its name from the Greek word *rheuma,* meaning "to flow," and in the clinical sense, represented the defluxion from the brain into the joints of a mysterious humor. Of the definite structural alterations in connection with the disease they of course knew nothing; for at this time, medicine aspired to little more, as regards the great majority of diseases, than a symptomatic conception intermingled with a veritable riot of speculative propositions. That the medical philosophy of antiquity should present such a chaotic condition is not, in the light of history, a matter for surprise. Any human being was at liberty to frame for himself what seemed to him the most plausible explanation of a given disease and, in the philosopher's rôle, expound to the eager multitude his dream hour conceptions. In fact the giddy disciple of extravagant conjecture might stay the search for the philosopher's stone or for the Grand Arcanum, proclaim a new doctrine of inflammation, and in the moment of delightful reverie, drain the bloodvessels, starve the system, and drench the body with poisons whose malign effects outweighed the accumulated evils which fell from Pandora's box. In the light of modern teaching it is evident that the ancient physicians, in the attempted classification of disease, fell into the radical error of constructing a system in which the determining element was either a mythological creation or a few clinical similarities or dissimilarities. Frequently the striking symptom was made the standard of classification and was in effect a symptomatic nosology. The morbid processes and alterations which in fact constitute the disease itself, were of necessity no part of the system. This omission, among others, renders the term "rheumatism" fatally defective, for as far as the "acrid humor" and its defluxion, together with the fluid in the joints, are concerned, the term is equally applicable to acute hydrocephalus and pleurisy with effusion. Unquestionably many of these meaningless names are of particular value to the public, though the impression conveyed to the layman is invariably tinctured with the workings of a lively imagination. A scientific writer should have a clear and comprehensive idea of a subject if he hopes to make a clear and comprehensive impression on the public. If the words employed convey but feeble and indistinct ideas, the subject is of necessity sadly confused. Clearness and strength, either in writing or in verbal discourse, require precision in the use of terms; without it clearness and strength are impossible.

For centuries after the time of Galen and Hippocrates, rheumatism and gout were regarded as one and the same disease. To the genius of Sydenham is the profession indebted for the earliest practical recognition of the essential clinical differences between the diseases in question, for to Sydenham's inquisitive mind with its far reaching powers of analysis and generalization, the tophaceous deposits of gout were in themselves sufficient to separate gout from rheumatism. Ballonius employed the term to denote vague pains in the external parts. And with this humoral vice was associated the idea of catching cold, so that the causal element of chill is foremost in the public mind, and sad to relate, occupies entirely too prominent a place in the speculations of medical men. A theory of disturbed nervous innervation has ever hung like a pall over the etiological speculations concerning a large number of diseases; acute articular rheumatism is in that list. One comparatively modern theory, however, demands attention—the lactic acid theory. Lactic acid, a product of tissue metamorphosis, is an unstable compound which is readily changed into carbonic acid and water, and as such is eliminated from the system by the lungs and skin. Its presence in the system in large amount may be due to increased formation, defective elimination, or both. During exercise it is formed in large quantities in the muscles and under normal conditions is eliminated from the body in manner previously noted by the lungs and skin. Upon chilling of the body, the action of the skin is checked, elimination decreased with a resultant accumulation of the acid in the system, and, according to the ingenious theory of the production of the disease called acute articular rheumatism. This theory, in which one of the symptomatic features of the disease is raised from a subordinate position to one of the first rank, presented to the rational school of therapeutists a supposedly specific line of treatment—the alkaline treatment. If recent bacteriological discoveries bear even the semblance of verity, the present generation is able to see that the rational school of therapists was irrationally treating a symptom rather than the morbid process, which in reality constitutes the disease or its real etiological factor.

As the result of the persevering efforts of bacteriologists, a vast amount of literature has accumulated regarding the bacteriological findings in the various forms of arthritis. That their work has served a distinctly useful purpose is not to be denied. The findings of pneumococci and other microorganisms in the joints as the result of secondary infection from a primary focus, though it in no way establishes the bacteriological etiology of the disease known as acute articular rheumatism, enables us to grasp in a thorough and comprehensive manner an intimate, even an absolute rather than an approximate, idea of joint affections. Prior to a scientific classification of diseases of the joints, even at the hands of the most methodical nosologist, something approximating an absolute knowledge of the nature of the diseases is absolutely indispensable. Among the first to publish bacteriological findings in cases of frank articular rheumatism were Babes and Guttman. These observers found bacilli and small cocci in the fluid of the joints, but unfortunately the discoveries were in each instance invalidated by the autopsy findings. In Babes's case an abscess, and in Guttman's case a primary osteomyelitis of the femur rendered the work valueless.

Mantle in 1887 presented more positive findings.

In the fluid aspirated from the joint in a case of acute articular rheumatism he found cocci singly and in pairs, while at the same time cover glass preparations from the blood gave identical results. Popow in the same year obtained micrococci as the result of cultural examination of the blood. Inoculation experiments on rabbits caused "acute articular rheumatism with pericarditis and endocarditis," while Lion confirmed the work of Popow by recording similar findings in the articular fluid, pleural effusion, and heart's blood in a case of acute articular rheumatism. In 1900 appeared the work of Westphal, Malkoff, and Wassermann. At autopsy on a case dead of acute rheumatism, they recovered from the affected tissues and from the blood, diplococci which retained their pathogenic effects for a period of four months. During this time, eighty animals were inoculated and the result was multiple joint inflammation. The remarkable predilection of the joints was noted. The opened joints revealed a fluid characteristic in every way of that found in cases of human infection. Each new series of animals when inoculated with cultures from a previous series manifested all the symptoms of multiple joint infection. In the splendid achievements of Poynton and Paine, of London, is seen evidence strongly confirmatory of the work of Malkoff, Westphal, and Wassermann. After reviewing the literature of the bacteriology of acute rheumatism, they made a detailed report of their work on human cases and appended thereto the results of their experimental work on animals. In a series of eight consecutive human cases, they discovered diplococci which grew best on artificial medium rendered slightly acid with lactic acid! Not only did these observers find the diplococci in pure culture during the life of rheumatic patients, but they found post mortem the same microorganisms in the pericardial fluid, heart valves, and throat. In two instances diplococci were recovered from pericardial fluid of a distinctly acid reaction.

In the published record of the experimental work of Poynton and Paine are to be found some facts which command close attention. A rabbit was inoculated with pericardial fluid obtained from a fatal case of rheumatism. Three days later there was a marked swelling of joints and loss of flesh and strength, and death occurred on the tenth day. Autopsy revealed an excessive amount of turbid fluid in the joints affected and in the pericardium. By direct examination and culture, the same diplococci were found in the articular fluid and in the tissues of the mitral valve. A second rabbit received intravenous injections of a culture from the articular fluid of the first rabbit. The result was multiple joint involvement and at the end of seventeen days a systolic murmur at the base of the heart. In two days the murmur disappeared and with it the heart sounds—pericarditis with effusion. The autopsy revealed a large amount of fluid and a fibrinous coagulum in the pericardial cavity, and in the fluid from the affected joints were found the diplococci. Again, animal inoculation gave results which should enable even the doubting Thomas to see the handwriting on the wall. In four days articular swelling was marked and a soft murmur regarded as of mitral origin appeared. The autopsy findings presented an excess of articular and pericardial fluid together with marked lesions of the mitral and tricuspid valves; and last, but by no means least, diplococci were recovered from the articular fluid and the kidney. To insure the validity of their bacteriological and pathological work, Poynton and Paine inoculated another animal with diplococci obtained from a previous animal, and at the autopsy they discovered all the lesions found in a human case and found the diplococci in the usual situations. With diplococci obtained from a second human patient, animal inoculation served but to confirm the validity of the previous experimental procedures. Now diplococci were obtained from the throat of a patient, isolated, and injected in pure culture into a rabbit. At autopsy in addition to the usual findings the diplococci were recovered from the cerebrospinal fluid. With bacteriological findings from eight fatal cases of rheumatism, the same experiments were repeated with the same results. Modesty marks the claims of these brilliant workers and while admitting the possibility of other microorganisms as etiological factors in acute rheumatism, they express the belief that the future may demonstrate the fact that the microorganism which, as the result of their indefatigable efforts, has been shown to be entitled to consideration as more than an interesting incidence in the course of the disease and may be the cause of that long misunderstood clinical entity known as "acute articular rheumatism." And perhaps it is not amiss to record their opinion that the repeated finding of this diplococcus in kidney and urine warrants the surmise that this microorganism may be the causal factor in the frequently observed acute nephritis of childhood. The part played by cold in the production of various diseases is a question that has ever occupied a prominent place in the speculations of medical men. That low temperature is at best little more than a predisposing factor is the generally accepted view at the present day.

The legends of rheumatic fever without a few lofty conjectures anent the direct influence of cold in producing the morbid phenomena, would indeed make strange reading. In fact, there is hardly a morbid process in any tissue in the human body the history of which fails to bear out this contention; like Banquo's ghost, that awful spectre will not down. The year 1913, in which appeared the work of Rosenow on the bacteriology of rheumatism, is to be remembered as the date on which the fanciful speculations on the relationship of cold to the production of acute rheumatism were given their quietus and the point at issue subjected to the stern discipline of more positive ideas. Animals inoculated with pneumococci, streptococci, and cocci obtained from a case of rheumatism were kept at a low temperature in order to determine, if possible, the real part played by cold in the causation of acute rheumatism. The animals inoculated with pneumococci and streptococci under the influence of cold, proved refractory to the pathogenic effects of the microorganisms; the animals inoculated with the rheumatism cocci, on the other hand, promptly succumbed to the effects of the bacterial invasion, while the blood admitted of the recovery of large numbers of the micrococci. By a very simple process of the reasoning the conclusion is reached that the influence of cold on growing cultures should manifest similar results. Experimental work with growing cultures showed that the rheumatism cocci grew better at low temperature than the pneumococci or the streptococci. As to the influence of cold in the production of acute articular rheumatism, need the corollary be appended? Furthermore, in consonance with modern teaching does not the blood picture of acute articular rheumatism show that the disease in its proper place belongs in the acute infections? Note the secondary anemia, the marked destruction of red cells, and the leucocytosis, in some instances as high as 55,000. Moreover, this leucocytic phenomenon is strictly coincident with the exaggeration or amelioration of the symptoms and, it may be added, the appearance of complications.

Careful investigation, together with a rigorous analysis of facts, has at last revealed to the medical profession the true nature of the disease commonly called "acute rheumatism," and by a careful application of the newly ascertained phenomena and their relationships, the clinician of today is able to absolve himself from his allegiance to the traditions of two thousand years ago. He may now with safety and certainty abjure the spurious philosophy which led to a method of treatment which held forth at best but the faint hope of temporarily ameliorating the symptomatic conditions. He takes his therapy today, not from a system born of hypothetical fancies, but from a system in which the determinate actualities of the laboratory furnish appreciable evidence of the fact that medicine has at last, in the treatment of acute infectious polyarthritis, definite hopes of a remedy of definite value.

GOITRE.

An Analysis of 125 Cases with a Note on the Treatment.

By Leigh F. Watson, M. D.,
Chicago.

I have recently reviewed the case records of 125 goitre patients who live in localities where goitre affects not over five per cent. of the population. It is interesting to note that the age of onset in both the nontoxic and toxic types is later in life than in sections where the disease is more prevalent. Of this group, forty-five were toxic exophthalmic and eighty were nonexophthalmic; of the latter, fifty-two per cent. were toxic and forty-eight per cent. atoxic. One hundred and eighteen, or ninety-four per cent., were females, and seven, or six per cent., were males. Twenty-six per cent. were single, sixty per cent. married, and fourteen per cent. widowed. Twenty per cent. gave a family history of goitre and eleven per cent. of nervousness; nineteen per cent. had had tonsillitis. In forty-three per cent. no exciting cause could be elicited; in the remaining fifty-seven per cent. the onset of the goitre was ascribed to one of the factors in Table I.

TABLE I.

CAUSES OF THE ACUTE ONSET OF GOITRE.

Cause.	Number.	Per Cent.
Worry	19	15.2
Parturition	14	11.2
Puberty	12	9.6
Influenza	5	4
Pregnancy	4	3.2
Climacteric	4	3.2
Fright	3	2.4
Grief	2	1.6
Typhoid fever	2	1.6
Diphtheria	2	1.6
Scarlet fever	2	1.6
Injury to thyroid	1	.8
Iodine applied to neck	1	.8
Potassium iodide	1	.8
Operative shock	1	.8

TABLE II.

THYROID ENLARGEMENT IN 125 PATIENTS.

Part involved.	Exopthalmic. Per Cent.	Non-exopthalmic. Per Cent.
Both lobes and isthmus	95	54
Both lobes	5	6
Isthmus	0	7
Right	0	10
Left	0	5
Right and isthmus	0	13
Left and isthmus	0	5
Both lobes equal	22	10
Right lobe largest	74	30
Left lobe largest	4	20

Goitre usually begins in the right lobe, sometimes in the isthmus, and least frequently in the left lobe. The tendency to involve both lobes and isthmus before it becomes markedly toxic is shown in Table II.

SYMPTOMS.

Exophthalmic goitre.—Forty-five per cent. of the patients first noted the goitre eight years before examination at the average age of thirty-four years, and the symptoms developed at the average age of forty. Fifty per cent. gave a history of an acute onset, two years before coming under observation at the average age of twenty-nine years. Five per cent. gave a history of acute exophthalmic symptoms several years previous to examination when the temperature ranged from 102° to 104° F. daily for two to four months. The symptoms suddenly ceased and the goitre became atoxic. The weight varied from sixty-nine to 240 pounds in the adults, the average being 116 and the average loss twenty-one pounds.

Nonexophthalmic goitre.—Sixty per cent. of the patients observed that they developed more marked symptoms of intoxication as the goitre became more chronic. Eighteen per cent. of the toxic patients, after an average period of five years, suddenly became exophthalmic. Twenty-two per cent. of the nontoxic patients have shown no tendency to become toxic. None of these had had goitre for more than three years; the average duration was seventeen months and the goitre appeared at the average age of thirty-two years.

Previous operations.—Before coming under treatment, five exophthalmic patients had had ligation of the superior thyroid arteries with temporary relief; four had had partial thyroidectomies without permanent benefit; three had had pelvic operations without lessening the hyperthyroidism; the condition of one was aggravated by a panhysterectomy; and one had had a tonsillectomy six months before without influencing the severity of the exophthalmic symptoms.

TREATMENT.

Quinine and urea injections were used in treating 100 of these patients; I believe the treatment was not suited to the remaining twenty-five. Preliminary injections of sterile water and normal salt solution were used in the toxic patients to lessen the danger of acute hyperthyroidism. The injection is not suited to all types of goitre and unless used discreetly it will be disappointing, if not disastrous. There is always the danger of provoking an attack of acute hyperthyroidism. The toxic cases should be watched carefully and at the first sign of an acute exacerbation of hyperthyroidism, treatment should be stopped, a hypodermic of morphine and atropine given, ice bags applied over the thyroid and heart, and the room darkened.

TABLE III.

IMPROVEMENT IN SYMPTOMS FOLLOWING INJECTION.

Months.	1	2	3	4	5	6	8	12	Relieved.	Improved.	Not improved.
Exophthalmic	16	8	12	16	0	25	4	4	85	15	0
Nonexophthalmic	43	15	11	0	2	5	8	0	84	10	6

TABLE IV.

EFFECT OF INJECTIONS ON THE GOITRE.

	Cured Per Cent.	Improved Per Cent.	Not reduced Per Cent.
Exophthalmic	80	15	5
Nonexophthalmic	75	12	13

The patients who were improved but not entirely relieved of the tumor say that their symptoms are lessened and that the growth of the goitre has been checked. Three exophthalmic patients who received temporary benefit from the injections submitted to partial thyroidectomy; one is cured and two are much improved. Two patients suffering with severe toxic goitre with exophthalmos of several years' duration received only slight benefit; later a lobectomy was done without additional relief. The following case history is believed to be of interest:

Case.—Mrs. W. D. P. A vascular exophthalmic goitre of the right lobe two by three inches in size was exposed as for operation and injected with quinine and urea solution. Prompt relief from hyperthyroidism followed this extensive infiltration. Three weeks later, for the purpose of study, a lobectomy was done, showing complete necrosis of the injected area which was bloodless, firm, and dark in color, contrasting with the soft, vascular, light colored uninjected portion of the gland. The patient was well for eight months, when she noticed a return of exophthalmic symptoms and an enlargement of the left lobe. On examination the left lobe was found to be approximately the same size as the right one, when it was removed. The symptoms were severe, pulse 160, and exophthalmos marked. After injections of quinine and urea through the skin the patient was sent home for a prolonged rest. Her symptoms gradually subsided; five months after treatment she wrote that the goitre had entirely disappeared and she felt better than at any time in the past ten years and was doing her housework.

CONCLUSIONS.

1. This study indicates that both nontoxic and toxic goitre occur later in life in nongoitrous localities than in sections where the disease is prevalent.

2. A majority in this group of 125 patients noticed increasing symptoms of intoxication as the goitre became more chronic, gradually involving both lobes and the isthmus. Eighteen per cent. of the mildly toxic patients became exophthalmic after an average period of five years.

3. In exophthalmic goitre forty-five per cent. of the patients cured by quinine and urea injections gave a history of acute onset of symptoms; while fifty-four per cent. had had goitre for some time previous to exophthalmic symptoms, which were first noticed 2.4 years before examination, at an average age of thirty-seven. The average time elapsing before the disappearance of the goitre was five months. In toxic nonexophthalmic goitre those patients who were cured by quinine and urea injections noted symptoms of intoxication 1.7 years before examination, at the average age of 33.5 years. The goitre disappeared within one to twelve months, the average period being four months.

4. The number of patients cured is highest in the group of those who came for treatment early in the disease; the benefit received by those who came later was in proportion to the degree of damage done the circulatory and nervous systems. A goitre that has once disappeared has never recurred. A majority of the patients in this group have been under observation from two to four years.

5. Four exophthalmic patients were pregnant two to four months. Relief from hyperthyroidism followed the injection and they went to term without recurrence and had normal deliveries.

6. The quinine and urea injection has limitations like any other treatment for goitre and can be employed only in selected cases. The treatment of the exophthalmic type in young adults is most difficult, and should be attempted only under the most favorable circumstances. If the best results are to be secured, hyperthyroidal patients must have at least a year of mental and physical rest after treatment.

30 North Michigan Avenue.

SINUSITIS IN CHILDREN.

By Kenneth A. Phelps, M. D.,
New York,
House Surgeon, Manhattan Eye, Ear, and Throat Hospital.

Only within the past few years has sinusitis in children attracted much attention. Even today it is apparently considered unimportant for it is barely mentioned or not mentioned at all in the standard works on pediatrics, rhinology, or pathology and even those books devoted exclusively to the nasal accessory sinuses give little space to sinusitis in children. One reason for this must be that the condition is often unrecognized by the pediatrist, rhinologist, or pathologist. In presenting the subject only those phases most closely related to pediatrics will be considered.

Authorities differ regarding its frequency in children. Some state (1) that it occurs as often as in adults, while others maintain that it almost never occurs in children. Wertheim (2) in a series of 360 post mortem examinations found the smallest percentage of sinusitis in the first ten years of age and the largest in the second. Haike (5) examined sixty-four children post mortem and found fifty-four with a sinus disease. During the past four years at the Johns Hopkins Hospital and Dispensary, 200 children presenting some definite signs or symptoms of a sinus infection were most carefully examined, including x ray, and of these only twenty-three were definitely proved to have a purulent sinus infection. The records of the Manhattan Eye, Ear, and Throat Hospital for the past few years show but twelve cases of proved sinusitis in children. There are records of undoubted sinusitis in children which are not included, because the infection was not definitely proved either at operation or post mortem. It would therefore seem that sinusitis is not a common disease in children. It is nevertheless a most important one.

From a study of about three hundred x ray plates, together with some actual dissections of children's sinuses, it may be stated that the sinuses are probably more variable than any other structure in the body. Their size, shape, development, or even presence is never the same in two individuals, and even in the same person the two sides are apt to be asymmetrical. The maxillary sinus is present at birth though its own mucous membrane fills most of the cavity. In development it is in close relation to that of the upper teeth and jaw and is not fully developed until after the second dentition.

The ethmoid cells are also present at birth. Usually the cells in the posterior group are the larger in size, but fewer in number. One of the anterior group of cells develops into the frontal sinus. Davis (4) states that at about one year after birth this cell begins its ascent into the vertical portion of the frontal bone and at the third year has usually reached a level high enough to be called the frontal sinus. I have seen large frontal sinuses in a child of five years and Haike (5) has reported a case as early as two and a half. The full development is not reached until the age of fifteen to eighteen years. The sphenoid sinus (4) is said to be absent at birth, but at the age of three years there is a definite cavity present. In x ray plates, I have seen evidence of its presence in children one month old and in several cases under two years. Hence the ethmoids and maxillary sinuses are clinically important from birth and the sphenoids and frontals from the age of three to six years.

Some of the thirty-five cases referred to give interesting histories regarding the etiology. One followed going in bathing; four followed definite coryzas; six followed the infectious diseases—two in scarlet fever, and one each in measles, typhoid, pneumonia, and influenza; four came on suddenly over night; one followed a tonsillectomy, and one followed extraction of a tooth. In looking over the literature, I could find reports (6) of thirty-seven cases in which the etiology was mentioned and in all but five it was scarlet fever. Grove (7) reports a series of cases in which the infection was due to postoperative vomiting following adenoidectomy. Few reports can be found of investigations made in a group of children with any infectious disease to determine the presence of sinusitis. Ruedi (8) studied 750 cases of scarlet fever and found a sinus infection in only eight per cent. He does not state, however, that he used the x ray. It would be most instructive to study a group of children during some epidemic, especially of meningitis or poliomyelitis. Perhaps some valuable information regarding the portal of entry in these diseases could be obtained. Cooperation between pediatrist and rhinologist should accomplish something along this line. Once a sinus is infected, anything causing obstruction to its drainage will determine the further course of the disease. In children, nasal obstruction is most often caused by adenoids and in certain cases of sinus infection not demanding radical operation an adenoidectomy will often give relief. Sinusitis may occur at any age. Morgan (9) reports a case at birth. Our youngest patient was five months old.

Acute sinusitis is said to be more frequent in children than the chronic form. Usually the diagnosis is easier and the symptoms more suggestive. Still, if more children were systematically examined for a sinus infection, a chronic infection might be more often found. Nineteen of the thirty-five cases studied were acute and nearly all presented some complications. Two had meningitis on admission to the hospital; three had orbital abscesses; two had orbital cellulitis with no pus found on operation or post mortem; five had swelling of the eyelids; one had an abscess of the lower lid; one swelling between the eyebrows; one a cheek abscess, and two suffered from acute otitis media which cleared up on treatment of the sinusitis. Two gave evidence of profuse nasal discharge and one complained of severe headache and nasal obstruction. Often acute cases are undiagnosed, for they may clear up spontaneously, death may occur and no autopsy be done, or the complication may be treated such as an abscess of the eyelid without ever knowing that a sinus infection caused it. In two of the cases, a metastasis occurred to the ankle requiring an incision.

Chronic sinusitis is perhaps of more interest than the acute. In adults it is an established fact that the sinuses may act as foci of infection producing general symptoms. Why should the same relation not hold good in children? I believe that if every child who suffers from a meningitis, asthma, nephritis, arthritis, endocarditis, or headaches and in whom the etiology is obscure, as well as those suffering from frequent or long standing coryzas, frequent tonsillitis, bronchitis or laryngitis, were carefully examined for a sinus infection the relation above mentioned might frequently be established. I have seen children with bronchitis, asthma nephritis, and acute otitis media markedly improved by operation upon the infected sinuses.

Rosenow and Billings (5) state that joint, renal, muscular, and valvular lesions secondary to a focal infection are due to bacterial thrombi. The veins of the nasal and sinus mucous membrane connect with those of the face, orbit, and the capillary network in the pterygopalatine fossa as well as those of the meninges. Cases of thrombophlebitis of each of the venous sinuses of the brain have been reported as having their origin in the nasal accessory sinuses (11). As mentioned above two of the cases had joint metastases, in which the sinuses were the source of the thrombi. In few chronic cases can the history of an acute stage be obtained. Usually the onset is gradual and the symptoms indefinite. The diagnosis is made only after the most careful and painstaking examination and study. The most common symptoms complained of are nasal discharge, headaches, and nasal obstruction.

In treating sinusitis in children the same general principles apply as in adults. Intranasal surgery is of course extremely difficult in young children, and nonoperative measures often produce good results.

Regarding the results, let me quote from the follow up records of the Baltimore cases. I saw twenty-one of the twenty-three patients at least one year after treatment was completed, and a careful history was taken and examination made, often including the x ray. Thirteen were well and showed no evidence of active sinusitis. The remaining eight were all improved. In conclusion, I wish to express my thanks to Doctor Crowe and his staff at the Johns Hopkins Hospital, to Doctor Coffin, and to the staff of the Manhattan Eye, Ear and Throat Hospital, as well as to the x ray departments of both institutions.

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BILATERAL CHOKED DISC FOLLOWING THYROIDECTOMY.

By Frederick Krauss, M. D.,
Philadelphia,
Ophthalmic Surgeon, Episcopal Hospital.

Case.—Edward C., twenty-three years of age, weaver by trade, came to my service in the Dispensary of the Hospital of the Protestant Episcopal Church on March 30, 1916, with the history of poor vision since having been operated upon for goitre in January. Previous to this his sight had been perfect. He says he could not recognize a person across the street, having almost continuous attacks of dizziness with intermittent attacks of blindness. The vertigo and blindness were accentuated by any excitement and sudden movement or change in the position of his body. The central vision was 5/5 in the right eye and 5/6 in the left eye, but the patient at the same time declared that he could not recognize a person across the room. The attempt to do so would make him dizzy and everything was black before his eyes. The pupils responded to light and accommodation. The eyegrounds showed marked neuroretinitis in both eyes. In the right eye the disc was markedly swollen, the apex best seen with plus 3D, the surrounding media with no lens. In the left eye the swelling was greater, the apex being seen with plus 4D, and the surrounding media with O. The veins were full and tortuous, there was a small hemorrhage down and out. The swelling extended beyond the disc into the retina for about 1½ disc diameter all around its margins.

This swelling of the nerve and retina increased, reaching its height about April 10, 1916, when in the right eye the apex of the disc was seen with plus 4D, the periphery with zero, the veins very full, tortuous, and completely hidden in spots. The edema of the retina though all around the disc for 1½ disc diameter extended along the course of the vessels for about 2 disc diameters, beyond this coronal edema about the disc.

In the left eye the swelling of the nerve and retina became decidedly more pronounced, the apex being seen with plus 5D. The swelling of the retina was decidedly more marked along the course of the bloodvessels. The fields of vision showed crossed fields for red and white, the red field being abnormally large with transcient scotoma in the periphery. Later they showed contraction for form with crossing of the red field. At this time he was shown before the Section in Ophthalmology at the College of Physicians. The general medical examination by Doctor Hooker was reported as negative. The blood examination was negative. The x ray showed the ethmosphenoidal cavity large with a thin roof and flattened clinoid process. The other sinuses were all clear, except a possible slight clouding of the left frontal sinus.

The swelling of the disc gradually became less pronounced, the distance vision remaining the same. The patient continued to state that he could not see, though the central vision varied between 5/5 and 5/6 in each eye, with accommodation of eight to twenty inches with type 0.75 in each eye and eight to twenty-nine inches binocularly. The patient had a constant expression of worry and refused to be comforted by my telling him of his excellent showing in the reading tests. The swelling of the disc gradually subsided so that by May 29, 1916, the edges were markedly indistinct, the apex of the disc being only plus 2D higher than the retina. He then had 5/4 vision and read type 0.25 at ten inches. When reexamined on October 26, 1916, the nerve in the right eye was dirty red gray in tint, with edges of the disc slightly blurred. The vessels were normal in size. The lymphatics about the retinal vessels at their exits were very full, causing a dead white lining about the vessels in strong contrast with the gray color of the disc. In the left eye the edges of the disc were more distinct, otherwise the appearance was similar to that of the right eye. The fields are slightly and concentrically cut

The patient's general condition was greatly improved. He felt well except for occasional slight attacks of dizziness. He thought that his sight was good, his nervousness less pronounced with complete disappearance of the extreme mental depression and sense of nervous excitement from which he had suffered.

The hospital records showed that our patient had been operated upon by Dr. Harry C. Deaver at the Episcopal Hospital for cystic goitre on January 20, 1916. The history given was as follows: The patient stated that he had never been ill or injured. His general health was good. The tumor appeared on the neck five or six years ago, growing gradually larger. It had never been tender, nor caused pressure symptoms. He used to smoke cigarettes to excess, to which he attributed the slight tremor in his fingers. In the general examination made by the resident physician, Dr. L. M. Pratt, the temperature and respiration were normal; pulse, 72. There was a fine tremor of the lids when shut. The pupils reacted to light and there was no exophthalmos. Ears, nose, and throat were negative. The tongue was clean and the teeth in fair condition. Asymmetrical swelling in the region of the thyroid, which moved on swallowing. Swelling about the size of a lemon on the right side, and two thirds as large on the left. Both sides felt cystic and soft. No tenderness or evidence of acute inflammation. The skin was not adherent. Chest examination was negative. Heart sounds loud and clear and of good muscular quality. No murmurs. Abdomen negative. Very fine tremor in fingers.

He was operated on by Doctor Deaver on January 20, 1916. The following is an account of the nature of the operation: Ether anesthesia. Iodine five per cent. in the ward and in the operating room. Long Kocker collar incision at the base of the neck. The skin and fascia were dissected up so as to expose the thyroid gland. The right sternohyoid was split and the right lobe enucleated, excepting a small part of the upper pole. This was clamped tied off, and cauterized with carbolic acid and alcohol. The lobe extended down under the sternoclavicular joint and high up, and was very difficult to free. Inferior thyroid artery ligated. Inferior parathyroid seen and felt.

Lobe, excepting above, removed. The left sternohyoid was split and the lobe enucleated with less difficulty. Was not so large. Clamped and ligated at the upper pole. Inferior thyroid artery ligated. Remainder of the lobe was then removed, leaving the neck with the left upper pole, part of the isthmus, and a small portion of the right upper pole. Both lobes were cystic and had undergone colloid degeneration apparently. Rubber dam drains in both cavities. Sternohyoid united with interrupted No. 11 chromic catgut. Interrupted silkworm gut sutures were used in the skin. Iodine five per cent. dry sterile dressings were then applied in the usual manner.

The following notes are interesting: January 21: Operated yesterday as per sheet. Reacted well. Patient is being kept quiet with morphine. Is hoarse but is able to articulate. January 23: At 4 p. m. temperature, 103° F.; respiration, 124; pulse, 28. Is still very nervous and requires morphine twice a day. Is perspiring very freely. Complains of a tingling sensation in the feet. January 25: Patient is semiirrational; perspires freely. Has forced extension of the first two fingers and the thumbs are flexed over the palms (obstetrical hand). Toes are forced extension. Marked tremor of the muscles. Has some difficulty in swallowing. January 27: Little better this afternoon after chloral and bromides by rectum. Perspiring less. Can swallow better. Muscular contraction has now disappeared, still has a tremor of the muscles. Has been despondent since the operation. January 28: The wound is being dressed daily; stitches removed today. Has a small point of infection around many of the suture entrances, probably from perspiration, but no discharge from the deep parts. General condition improved over yesterday, but he still has some incontinence of urine and feces. Realizes this and it worries him considerably. January 30: Patient feels better and says that he is better. Is hungry. The wound infection remains about the same. February 21: Patient is very hungry and the mental condition is much improved. No incontinence of urine or feces for the past three days. Still has muscular tremor of the first two fingers on both hands. February 4: Mental condition of the patient is good. Says he feels fine. Eats very well. Temperature, respiration and pulse normal. Sleeps fairly well, with sedative enema. Muscular tremor is much less. February 9: Patient up two days ago. General condition is fine. The wound is about healed. Patient discharged. Still has a very fine tremor of the muscles, but practically no more than before the operation. The appetite is excessive.

This patient had a cystic thyroid, which was removed by a careful and experienced operator. Following this he had a severe attack of tetany with excessive mental excitement and incontinence of urine and feces. His ocular condition was not noted until eight weeks after the operation, when he showed marked neuroretinitis, the so called choked disc, with extension of the swelling along the course of the retinal vessels. This swelling increased for six weeks, then gradually subsided. A distinctive feature of his visual fields was a slight cutting for form and an abnormally large field for color.

The subsidence of the neuroretinitis was followed by a low grade of optic nerve atrophy with a moderate degree of cutting of the form fields. The color fields do not cross now, and he has full visual acuity. The treatment consisted mainly of five grains of calcium lactate, three times daily. Thyroid extract aggravated the nervous symptoms and was withdrawn.

Kendall (1) finds that the entire activity of the thyroid is manifested by the administration of alpha iodine, a crystalline compound abstracted by the thyroid gland. This substance given alone in very small amounts will supplant thyroid activity and in excess will cause symptoms simulating exophthalmic goitre. It appears to have no direct action on the pulse rate. The extent to which the rate is affected depends not on the administration of the thyroid, but on the simultaneous ingestion of food, and in particular of aminoacids. This effect may be outlined as follows: After the administration of the compound, there is no apparent effect for many hours. There is no increased pulse rate nor drop in blood pressure. However, if the thyroid hormone and aminoacids are injected simultaneously, the pulse rate is enormously affected, and even death will result, due to the apparently great increase in metabolism going on in the animal. It appears very probable that the thyroid hormone manifests its activity by reacting in some way with aminoacids. In this connection the observations of Cannon (2) are somewhat illuminating. To test this effect of overstimulation in a particular region of a sympathetic system, Cannon about two years ago fused in a cat the anterior root of the right phrenic nerve with the right cervical sympathetic strand. Thus, after regeneration had occurred, there was delivered to the neurons in the superior cervical ganglion a volley of impulses every time the animal breathed. The operations were performed early in May. In October, four of the six animals were still alive. All had peculiar symptoms. There was marked tachycardia. Though fed like normal animals, they had loose movements of the bowels. They were unusually excitable. The basal metabolism was much elevated. In two animals that died of the disease, the suprarenals were found much increased in weight. One of the animals had definite exophthalmos and respiratory oscillations of the pupil on the operated side.

Since these first observations, the disease has been produced in another animal, and it has been proved that the symptoms—rapid heart, increased excitability, steadily mounting metabolism with loss of weight—all disappear on the removal of the thyroid on the operated side. The metabolism, which was increased approximately 100 per cent., dropped to within normal limits. Whereas the other animals having the induced disease had died within three months of the first appearance of the symptoms, this animal lived normally for seven months after the operation and was then purposely killed. The thyroid is subject to that division of the nervous symptoms which is brought into action in emotional excitement, and which causes suprarenal secretion. Cannon believes that it is probable therefore that the thyroid, like the suprarenal, has normally functions which are performed in times of critical emergency and that such an emergency function is an exaggerated form of the routine activity of the gland.

Very little is known of tetany. It is believed to follow complete removal of the thyroid glands, therefore including the parathyroids. Osler quotes thirteen cases which followed sixty-eight operations on enlarged thyroid glands in Billroth's clinic and six of them proved fatal. James Stewart has reported an instance in which with the tetany there were symptoms of myxedema, and no trace of the thyroid. Osler further states that the two features valuable in the diagnosis of tetany are as follows: "The instability of the nerves is enormously increased both during the period of tetany and subsequently. Thus a minimal strength of current necessary to produce contracture during the quiescent period is sufficient during the attack to cause a distinct tetanic contraction. The second point is the so called Trousseau's phenomenon, namely: Pressure on the larger arteries, sometimes on the nerve trunk, will excite the spasm, which continues while the pressure is kept up."

In our particular case there is a history of great difficulty in removing the right lobe and some trouble in removing the left lobe. It is not unreasonable to suppose in the light of the above that the symptoms cited in our patient were due to traumatism of the sympathetic nerves in the neck and their allied branches, causing severe vasomotor changes. The eyegrounds showed the edema of the neuroretinitis along the retinal vessels for some distance, showing a direct relation of the vascular supply. The retina between the vessels and the periphery were clear. If the choked disc were due to toxic action, the edema would probably have been more evenly spread about the disc. The trauma was more pronounced on the right side of the neck and the left eye was the more affected. In addition to the ocular symptoms, other conditions which can be explained by intense vasomotor phenomena, are the intense perspiration, tetanic contractions, delirium (edema brain), feeling of intense nervous unrest with no pain, dizziness upon slightest visual or mental exertion. The sensation of blindness, though the central vision is practically normal with a broad visual field, can only be a mental phenomena. An edema of the brain, optic nerves, and retina could explain many of these phenomena. This is rendered more likely by the complete disappearance of the swelling from the eye with absence of secondary changes, excepting a gray nerve.

It is seen therefore that violent nervous and ocular symptoms are caused not only by the ingestion of the active principle of the thyroid gland, but also by transplanting of nerves in the neck with those of the sympathetic system.

Traumatism in the difficult removal of a thyroid gland would also probably affect the smaller branches of nerves in the neck and those of the sympathetic system bound up so intimately with the thyroid system. False union could send nerve impulses through the sympathetic system, inducing great derangement of the entire vasomotor system.

REFERENCES.

1. KENDALL: *Boston Medical and Surgical Journal*, October 19, 1916. 2. CANNON: *Ibidem*.

1701 Chestnut Street.

Coagulen in Hemophilia.—James W. Davis (*Charlotte Medical Journal*, July, 1917) used coagulen in the case of a child aged four years with a negative family history for hemophilia. She had had numerous hemorrhages from the gums and nose; also hematuria. Three grams of coagulen in normal saline were given intravenously. Soon after administration the hemorrhage ceased. Later a transfusion was performed, according to the Kimpton Brown method, the father being the donor. The patient made an uneventful recovery.

HYGIENE OF RURAL SCHOOLS.

By J. A. Nydegger, M. D.;
Baltimore, Md.,
Surgeon, United States Public Health Service.

(*Concluded from page 508.*)

It is to be regretted that there is such a large proportion of children of impressionable age attending school without the advantage of sanitary and medical supervision. According to the last census report, there were 10,529,871 pupils in attendance at rural and city schools. Of these there were 794,000 more pupils from six to nine years of age, and 376,052 more from ten to fourteen years of age in rural school attendance than in the cities. This is all the more regrettable because many of these children are suffering from curable defects by reason of the want of skilled medical advice. The data collected by these surveys show that an amazing percentage of the children in the rural districts are defective and in need of medical attention. These investigations and others of a similar nature show that the health of the country school child is found to be from five to twenty per cent. more defective than that of the city child. Take, for instance, tuberculosis. One would fancy that here, at least, the country child, with all the advantages of fresh air, would suffer less from the great plague of our country, but the number of city children with lung troubles make up only a fraction of one per cent., while 3.7 of the total number of country children have an affection of the lungs. Another defective condition which is supposed to be one more prevalent among city school children is malnutrition. We realize its gravity when we hear that in the cities the proportion of children with poorly nourished bodies is twenty-three per cent. But should we not be still more amazed and alarmed to know that thirty-one per cent. of the country school children are listed under malnutrition? Another charge laid against the big cities is that they produce mental defectives. These investigations showed a proportion of mental defectives in rural districts of eight per cent., while that for cities was two per cent.; there are four times as many mental defectives among country school children as among city pupils. It was also found that heart troubles were more than twice as prevalent in the country schools than in the city schools. When one runs over the list of disadvantages in country life compared with city life—and the list might easily be extended—one is inclined to wonder, not that the average country child is less healthy, but that his condition is not worse than it is. He has the great benefit of the pure air and the outdoor life, but he is apt to live in houses which are draughty and unheated, to walk long distances in extreme heat, cold, or wet, and to sit in school with damp clothes and wet feet. His people are less inclined to seek aid from physicians, dentists, or oculists because they have not been educated to do so except in extreme cases.

The percentage of curvatures of the spine for city children was found to be 0.13, while that for the children in the rural districts was 3.5, or occurring fourteen times more frequently. This is due in great part, doubtless, to the use of improper seats in rural schools. Ear troubles were found to be prevalent among city children to the extent of about one per cent., but among country children, however, it was nearly five per cent., or five times more prevalent. City children, suffering from some defects of the eyes, number only five per cent., while those in the rural districts reach the enormous total of twenty-one per cent., or four times more. In some rural sections, the proportion for country school children amounts to very nearly thirty per cent., or six times more than city school children. The figures for enlarged tonsils are from eight to ten per cent. in city school children, as contrasted with thirty per cent., or three times more, in country school children. In some rural sections fifty per cent. of the children were found to be suffering from enlarged tonsils. The incidence of hypertrophied adenoids in city children amounts to about eight to nine per cent., but the country percentage is increased to nearly twenty-two per cent., a proportion of almost three to one. These findings are merely illustrations, but the investigations have revealed a widespread need for instructions in rural sanitation which can be given in a large measure through rural schools. The conviction arises from investigation that trachoma, a dangerous contagious disease of the eye, in a number of heavily infected rural districts, can best be controlled by education. These surveys have shown that trachoma is a widely prevalent affection among rural school children in many sections of our country. In the course of these investigations it was found that over ten per cent. of the pupils suffered from trachoma in twenty-one rural schools and over twenty per cent. in eleven rural schools. In four schools the incidence rate of trachoma infection was 35.29, 43.75, 43.2, and 46.15 per cent., respectively. The economic loss is very great through the diminished earning capacity of those attacked, as many of the cases result in total blindness, or badly impaired vision.

The lighting of rural schools is another matter of much significance. In the surveys made it was found that the vast majority of rural school buildings had ample light, but the usual custom of lighting the room from both sides was followed in a large proportion, while a few were found to be lighted from both sides and also the front. As a result of this method of lighting, at ninety per cent. of the rural schools today bad cross lights will be found to exist, and in a limited number the children sit facing the light. The ideally lighted room is one in which the light comes from the left side or preferably from above. Cross lights are injurious to the eyes of the pupils, by causing shadows on books, etc., thus resulting in eye strain. Another point of much importance is the color of the interior of schoolrooms. In the surveys conducted it was found that no uniformity existed as to the color of walls and ceilings. This seems to have been left entirely to the fancy of the individual selecting the colors, and all shades of the rainbow were met with, from violet to red, from white to black. A buff finish for walls of schoolrooms with a lighter green shade of buff for the ceilings and a moderately light green shade for walls with ceilings of a lighter green are the finishes which have been found to be the best for schoolrooms. Green is more restful to the eye, but absorbs more light. Buff reflects more light from the walls than green, but is more irritating to the eyes and sooner produces eye fatigue.

Ventilation in many of the rural schools inspected was found to be bad. Natural ventilation was observed mostly in the old type one room rural schools, as also in the same type of schools in town, as well as the old type of grammar, primary, and junior schools. In the modern rural and town graded schools of more recent construction the ventilation was found to be good. Although the weather was frequently warm at the time of the inspection and heat was not required, many of the schools were found with closed doors and closed windows, and the odor of foul air was noticeably perceptible. Many of the school children in the rural schools suffer from the effects of bad ventilation.

A matter of much importance in rural schools is that of having separate cloakrooms. Their establishment can be provided at a slight cost, and they do much in promoting the hygiene of the schoolroom. Wet, soiled, and frequently bad smelling clothes are hung up in these rooms, and thus are kept out of the schoolroom, thereby avoiding the exposure of the children to unnecessary danger and discomfort. The keeping of lunch baskets in school or classroom should be abolished in all schools. In a number of the rural schools visited it was noted that the desk drawers are frequently utilized for this purpose, and remnants of the lunch were seen lying in the drawers in some instances. This custom was also observed at some of the town schools. In addition to littering up the desks with debris, frequently portions of the lunch are allowed to decay in the desks, giving off unpleasant odors. More than fifty per cent. of the rural schools inspected during these surveys were found to be unprovided with cloakrooms, and clothing and lunches were kept in the schoolrooms.

The facilities provided at rural schools for washing hands and face, as shown by the surveys, were found to be somewhat varied. In some rural schools no provisions were made for washing hands or face. In many rural schools the common wash basin was found to be still in use. Its use is as dangerous as the common towel and the common drinking cup, for it is liable to be kept in a filthy and dirty manner. In sections where water is scarce the same wash water is frequently used by a number of different school children. Should any of the children have trachoma or other communicable diseases of the eye, all will be liable to contract them, as a result of using the common wash water in the common basin. The common basin is a dirty and objectionable vessel at best in a schoolroom, and State, county, and municipal health officials should see to it that it is banished from the schools along with the common towel and the common drinking cup.

Notwithstanding the energetic campaign being waged against the use of the common towel in schools, as also elsewhere, the surveys showed that the common towel is still much used in country schools. In the course of the investigations teachers were encountered who believed the common towel was all right and could see no objection to its use by the school children. The use of the common and individual towels in a school, so frequently seen, is in a measure a reflection upon the teacher. The school child gains the impression from his parents at home, or outside of the school perhaps, that the common towel should not be used because it is likely to convey disease. The child then brings with him to school his own towel, and guards it carefully, while a number of the other children who unfortunately have not been instructed by the parents or teachers continue to use the common towel. The surveys showed that in some schools the towel in all forms has been banished, and nothing is used for wiping dry the hands and face after washing; they are simply allowed to dry by exposure to the air. Many of the school children attending the town schools in this respect have the advantage, however, over those in the rural schools of the nearness of their homes for lavatory purposes.

Adjustable school furniture is a fundamental consideration. The effects of misfit school furniture on posture are well known. If the desk is too high, the shoulders are unduly elevated and the head and chest are forced out of position. With a desk too low, the worst possible crouching attitudes are cultivated. A seat too high leads to sliding down in the seat in an effort to touch the feet on the floor, and this rounds the back and tilts the pelvis too much toward a horizontal position; with a seat too low, the upper part of the body collapses into the most aggravated "fatigue position." A properly adjusted seat has the seat at the height of the bent knee when the foot rests flat on the floor; this places the thigh in a horizontal position. The desk should be of such height that when a pupil is seated as above described, and the elbow bent, the forearm will rest horizontally on the desk surface. The distance between desk and seat, affecting the leaning forward of the pupil to work, the slope of the desk top and relation of the desk to the light, the shape and inclination of the seat back and seat, are all matters that influence the posture of children. With perfectly adjusted furniture there still remains, however, the necessity for cultivating habits of correct sitting. These should be taught by the teacher, whose duty it is to care for the health of the growing school child as much, if not more, than to develop the mental faculties.

While all city schools are provided with seats adjusted according to size, height, and age of the scholars, such is not the case in the rural schools. One sees in the country schools most frequently all seats of a uniform size, and very rarely a seat or desk adjusted to the occupant. A visitor sees in these schools small children sitting on seats so high that their feet are dangling in the air, or a large boy or girl may be seen crouched down on a seat and desk too low and too small. Such unsatisfactory seats lead to many of the spinal deformities seen in country children. Occasionally does one see, as was shown by the surveys, a country school where in part adjustable seats are provided, and rarely where all the seats are adjustable; while in seventy-five per cent. of the country schools no adjustable seats were found. When the seat is too high or too low for the desk, or too far away or too near, there results a painful crouching or straining or twisting, which may easily produce hump back and spinal curvature. In all cases the seat should have such a relation to the desk top and floor as to afford an easy natural position to the child.

The location of blackboards in rural schoolrooms is a matter of no small concern to the children who have to use them. The faults usually observed are the improper location, glare, and lack of proper illumination. Other defects observed are that blackboards are frequently placed too near the floor or too far above the floor, making it difficult and tiresome for the children to use them. Stooping in a crouched position to use a low board or standing on tip toes so as to reach a high board is uncomfortable and is conducive to early fatigue in the child. Another defect so frequently noticed in blackboards in the rural schools is that of extending them into corners where shadows always exist. The blackboards in rural schools are frequently so poorly illuminated or have such bad cross lights playing on them as to cause eye strain and other equally injurious conditions of the eyes. The ideal plan of illuminating blackboards has not yet been formulated, but the recently introduced method of lighting schoolrooms from above will perhaps solve this problem. A point to be insisted on in the illumination of blackboards is that the light should be equally distributed over the entire surface and not produce confusion and shadows. If not from above, the light should preferably reach the board from the left side. The surveys showed that fifty per cent. or more of the defects referred to were noted in the placing of blackboards in rural schools today.

A part and not all of the sanitary defects of the average rural school have been cited and it is confidently believed that the conditions as they exist today in country schools have not been overdrawn. The welfare of our country depends upon no factor more indispensable, more vital, than the welfare of our rural life. Our finest crops are our children. The rural school is the strategic point from which rural life can be improved. The State should see to it that the rural school is used to the very limit of its possibilities as a factor for improvement, and one of the first demands is that for trained health inspection more or less uniform for all the States. Even the trained medical inspector of rural schools cannot be perfect without the cooperation of a competent teacher. It should be made mandatory for all teachers to have a sufficient knowledge of diseases and hygiene at least to be able to safeguard the health of the children given to their care. Up to the present time the average rural school teacher has shown a wonderful deficiency in knowledge of diseases and personal and school hygiene.

In addition to the inspector and teacher, there is the great possibility of the district school nurse for rural communities. There are today about 800 school nurses working in the large cities, but we have not yet waked up to the fact that the school nurse is needed much more badly in the rural schools.

Medicine and Surgery in the Army and Navy

THE MEDICAL DEPARTMENT OF THE UNITED STATES ARMY.*

Fourth Communication: Organization of the Medical Department.

BY WILLIAM W. RENO, A. M., M. D.,
Fort Riley, Kan.,
Lieutenant Colonel, Medical Corps, U. S. Army.

The regular army of the United States consists of sixty-four regiments of infantry, twenty-five regiments of cavalry, twenty-one regiments of field artillery, a coast artillery corps, and the various staff corps and departments. In the present war it is reinforced by the National Guard, the first increment of the national army, and as many other increments as may be necessary. The largest army staff department in point of numbers in officers and men is the Medical Department.

The Medical Department consists of one surgeon general, who is chief of the department, with the rank of major general during the active service of the present incumbent of that office, and thereafter with the rank of brigadier general; a Medical Corps; a Medical Officers' Reserve Corps; a Dental Corps; a Veterinary Corps; an enlisted force; the Nurse Corps, and contract surgeons. The Medical Corps consists of commissioned officers below the grade of brigadier general, proportionally distributed as follows: colonels, 3.1 per cent.; lieutenant colonels, 5.4 per cent.; majors, 23.7 per cent.; captains and lieutenants, 67.8 per cent. This ratio gives practically one field officer—colonel, lieutenant colonel, major—for every two captains and lieutenants. The total number of such officers is approximately equal to seven for every 1,000 of the total enlisted strength of the regular army authorized from time to time by law.

The enlisted force of the Medical Department consists of the following personnel, who are not included in the effective strength of the army nor counted as a part of the enlisted force provided by law: master hospital sergeants; hospital sergeants; sergeants first class; sergeants; corporals; cooks; horseshoers; saddlers; farriers; mechanics; privates first class, and privates. The total number of enlisted men in the Medical Department is approximately equal to five per cent. of the total enlisted strength of the army. In time of actual or threatened hostilities, the Secretary of War is authorized to enlist or cause to be enlisted in the Medical Department such additional number of men as the service may require. The number of enlisted men in each of the several grades is as follows: master hospital sergeants, 0.5 per cent.; hospital sergeants, 0.5 per cent.; sergeants first class, seven per cent.; sergeants, eleven per cent.; corporals, five per cent.; and cooks, six per cent. The number of horseshoers, farriers, and mechanics in the Medical Department is one each to each authorized ambulance company or like organization. The number of privates first class is five times the number of privates. Privates, first class, of the Medical Department are eligible for ratings for additional pay as follows: as dispensary assistant, two dollars a month; as nurse, three dollars a month; as surgical assistant, five dollars a month.

The President appoints and commissions by and with the advice and consent of the Senate dental surgeons who are citizens of the United States between the ages of twenty-one and twenty-seven years at the rate of one for each 1,000 enlisted men of the line of the army. Dental surgeons have the rank, pay, and allowances of first lieutenants until they have completed eight years' service. Dental surgeons of more than eight but less than twenty-four years' service have, subject to such examination as the President may prescribe, the rank, pay, and allowances of captains. Dental surgeons of more than twenty-four years' service have, subject to such examination as the President may prescribe, the rank, pay, and allowances of major; the total number of dental surgeons with rank, pay, and allowances of major must not at any time exceed fifteen. The Veterinary Corps also is attached to the Medical Department. Its officers have the rank of second lieutenant, first lieutenant, captain, and major. The Nurse Corps (female) consists of one superintendent, a graduate of the hospital training school, whose compensation is $1,800 per annum, and as many chief nurses, nurses, and reserve nurses as may be needed. The superintendent and members of the Female Nurse Corps are paid at the following rates: superintendent, $1,800 per annum; female nurses, fifty dollars per month for the first period of three years' service; fifty-five dollars per month for the second period of three years' service; sixty dollars per month for the third period of three years' service; and sixty-five dollars per month after nine years' service. All female nurses are entitled, in addition to the rates of pay as herein provided, to ten dollars per month when serving beyond the limits of the States comprising the Union and the Territories of the United States contiguous thereto, excepting Porto Rico and Hawaii, and to cumulative leave of absence with pay at the rate of thirty days for each calendar year of service in said corps; and when serving as chief nurses their pay may be increased by authority of the Secretary of War, such increase not to exceed thirty dollars per month. All nurses are also entitled to quarters, subsistence, and medical attendance during illness.

The Medical Officers' Reserve Corps is also a branch of the Medical Department. It consists of medical officers of the rank of first lieutenant, captain, and major who are available for temporary service in time of need. The proportion of reserve officers in the various grades cannot exceed the proportion established by law for the regular army medical officers, except that an unlimited number of first lieutenants can be appointed. Reserve officers when on active duty are entitled to the pay and allowances of regular officers. Reserve officers on active duty take temporary rank among themselves and in their grades in the organization to which assigned, according to the dates of orders placing them on active service. They are promoted in accordance with such rank to vacancies in volunteer organizations or to temporary vacancies in the regular army thereafter occurring in the organizations in which they shall be serving. They are not entitled to retirement or retired pay, and are entitled to pension only for disability incurred in the line of duty and while in active service. Any officer who, while holding a commission in the Officers' Reserve Corps, is ordered to active service by the Secretary of War, is from the time he is required by the terms of his orders to obey the same, subject to the laws and regulations for the government of the army of the United States. There are now about 350 majors, 1,400 captains, and 8,000 first lieutenants in the Medical Officers' Reserve Corps.

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As has been stated, the proportion of medical officers authorized for an army is seven for every 1,000 enlisted men. The regular army and National Guard have approximately 600,000 enlisted men. This number calls for 4,200 medical officers. To meet this demand there are about 800 medical officers in the regular army Medical Corps and about 1,200 in the National Guard. This leaves a shortage of 2,200 for the regular army and National Guard alone. The national army of 500,000 men needs about 3,500 medical officers. Each new increment of the national army, for its immediate needs, must have approximately 3,500 medical officers. Additional medical officers are needed for recruiting parties, general hospitals, specialist hospitals, clearing hospitals, embarkation and debarkation hospitals, base hospitals, convalescent camps, casual camps, rest stations, evacuation hospitals, evacuation ambulance companies, flying surgical units, laboratories, research units, and many other places. Also thousands are needed in England and France to assist the medical department of the British and French armies. Then, too, a large increase over the number actually needed is required to replace losses due to death, discharges on certificates of disability, desertions, and other causes. It has been estimated that 24,000 medical officers of the reserve are needed at the present time. This huge number does not include the tremendous needs of the Red Cross.

The rates of pay of medical officers are as follows:

RATES OF MONTHLY PAY FOR MEDICAL OFFICERS.

	Entrance pay.	After 5 years.	After 10 years.	After 15 years.	After 20 years.
First lieutenant	$166.67	$183.33	$200.00	$216.67	$233.33
Captain	200.00	220.00	240.00	260.00	280.00
Major	250.00	275.00	300.00	325.00	333.00
Lieutenant colonel	291.67	320.83	350.00	375.00	375.00
Colonel	333.33	366.67	400.00	416.67	416.67
Brigadier general	500.00	500.00	500.00	500.00	500.00
Major general	666.67	666.67	666.67	666.67	666.67

In addition to this, quarters, fuel and light, mounts for captains and lieutenants when necessary, and certain other allowances are furnished. The quarters may be a tent or more pretentious. The rates of pay for enlisted men of the Medical Department are as follows:

Grade.	Initial pay per month.	Increase every enlistment period.
Master hospital sergeant	$81.00	$4.00
Hospital sergeant	71.00	4.00
Sergeant, first class	56.00	4.00
Sergeant	44.00	4.00
Corporal	36.00	3.00
Cooks	38.00	3.00
*Horseshoers	38.00	3.00
*Saddlers	36.00	3.00
*Farriers	36.00	3.00
*Mechanics	36.00	3.00
Privates, first class	33.00	3.00
†Privates	30.00	3.00†

*Shall not exceed one each to each authorized ambulance company or like organization.

†Second and third enlistment periods only; after that, one dollar increase.

In addition, privates first class are eligible for ratings for additional pay per month, while they actually perform the duties as such, as follows: dispensary assistant, two dollars; nurse, three dollars; surgical assistant, five dollars.

DISPOSITION OF EXCRETA IN THE TRENCHES.*

By T. H. Goodwin, C. M. G., D. S. O.,

Colonel, Royal Army Medical Corps.

We have the main trench (Fig. 1) and the communication trench running back. At first, at the beginning of this trench warfare, we made a trench within a trench, just jutting off the main trench, and used this as a latrine. The disadvantages of course are evident. In the first place it was all very well if you were going to occupy the trench for a few days. But suppose you occupied it for a few weeks, or a few months, or two years and a half, as we have in some cases, what will the condition of your front line trenches be if you go on constantly digging fresh latrines? That is one disadvantage. Another is that this ground in places was so low lying that we got fearful floods; a heavy fall of rain would come and the contents of the latrine would be washed out and carried all along these trenches, and the men were simply wading or standing in one enormous sewer. So this plan had to be abandoned, and it was abandoned very early.

Of course the palpable solution was to have some method of removal. So we had biscuit tins or oil tins, and these were taken away every day, emptied and the contents buried behind in deep pits. The next thing we did was to establish the system which really obtains now. A big latrine trench, not very deep, but fairly deep, is excavated in a dugout, bomb and splinter proof, so that the men can go there comfortably and not have the feeling the whole time that a bomb or shell may drop in on them. They are also fly proof. There are wooden covered receptacles (Fig. 2) which are made very ingeniously from an oil drum, with a lid with a spring or weight to it, and rope handles, so that they can be lifted and carried out easily. They are perfectly inoffensive. It is the duty of the sanitary men of each unit to look after the condition of these. A medical officer supervises it, and their condition is absolutely satisfactory. I have walked past these latrines any time of the day, and could

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*From an address before the War College of the United States, as reported in the *Military Surgeon*, September, 1917.

not notice the slightest smell or anything offensive about them.

The troops in the front line will probably be relieved every twenty-four hours, and it is the duty of the troops who are being relieved to take those receptacles with them and to put in fresh receptacles which are kept in shallow dugouts, on the other side, so that the troops coming up will find their latrines quite empty, perfectly clean, perfectly ready for use.

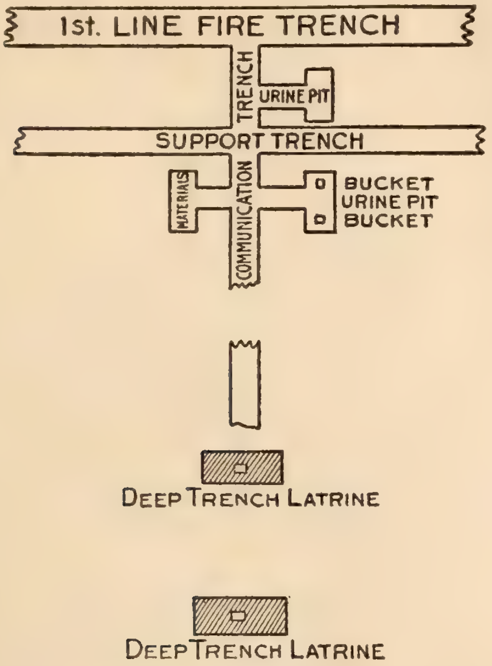

Fig. 1.—Sanitary arrangements in the trenches at the front.

Further back near this communication trench is a big, deep trench, probably 10 or 15 feet deep, where the contents of the buckets are emptied by the men who carry them back. When this trench becomes filled to within two or three feet of the top, it is filled in with earth. One such trench will last a very considerable time.

Another improvement which is carried out now in some divisions, and was carried out in my division, is to fit a wooden lid over the filth pit so that it is fly proof; no flies can get in and arrange a flue. There are handles to the lid with which to lift it so that the contents of the latrine buckets may be thrown in. We also throw into this all loose paper, loose straw or bits of wood, and a thousand and one pieces of rubbish which are always lying about. Every morning this is set fire to. I do not say that it burns all the excreta, but it burns a large portion of it. It is fly proof and absolutely inoffensive. You would not know of its existence when walking up the communicating trench. There are no flies near it, and it lasts for a very considerable time. That I think has worked very well, indeed. We had a working model going for a couple of months, and it was in every sense satisfactory and sanitary.

The regulation says the commanding officer of the unit is primarily responsible for the sanitary condition of the trenches, i. e., the commanding officer of the battalion occupying those trenches is responsible, and so he is. He is held responsible by the staff. But we medical people, I, for instance as assistant director of medical services, will be very annoyed with the medical officer of that battalion if the sanitary condition is not satisfactory. I should say to him, "Why did not you point this out? You are the sanitary and medical adviser, and you must point these errors out to the adjutant and colonel of the battalion. If I find things wrong again and that you are not calling attention to these unsatisfactory conditions, I shall put some one else in who will." The commanding officer of the battalion is the man who is responsible absolutely. But the medical officer is responsible as his adviser, and he should be able to point out defects to him and to suggest reasonable methods and means of making things right.

Every division is provided with three medical units, three field ambulances and a sanitary section. The sanitary section has one officer and twenty-five enlisted men and is provided with a light, thirty hundred weight motor lorry, which carries tools, carpentry materials, etc. They have a large disinfecting Foden lorry with a double Thresh installation on it, by which means they can disinfect by steam enormous quantities of clothing, blankets, etc., daily, when the division is in rest. They also carry materials for setting up baths, warm baths, and by that means they now use warm spray baths almost altogether, and you can make sure that every man in the division will get his hot bath at least once a fortnight, and he can get a complete change of clothing, disinfected, washed, dried, at least once a month.

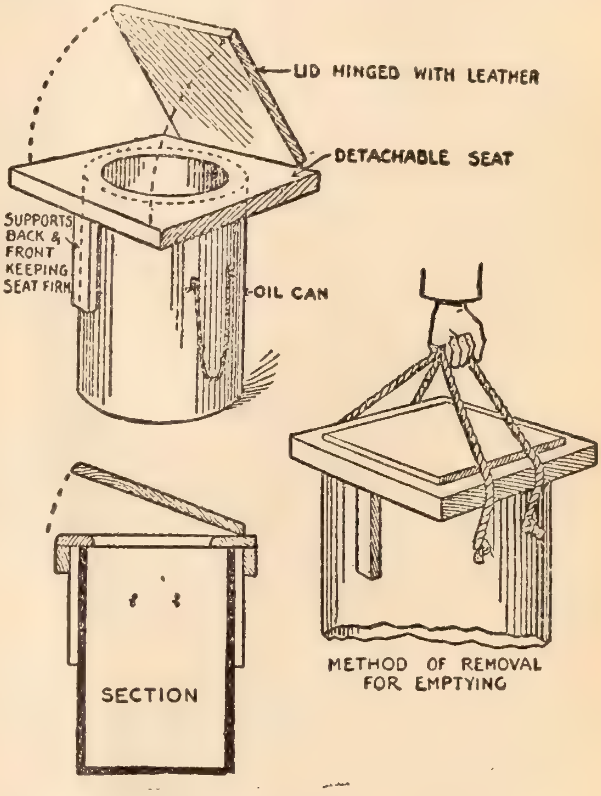
LID HINGED WITH LEATHER
DETACHABLE SEAT
SUPPORTS BACK & FRONT KEEPING SEAT FIRM
OIL CAN
SECTION
METHOD OF REMOVAL FOR EMPTYING

Fig. 2.—Improvised latrine bucket used for disposal of excreta in the front line trenches.

MEDICAL NEWS FROM WASHINGTON.

Increased Accommodations for Quarantine of Returning Transports.—Plans for Emergency Hospital Construction for Naval Service.—Red Cross Base Hospital No. 31, Youngstown (Ohio) Hospital.—No 12,000 Bed Hospital for Spartanburg.—Medical Inspector F. L. Pleadwell's Tour.

Washington, *September 17, 1917.*

The quarantine stations at Boston, Reedy Island, Cape Charles, and Savannah are to be increased in capacity, an appropriation for this purpose being carried in the pending urgent deficiency appropriation bill. It is apprehended that during the course of the war transports will arrive with returning troops that have developed infection of a quarantinable nature en route, and it is desirable that at least some of the stations on the Atlantic seaboard be so equipped and have such capacity as to make it possible to remove the troops from transports, thus releasing the vessels after proper disinfection. If the transports were required to be held at quarantine for the purpose of troop accommodation it would work material injury to the transport service, particularly in view of the shortage of sea going vessels. Aside from this feature the inability properly to segregate or isolate infected persons or contacts on crowded troop ships would interfere seriously with efficient quarantine treatment. The Public Health Service and the medical authorities of the army and navy are bending their energies to prevent certain disastrous conditions that were encountered during the Spanish-American War. Then large numbers of transports were detained in quarantine for days at a time, solely because there were no means for accommodating and isolating the troops on shore.

Reliable reports as to the sanitary conditions in Europe are not available for publication. However, it may be stated, in general, that during the past year there has been a wider spread of plague infection in the British ports that has been reported within the past thirty years. Plague infected rats having been reported from Liverpool, London, Bristol, and Hull. Typhus has caused great ravages, not only in the Balkans, but also in Germany and on the western battle front. Cholera, although it has prevailed chiefly in southeastern Europe, nevertheless has been found also on the western front.

* * * * *

Among the numerous naval items of appropriations on which estimates were submitted for inclusion in the urgent deficiency appropriation bill and which were reduced by the House Appropriations Committee, was one of $2,000,000 for emergency hospital construction. This item was reduced by $1,000,000 by the committee. This in spite of the fact that the estimate as originally submitted is destined to prove inadequate for the purpose desired to be realized by the surgeon general of the navy in providing for the care of the sick and injured of the naval service during the war. Construction involving expenditure of approximately $1,775,000 already is in progress at the following stations: Newport, $190,000; League Island, Philadelphia, $150,000; Norfolk, $200,000; Charleston, S. C., $125,000; Pensacola, $150,000; New Orleans, $150,000; Great Lakes, North Chicago, $450,000; Bremerton, Wash., $150,000, and Hampton Roads, $200,000. Plans also are under way for additional hospital facilities at Portsmouth, N. H.; Chelsea, Mass.; New York; Annapolis; Key West; Gulfport, Miss.; Pelham Park, N. Y.; Cape May, N. J., and Mare Island, Cal. The construction contemplated at these stations involves an expediture of about $1,500,000. All of this new construction is on account of the war and for the care and treatment of sick and injured prior to convalescence, and it is at places where the Navy Department has no hospital facilities or where hospital facilities are inadequate.

While facilities for the care and hospital treatment of sick and injured are receiving more immediate consideration at the hands of the medical authorities of the government, a broad scheme for taking care of convalescents of the military and naval services also is being worked out in a preliminary way. While no details of the plans in this direction have been given out, it is intimated that they may involve the taking over by the government of large and well equipped hotel and other accommodations at seaside and mountain resorts.

* * * * *

The organization of Red Cross Base Hospital No. 31 at the Youngstown (Ohio) Hospital is nearing completion under command of Major Adam E. Schlanser, of the army Medical Corps. The following members of the Medical Reserve Corps have been formally assigned to duty with this unit: Majors James A. Sherbondy and Burt W. Wilson; Captains Frederick J. Bierkamp, Maurice P. Jones, John L. Washburn, Ralph R. Morall, Charles C. Wolferth, Albion E. Brant, and Sidney M. McCurdy; First Lieutenants William J. Allsop, Clarence D. Barrett, John U. Buchanan, William H. Bunn, Ray W. Fenton, Charles H. Moses, Dean A. Nesbit, Colin McF. Reed, Jr., Everett R. Thomas, Parker G. Bordon, Orrin D. Hudnutt, and David B. Phillips.

* * * * *

Rumors to the effect that a base hospital, to have 12,000 beds, is to be built at Spartanburg, S. C., at a cost of $450,000, find no confirmation at the War Department. It is the plan of the department to place base hospitals at every cantonment with beds in number equal to three per cent. of the number of troops expected to be at the cantonment, and there will be a 1,000 bed hospital at the camp at Spartanburg, where the 27th National Guard division is being organized.

* * * * *

Medical Inspector F. L. Pleadwell, of the navy, has just returned to this country after being in England and in France along the battle front since May, 1916, as a member of a joint army and navy board. A recent part of his service was on the staff of Vice-Admiral William S. Sims, commanding our naval forces in European waters. While in England he received every courtesy from medical organizations and other bodies, and he had unusual opportunities to study military matters and medical conditions. His tour included inspections of hospitals, hospital ships, ambulances, camps, and training establishment in the United Kingdom and in France. He visited the British high seas fleet, the British trenches in France, and the Italian front on the Isonzo. In all, he visited sixty-four hospitals, five ambulance trains, twenty naval vessels including eleven hospital ships, and four medical service schools. His report will contain valuable data on administration, sanitation, disinfection, construction, education of disabled men, and kindred subjects, and such parts of it as are not confidential will be made public.

Medical Students and the Draft.—The following regulations governing the discharge of hospital internes and medical students from draft under the selective draft law of May 18, 1917, have been made by the President:

> First. Hospital internes who are graduates of well recognized medical schools or medical students in their fourth, third, or second year in any well recognized medical school who have not been called by a local board may enlist in the Enlisted Reserve Corps provided for by section 55 of the national defense act under regulations to be issued by the Surgeon General and if they are thereafter called by a local board they may be discharged on proper claim presented on the ground that they are in the military service of the United States.
>
> Second. - A hospital interne who is a graduate of a well recognized medical school or a medical student in his fourth, third, or second year in any well recognized medical school, who has been called by a local board and physically examined and accepted, and by or in behalf of whom no claim for exemption or dischardge is pending, and who has not been ordered to military duty, may apply to the Surgeon General of the Army to be ordered to report at once to a local board for military duty and thus be inducted into the military service of the United States, immediately thereupon to be discharged from the National Army for the purpose of enlisting in the Enlisted Reserve Corps of the Medical Department. With every such request must be inclosed a copy of the order of the local board calling him to report for physical examination (Form 103), affidavit evidence of the status of the applicant as a medical student or interne and an engagement to enlist in the Enlisted Reserve Corps of the Medical Department.
>
> Upon receipt of such application with the named inclosures the Surgeon General will forward the case to the Adjutant General with his recommendations. Thereupon the Adjutant General may issue an order to such interne or medical student to report to his local board for military duty on a specified date, in person or by mail or telegraph, as seems most desirable. This order may issue regardless of the person's order of liability for military service. From and after the date so specified such person shall be in the military service of the United States. He shall not be sent by the local board to a mobilization camp, but shall remain awaiting the orders of the Adjutant General of the Army. The Adjutant General may forthwith issue an order discharging such person from the military service for the convenience of the Government.
>
> Three official copies of the discharge order should be sent at once by the Adjutant General to the local board. Upon receipt of these orders the local board should enter the name of the man discharged on Form 164A and forward Form 164A, together with two of the certified copies of the order of discharge, to the mobilization camp to which it furnishes men. The authorities at the mobilization camp will make the necessary entries to complete Form 164A, and will thereupon give the local board credit on its net quota for one drafted man.

It will be observed that the first paragraph deals with internes and students who shall not have been called by a local board, and provides that they may enlist in the Medical Enlisted Reserve Corps under regulations to be issued by the Surgeon General, such enlistment entitling them to discharge from draft if thereafter called. An application for enlistment under this paragraph must be forwarded to the Surgeon General with the affidavit of the applicant, supported by the certificates of his school authorities, showing his present status as interne or student, and particularly how long he has been an interne in the one case, or the year of the medical course that he is pursuring in the other. An interne who has served one year or more as such will not be enlisted in the Medical Enlisted Reserve Corps under this regulation. An interne who is enlisted in the Medical Enlisted Reserve Corps hereunder will be called into active service under his enlistment, if his services are needed, at the end of one year or interneship. Applications for commission in the Medical Reserve Corps, from internes who at the expiration of one year's interneship are called for duty as members of the Medical Enlisted Reserve Corps, or from internes whose year of interneship is about to expire, will receive proper consideration. A medical student (undergraduate) who is enlisted in the Medical Enlisted Reserve Corps hereunder will be called into actve service under his enlistment, if his services are needed, upon failing in promotion or upon failing to graduate.

The second paragraph above quoted deals with internes and students who shall have been called for service by a local board under the selective draft law, and contemplates their discharge from the draft, upon condition that they shall enlist in the Medical Enlisted Reserve Corps. It will be the policy of the Surgeon General as a rule to recommend discharge from the draft upon the condition indicated, the discharge to be followed by a call to active duty under the enlistment in the Medical Enlisted Reserve Corps at the expiration of a complete year of interneship or upon the failure of the student (undergraduate) to pass to the next higher class or to graduate. Internes and students who are enlisted in the Medical Enlisted Reserve Corps by virtue of these regulations, and are not called into active service under such enlistments, are required to report their status to the Surgeon General as follows: Internes, at the end of each three months' period, such report to show the total amount of interneship since graduation, and to be countersigned and attested by the Medical Superintendent of the hospital; students, at the end of each semester, such reports to show whether the students qualified for advancement, and to be countersigned by the deans of their schools or by officers representing the deans.

In the execution of these regulations the department will not recognize interneships in hospitals, sanitariums or other institutions conducted for profit, or in small private hospitals of fifty beds or less, or new interneships established or added since May 18, 1917, to those previously existing, at any hospital, excepting such as may have been newly established and added by reason of a proportional increase in the bed capacity of such hospital; nor will it recognize interneships in the case of a graduate appointed later than August 1st after graduation.

Editorial Notes and Comments

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EDITORS
CHARLES E. DE M. SAJOUS, M.D., LL.D., Sc.D.,
Philadelphia,
SMITH ELY JELLIFFE, A.M., M.D., Ph.D.,
New York.

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DISEASE AND DISCIPLINE.

The intimate relation existing between disease and discipline or, to be more accurate, disease and lack of discipline, is clearly shown in the epidemiological study of an outbreak of measles by Colonel Edward L. Munson, division surgeon of the Twelfth Division on the Mexican frontier, the concluding installment of which appears in the *Military Surgeon* for September, 1917. The division comprised eleven regiments, including infantry, cavalry, and field artillery, besides the sanitary train, signal corps, and other detachments. Three out of the eleven regiments belonged to the regular army, the others being national guardsmen. An epidemic of measles broke out on January 27th and was practically confined to two regiments. By March 15th, 204 cases of measles had occurred in the First Alabama Cavalry and 133 in the First Mississippi Infantry, whereas in the remaining nine regiments of the division only fifty-six cases had been reported.

As pointed out by Colonel Munson, the sole material difference in the conditions surrounding these and the other regiments of the command was the lack of discipline in the two regiments named in which the sanitary regulations were not enforced. Colonel Munson says that the officers of these regiments were charming gentlemen and their commands made excellent records in military formation and in purely military exercises, but they did not furl their tents and sun their bedding as directed in the sanitary orders, and the result was an epidemic which practically disabled the regiments temporarily. So close was the relation between the health of the troops and the sanitary discipline that the division surgeon was able to pick out merely from the sick records of the companies the most efficient company commanders. Some companies had as few as two men sick, while one had as many as twenty-one. The loss in effectives was greater than in many severe engagements. The surgeons of these particular commands had endeavored to enforce the order to furl the tents and sun the bedding, but lacking the vigorous support of their superiors, the orders were not carried out.

The conclusions to be drawn from this study are the imperative need for the strict enforcement of all sanitary orders, the close relation existing between discipline and disease, and the possibility of preventing an epidemic of measles by providing ample air and sunlight. It is necessary to disinfect all the belongings of the patients and of those exposed to the disease by exposure to the sun and wind for at least two hours daily. Where there is no sunlight chemical disinfectants should be resorted to. The common drinking cup should be done away with, and personal contact or contact in the use of the same bed, pipe, towel, etc., must be avoided. Where an outbreak has occurred, the cases must be isolated promptly; careful examination at roll call will frequently betray the onset of disease before eruption appears. The surgeon of each command should formulate in writing a general order to be issued as soon as the first case of measles is reported. Immediate promulgation and enforcement of such an order will invariably limit the number of cases and prevent the development of an epidemic.

MEDICINE IN THE LIGHT OF MIRACLES.

It is no new thing to explain away the miracles of Jesus and his followers in terms of psychotherapeutic plausibility. At least this is so with the miracles of healing, especially since medical science has found an immeasurable psychical reality and causality below the surface of consciousness. This form of psychological consideration brings, however, a reversal of the point of view and sets our boasted modern medicine in the light of a far greater miracle which transcends the present limits of science. The effulgence of these same scientific medical concepts and formularies needs extensive revision.

Professor Hall (G. Stanley Hall: *Jesus, the Christ, in the Light of Psychology;* Doubleday, Page & Co., New York, 1917) has entered into the problems of Christology and Christianity with a profound penetration into genetic human history, its conflict, and effort at selfexpression, of which the Christian religion, this greatest of all psychical creations, is the outcome. Medicine, with every other practical issue of modern life, may well find within it a new baptism and a new realization of pragmatic value. Medicine, like every other phase of activity, may profitably contemplate itself in the light of the greater miracle which in fact created those lesser miracles, but which, once launched upon faith or credulity, retreated for a time, staggered by their literalness. The miracle of this religious faith was conceived in the intuitions of a Jesus who slowly found his way through the psychical development which constituted his life, or in the minds of the disciples and followers of this faith. It found its way out into the great conceptions of a high ethical life, the unifying power of prayer which unites the individual soul again with its racial, unconscious soul, the simple and yet suggestive symbolism of parabolic teaching, the greater symbolic suggestiveness of miracles, culminating in the resurrection of the Lord. Its reality and actual truth outdistance the greatest of any of these conceptions. It is the expression of that racial soul flowing underneath and beyond the individual soul, and of the individual effort to realize itself in that, at the same time that it projects itself through these articles of faith out again into practical life. This is no more an idle dream than was the tale of the resurrection on that first Lord's Day morning. The latter would have been such had there been no racial truth seeking to express itself thus in highest symbolic miracle. The former would be so to medicine if medical thought could grasp no more than its pills and powders and the symptomatic terms to which they apply.

Medicine, however, takes its rightful place as only a small part of man's economy and dares to find therapeutic guidance and light in religion if each man and woman every day is but a striving expression of the endless endeavor after health and wholeness, endeavoring though unwittingly to enter this greater miracle and be healed, reborn, raised from the dead. In the light of this broader and deeper psychological conception as a dynamic force progressively working its way up through the history of the race, finding its greatest expression thus far in this faith of symbolic teachings and miracles lifted over into high ethical living, the doctor who would reach his patient must enter into religion in order to know this complete striving after wholeness. "Religion," Hall says, "is conserving and curative by bringing us back to the older, better organized layers of our psychic life." This is found with particularly obvious truth in the realm of distinctively psychical disturbance, whether of a lesser or more profound type. Jesus's intuitive insight saw, however, a more extended application to the variety of ailments which manifest themselves in the body, and thus foreshadowed the knowledge which is dawning upon science. This racial soul surrounding the small circumference of individual consciousness has the body at its disposal and the symptoms are many whereby the striving of this greater soul expresses its discontent with the schism between itself and the external world of action and expression.

The great miracle is the reality of this larger life, which has been variously called, to which God himself belongs. Our limitations of conscious vision lead to its denial. The narrowness of practical effort to establish health lead to its neglect or scornful disavowal. Yet the great miracle lies also in its power to assert itself. This it has done in the genetic growth and development of this greatest of world religions, establishing the truth of itself through and finally beyond the individual miracles it has created along its pathway. It does it also in the baffling cry for health and wholeness which can be actually found only in its recognition and application to each individual life.

THE CHRONIC "RUNNING EAR."

The dangers lurking in a chronic suppurating ear cannot be too often emphasized, for notwithstanding the advance in the pathology and therapy of diseases of the ear the view prevalent among the laity that a chronically discharging ear should be left alone until it cures itself is unfortunately shared by a considerable portion of the profession. We know of cases where the apprehensions of intelligent, inquisitive parents were allayed by the family physician's consoling assertion that as long as the child is not "bothered" by the ear it is better to leave it alone, for the child will very likely "outgrow" the disease.

A mere glance at the anatomical relations of the parts involved ought to convince any intelligent physician that a discharging ear is fraught with peril and full of dangerous possibilities from a chronic suppuration with its intermittent exacerbations and remissions, which in many cases may mean nothing but an ever recurring annoyance, to meningitis and epidural and brain abscess, with *exitus lethalis*. The temporosphenoidal lobe of the brain is separated from the middle ear, the seat of the disease under question, by a mere thin bone plate, and erosion of this opens a wide avenue of access for the infecting organisms to the brain and its surrounding membranes. On the other hand there is but a thin layer of bone intervening between the mastoid cells on one hand and the lateral sinus and cerebellum on the other. Destruction of this partition may open the way to a perisinus abscess, a sinus thrombosis, meningitis, or cerebellar abscess, conditions that are almost invariably fatal. The invasion of the labyrinth through the round or the oval window may terminate in complete deafness if not the invasion of brain tissue. Again the proximity of the jugular bulb to the floor of the middle ear, the internal carotid below the Eustachian tube—its tympanic orifice—and the facial nerve along the inner and posterior walls of the middle ear—all important structures whose invasion threatens thrombosis, hemorrhage, and paralysis—should surely awaken the profession to the importance of intelligent and persistent treatment of chronic purulent otitis media. This has long been recognized by insurance companies which consider subjects of this disease as doubtful risks, and by the army and navy which do not accept them for enlistment.

In view of the fact that the recognition of an acute otitis media is a comparatively simple matter and that the indications for an incision of the drum are so plain that every wideawake general practitioner can easily detect them, it becomes an unpardonable omission to neglect this simple but effective little operation and to allow what would in the great majority of cases be a selflimited inflammatory process to develop into a long, lingering chronic disease with all its attendant perils. A sufficiently large incision made early and establishing thorough drainage would go far in limiting the number of chronic suppurating ears. It is, however, important to keep in mind the many causative agencies that tend to produce and perpetuate this condition, for on the proper recognition of these depends the course and the results of the treatment. Dr. J. V. Clay [*Journal of Ophthalmology, Otology, and Laryngology,* April, 1917] enumerates the most important of these, tuberculosis and syphilis, in which the disease is chronic from its very inception; next comes otitis media complicating scarlet fever, measles, diphtheria, and typhoid, in which the process is so intense and destructive "as to render a large percentage stubborn to any form of treatment." Infection with Vincent's organism shows a special predilection for the middle ear of the debilitated child. Bezold regards diabetes, next to tuberculosis and lues, as the chief etiological factor in the extension of chronic suppuration from the middle ear to the labyrinth. Modern methods of isolation and treatment have undoubtedly conduced to the diminution of cases of suppurative otitis media complicating or following the acute exanthemata, and with our further advance the number will still tend to greater decrease. This refers with equal force to diphtheria. The ordinary "colds," especially if influenzal in origin, are often a prolific source of acute otitis, and if not taken in hand early, are apt to result disastrously, particularly in the presence of adenoids and tonsils, septal deformities, and sinus involvement.

AN ATTACK UPON THE SUPREMACY OF URIC ACID IN GOUT.

Democracy is advancing in medical theory as well as in political history. An increasing recognition of the interchange and shifting of energy from one part of the community of the bodily organism to the other interprets these manifestations of energy, their products, and results likewise in diverse manner. There is room in such a conception for the relation of the character of these to their various functions, of a substance performing one service under one condition or perhaps proving detrimental under another. There is latitude for admitting many factors at work in any disease picture, none of them static or fixed or ultimately to be considered the sole cause of disturbance.

Uric acid as the last word in the causation of gout is one of these old concepts which is tottering upon its throne. The facts upon which its supremacy was established were too hastily assumed. Such is the position of Doctor Berkart [J. B. Berkart: The Alleged Perils of Uric Acid, *British Medical Journal,* August 18, 1917], who brings forward certain other facts which at least raise a question of the validity of former conclusions. The ancient doctrine that gout was due to excess in food and drink needed some satisfactory basis on which to stand. Therefore when uric acid deposits were detected in the joints where inflammatory pain had been experienced, and since uric acid was supposed to be an imperfect form of urea, the apparent sequence was seized upon without further investigation.

The toxic nature of uric acid was assumed because it is a product of excretion, although on the other hand it is a regular product of normal metabolism and ordinarily produces no disturbance. It is derived not alone from food, but also from disintegration of the nuclei of tissue. It only becomes morbific when elimination by the kidneys is interfered with, but as then other effete substances are also retained it is too much to assert that uric acid alone is responsible for resultant disturbance. It has been alleged that a too acid condition of the blood prevented its solubility and it must then be removed by deposit into the joints. There is, however, no evidence for this.

Then again uric acid is found upon inflamed or obsolete tissues belonging to a variety of disorders, none of which has been attributed to this product, while in gout, which has appropriated to itself this causative product, it is not always found to exist. Moreover, "uratic crystals never occur in the circulating fluid, their deposition is an epiphenomenon. . . . Thus the clinical data afford no proof whatever of any pathogenic property of uric acid, nor do the results of experimental inquiries."

The place of uric acid therefore in the causation of gout is a disputed one. The acceptance of it so firmly without sufficient proof has not only blinded medical men, but has proved a source of confidence to the public in various remedies exploited to combat this substance and has thus prevented or delayed the seeking of proper effective means for treating the disease. The use of uric acid solvents is in certain cases favorable to the deposit of uratic crystals, and moreover the removal of uric acid from the blood by His through radium treatment did not prevent the return of attacks of gout nor mitigate their frequency or severity.

DRAFTED PHYSICIANS MAY ENTER MEDICAL RESERVE CORPS.

A subscriber to the New York Medical Journal applied for appointment in the Medical Reserve Corps, but was rejected on the ground of physical disability. Later he was drawn and accepted under the selective service law and ordered to the mobilization camp. The Editors laid the case before the Surgeon General, requesting that a ruling be made as to the status of a man drafted under such circumstances. In reply the following ruling has been received from the Surgeon General:—"Applicants for appointment in the Medical Reserve Corps, who are rejected for physical defects and are later accepted under the Selective Service Law, will if they pass the final examination at the mobilization camp, be reconsidered for appointment in the Medical Reserve Corps. If they meet the moral and professional requirements they will be commissioned, notwithstanding the physical defects from which they may suffer."

News Items

American Medical Officers to Take Charge of British Military Hospitals.—The first contingent of American medical officers who will take charge of the military hospitals at Manchester, Salford, Liverpool, Leeds, Birmingham, and Cardiff, has arrived in London. The reason for the change is that the services of the doctors who have had charge of these institutions are needed by the civilian population.

High Death Rate from Automobile Accidents.—A study of the deaths among the industrial policy holders of the Metropolitan Life Insurance Company discloses the fact that the death rate from automobile accidents has more than tripled since 1911. In that year the rate was 2.3 per 100,000; in 1916 it had increased to 7.4. Nearly one third of those killed were children under ten years of age, and over 44 per cent. were under fifteen years of age.

Immunity of British Hospital Ships.—British authorities have confirmed the report that every British hospital ship shall carry a neutral commissioner appointed by the Spanish Government. This has been done on account of Germany agreeing to give safe conduct to hospital ships provided a Spanish naval officer is on board to guarantee that the vessel is used only for the transport of the sick and wounded. Eleven Spanish officers have been sent to various ports indicated by the Allies.

Health Conditions in the Navy.—Surgeon General Braisted, U. S. Navy, announces that the health of the men in the navy is good, there being little serious illness. A few cases of measles and mumps were reported from the Atlantic fleet, measles being less prevalent than mumps, averaging only ten cases a week for the whole force afloat. Several cases of these diseases were reported from the naval training station at San Francisco. At all other shore stations conditions were reported to be excellent.

Civil Service Examination for Superintendent of Iola Sanatorium.—Under the Civil Service rules a competitive examination will be held on October 6, 1917, open to men only, for the position of superintendent of Iola Sanatorium, Monroe Country, N. Y.; salary, $4,000 a year. Applicants must be licensed physicians of New York State, with an experience of at least five years in the actual practice of medicine. Applications must be filed with the Civil Service Commission not later than September 30, 1917.

Southwestern Virginia Medical Society.—Dr. W. R. Cushing, of Dublin, was elected president of this society at the annual meeting held on June 28th in Pulaski, and other officers were elected as follows: Dr. Z. V. Sherrill, of Marion, and Dr. W. Preston, of Roanoke, vice-presidents; Dr. A. B. Greiner, of Rural Retreat, secretary-treasurer; Dr. S. S. Gale, Dr. E. T. Brady, of Roanoke, Dr. F. H. Smith, of Abingdon, executive committee. The next meeting will be held in December.

Sites Chosen for Reconstruction Hospitals.—Sites have been chosen in the following cities for the nineteen reconstruction hospitals in which will be carried on the work of rehabilitating for private life soldiers who have been wounded in the war: Boston, New York, Philadelphia, Baltimore, Washington, Buffalo, Cincinnati, Chicago, St. Paul, Seattle, San Francisco, Los Angeles, Denver, Kansas City, St. Louis, Memphis, Richmond, Atlanta, and New Orleans. The hospitals in Boston, New York, Washington, and Chicago probably will be the first built. They will have five hundred beds each, with provision for doubling their capacity if necessary.

The Mayo Foundation a Gift to the University of Minnesota.—The Mayo Foundation at Rochester, Minn., has been made the absolute property of the University of Minnesota after having been affiliated with the university for a trial period of two years. The Board of Regents of the university unanimously ratified the permanent agreement by which the foundation is to be used perpetually for higher medical education, research and investigation. Securities totaling $1,650,345, representing the fortunes of Dr. William J. Mayo and Dr. Charles H. Mayo, were turned over by them to the university regents as an outright gift. The expenses of the foundation will be paid for by the physicians until a fund of $2,000,000 has accumulated and thereafter, the regents explained, the income from the fund will maintain it.

Medical Practice in England.—According to the London correspondent of the New York *Sun*, a special division of the Royal Army Medical Corps has been provided to deal with the question of territorial and temporary medical officers. The civilian officers today constitute eleven twelfths of the army medical service, a fact which indicates the large part which the civilian officer is called upon to play in this service.

A Shortage of Rubber Gloves in England.—The British authorities have prohibited the importation of rubber gloves, except by special license, and such special license has, so far, been issued only for the importation of operating gloves for the use of the army and the navy. The English manufacturers are wholly unable to supply the gloves required for the army alone, and these demands take precedence over those of civilians. So great is the shortage that the British Medical Association has appealed to the Board of Trade to issue licenses for the importation of operating gloves from the United States.

A Symposium on Neurological Surgery.—At a meeting to be held in the surgical amphitheatre of the New York Polyclinic Hospital, on Monday, October 1, 1917, at 8.15 p. m., by the Department of Neurological Surgery, the following program will be presented: Diagnostic Value of Lumbar Puncture, accompanied by a demonstration of the technic with the spinal mercurial manometer, by Dr. Y. C. Lott; Observations regarding the Anesthesia in Cerebral Surgery, by Dr. Charles S. Hunt; The Appearance of the Fundus Oculi in Certain Intracranial Conditions, by Dr. J. A. Kearney; Presentation of Patients Operated Upon for Intracranial, Spinal, and Peripheral Nerve Lesions, by Dr. William Sharpe; Psychopathology, by Dr. Edward S. Cowles; The Treatment of Hypoplastic and Mentally Impaired Children, with a lantern slide demonstration, by Dr. E. Bosworth McCready.

Military Surgeons to Meet at Fort Benjamin Harrison.—The Association of Military Surgeons of the United States will hold its annual meeting at the Medical Officers Training Camp, Fort Benjamin Harrison, Ind., October 8th-10th. Attention is called to the fact that aside from the papers which will be presented at the request of the program committee, there will be much at this meeting to interest all doctors in the exhibition of the work of training of the regimental detachments, ambulance companies, field hospitals, and evacuation hospitals. In place of the usual social diversions and receptions, it is planned to spend the evenings in the open around great camp fires, with song, vaudeville entertainment, and talks by officers who have seen service in the great war. For one evening, a big barbecue is planned. Civilian physicians will be welcome, and those bringing their own blankets, cots or mattresses, can be accommodated and fed in camp at a cost of one dollar a day. It is expected that the number of doctors in attendance will exceed 1,300.

War Meeting of the American Public Health Association.—Health Problems created by the war will be the principal topics discussed at the annual meeting of this association, to be held in Washington, D. C., October 17th-20th, under the presidency of Dr. W. A. Evans, of Chicago. Among the speakers will be Surgeon General Gorgas, U. S. Army; Surgeon General Braisted, U. S. Navy; Colonel T. H. Goodwin, of the Royal Army Medical Corps; Assistant Surgeon General T. W. Trask, United States Public Health Service, Dr. Franklin H. Martin, Chairman of the National Council of Defense; Dr. Pearce Bailey, of New York; Dr. Hermann M. Biggs, New York State Health Commissioner; Dr. Joel E. Goldthwaite, of Boston; Dr. William H. Park, New York, and representatives of the French and Canadian Sanitary Bureaus. Each of the seven sections of the association will have a conference on health problems and opportunities of the war and a symposium on this subject will be given at once of the general sections by committees from each section. Mayors, members of boards of health, and others interested in sanitary science all over the country are invited to be present or to send representatives to this meeting. The complete program has not yet been published, but will appear shortly. Copies may be obtained by addressing the Acting Secretary of the Association, 126 Massachusetts Avenue, Boston, Mass. Although a large part of the meeting will be devoted to health problems of the war, many interesting papers of a nonmilitary nature will be presented.

Gifts to Yale University.—The corporation of Yale University announce the receipt of gifts amounting to $362,393 since commencement. The largest was $100,000 from Mrs. Edward H. Harriman for the Harriman fund for obstetrics. Other gifts to the medical school were: For the general fund of the medical school, from an anonymous source, $140,000; for Yale Mobile Military Hospital, from John S., Henry C., and Howard Phipps, $62,935; for the Julia F. Brooker fund, from Charles F. Brooker, $50,000. The last gift is for the department of obstetrics and gynecology in the Yale medical school, and especially for the advancement of the women's clinic in connection with that school.

War Needs Boom Red Cross Seal Sale.—Plans have been completed by the American Red Cross and the National Association for the Study and Prevention of Tuberculosis for the opening of the 1917 Red Cross Christmas Seal Sale about November 20th and continuing up to January 1st. The campaign will seek to raise at least $3,000,000 for the autituberculosis movement in the United States, or more than double the returns in any previous year. The war has made it imperative that every possible facility for the care of consumptives be enlarged. The money raised from the sale of Red Cross seals will be distributed throughout the United States and most of it will remain in the communities where the seals are sold. In every State, however, it is planned to establish a special war fund, to provide immediate facilities for discharged recruits and soldiers. These funds will be administered through the State and local antituberculosis associations in cooperation with the Military Department of the National Association for the Study and Prevention of Tuberculosis.

Medical Corps Captains Promoted to Be Majors.—The following promotions in the Medical Corps of the United States Army are announced: To be majors with rank from May 15, 1917—Captains George M. Edwards, George B. Foster, Jr., Joseph Casper, Henry Beeuwkes, Edward M. Welles, Jr., Condon C. McCornack, William H. Thearle, Glenn I. Jones, George W. Cook, Charles C. Demmer, Charles T. King, Thomas H. Johnson, William H. Allen, Larry B. McAfee, Adam E. Schlanser, Carl E. Holmberg, John P. Fletcher, Joseph E. Bastion, Thomas D. Woodson, Alexander T. Cooper, John T. Aydelotte, Taylor E. Darby, Thomas C. Austin, Edward D. Kremers, Charles W. Haverkampf, Harry R. Beery, James R. Mount, Royal Reynolds, James S. Fox, Felix R. Hill, Ralph G. De Voe, Wayne H. Crum, John A. Burket, Wibb E. Cooper, Thomas L. Ferenbaugh, William L. Sheep, Edgar C. Jones, Arthur O. Davis, Floyd Kramer, Edward L. Napier, W. Cole Davis, John S. Coulter, Frederick H. Foucar, Paul W. Gibson, George B. Lake, Frank N. Chilton, Leo C. Mudd, Leonard S. Hughes, Jay D. Whitham, Henry P. Carter, James L. Robinson, Francis X. Strong, Robert C. McDonald, Howard Clarke, Alleyne von Schrader, Clemens W. McMillan, Harry G. Ford, James F. Johnston, Henry C. Maddux, Samuel S. Creighton, Henry C. Michie, Jr., Lauren S. Eckels, Albert P. Clark, Charles E. McBrayer, Eugene G. Northington, Harley J. Hallett, Sanford W. French, Thomas J. Flynn, George E. Pariseau, Daniel F. Maguire, Edward C. Register, John M. Willis, Joseph L. Siner, William Denton, John J. Reddy, Herbert H. Sharpe, Lloyd A. Kefauver, William T. Cade, Jr., John R. McKnight, Neal N. Wood, William B. Meister, Leeson O. Tarleton, Shelley U. Marietta, Harry H. Van Kirk, Robert Skelton, Omar H. Quade, Thomas E. Scott, Alfred P. Upshur, Thomas E. Harwood, Jr., Philip B. Connolly, Samuel J. Turnbull, Michael A. Dailey, Leopold Mitchell, Adna G. Wilde, Frederick C. A. Kellam, Jr., Johnson F. Hammond, John G. Ingold, Alvin C. Miller, Chester R. Haig, John H. Trinder, William E. Hall, Hew B. McMurdo, Thomas W. Burnett, Kerwin W. Kinard, Robert M. Hardaway, John W. Sherwood, Guy L. Qualls, James E. Baylis, Douglas W. McEnery, John W. Meehan, Charles M. Walson, Luther R. Poust, Benjamin B. Warriner, William D. Herbert, Stephen H. Smith, George F. Lull, Charles C. Hillman, Sidney L. Chappell, Fletcher O. McFarland, Harry L. Dale, Alvin W. Schoenleber, Ernest C. McCulloch, George R. Callender, Edward T. B. Weidner, Raymond W. Bliss, Norman T. Kirk, William B. Borden, Clarence R. Bell, Robert H. Duenner, and Harry Selby Purnell.

THE TREATMENT OF PERNICIOUS ANEMIA.

By Louis T. de M. Sajous, B. S., M. D.,
Philadelphia.

In the study of the uses of organic arsenicals in pernicious anemia, special interest attaches to arsenobenzol and neoarsenobenzol in view of their strikingly powerful action in certain other well known disorders. The amount of elemental arsenic introduced into the system with a dose of, say, 0.25 gram, or about four grains, of arsenobenzol is of course large when compared with the quantity taken in even with a large single dose of inorganic arsenic. Thus, in the dose of the organic compound mentioned the patient would receive about 1.2 grains of pure arsenic, whereas with a ten minim dose of Fowler's solution, assuming absorption to be complete, only about one thirteenth grain of pure arsenic would be introduced. Were, however, ten minims of Fowler's solution to be given three times daily, as is not infrequently the case where a course of this remedy with ascending doses is being administered, the amount of pure arsenic taken into the system in a week would actually be somewhat more, viz., slightly over 1.5 grains, than that introduced with a weekly 0.25 gram dose of arsenobenzol. The impression likely to arise that an anemic patient, as ordinarily treated with arsenobenzol, is receiving a considerably larger amount of arsenic than if he were being given Fowler's solution, is thus proved erroneous.

Again, the view that arsenobenzol may be advantageous because of the contained arsenic remaining longer in the system than would be the case with inorganic arsenicals seems hardly warranted upon detailed examination of the facts. While, according to Usuelli, 1912, excretion of salvarsan upon intravenous injection commences in two or three hours, excretion of arsenic begins in two to eight hours after administration of inorganic arsenicals (Sollmann). Similarly, while, according to Hoppe, 1910, excretion of salvarsan given intravenously is almost complete in four days, Sollmann notes the excretion of a single dose of inorganic arsenic as occupying three to ten days. The similarity in excretion is further shown when the results of the usual continuous administration of inorganic arsenic are compared with those of injection of salvarsan at relatively long intervals. With the former procedure excretion lasts up to seventy days, according to Sollmann, after cessation of administration; in fact, in some experiments on dogs, excretion in the urine continued as long as 160 days. In the case of salvarsan given intravenously, traces may be detected, according to Heuser, 1911, up to three months after the administration. Thus, it seems not unlikely, on the whole, that after intravenous injection of salvarsan the action of the drug on such structures as the erythrocytes and the bone marrow is no more prolonged than after systematic use of inorganic preparations.

Excretion after intramuscular injections is distinctly slower than after intravenous, and the effect of the drug is correspondingly more sustained. As already pointed out, however, the actual amount of arsenic introduced with a single 0.25 gram dose of arsenobenzol is smaller than that received under treatment by full doses of Fowler's solution for one week, and if intramuscular injections are given several weeks apart, the amount of arsenic actually circulating toward the close of the interval must be decidedly small. That the drug may act even in small amounts by virtue of its special chemical constitution or that of its immediate products of decomposition is, of course, a feature not to be overlooked.

From the standpoint of the action of the drugs in question on possible microorganismal causes of pernicious anemia, it is readily conceivable that arsenobenzol might prove more efficient than inorganic arsenicals in the presence of infection by protozoa, including the spirochete of syphilis. Bacteria, however, are in general relatively insensitive to arsenobenzol; hence no special advantage of this drug over inorganic arsenicals as a direct germicide in bacterial infections is to be expected.

Clinically, no statistics fairly comparing the results from arsenobenzol or neoarsenobenzol and those from inorganic arsenic in pernicious anemia are as yet available. Bramwell in 1915 reported a series of twenty-one cases treated with intramuscular injections of salvarsan or neosalvarsan and compared them, in so far as was possible, with 110 cases treated with Fowler's solution by the mouth. The immediate results seemed more favorable in the cases receiving the organic drugs, for whereas among these there was apparent recovery in 33.3 per cent., and only 28.5 per cent. remained unimproved, among the cases treated with Fowler's solution apparent recovery occurred in 12.7 per cent. and 32.7 per cent. remained unimproved. From the standpoint of ultimate results, however, the comparison seemed more doubtful, for although 83.6 per cent. of the patients treated with Fowler's solution had died at the time of writing, and only 71.4 per cent. of those treated with the organic remedies, the length of time elapsed since treatment was as yet in most cases very much shorter in the latter cases than in the cases treated by mouth. In none of the patients given salvarsan did Bramwell find reason to suspect syphilis, and among those in whom the Wassermann test was made the result was always negative.

Apart from Bramwell's series, only reports of single or small groups of cases treated with arsenobenzol are available. In many instances prompt, sharp rises in the red cell count extending through a period of two or three weeks after the injection were noted, even at times where Fowler's solution or sodium cacodylate had previously given only inferior results. According to Gossage, 1915, neosalvarsan intramuscularly is likely to yield more rapid and persistent improvement than arsenic by the mouth. As regards ultimate results, however, as would appear from Bramwell's figures, the procedure cannot, for the present at least, be considered especially promising as an improvement over the earlier methods of arsenical treatment.

(*To be continued.*)

Treatment of Neuralgia and Neuritis by Ionization and Diathermy.—John McGinn (*Practitioner,* June, 1917) states that he has obtained good results from these methods of treatment, which are thus described: To treat neuralgia with salicylic ions, lint or felt pads are saturated with a ten per cent. solution of sodium salicylate. The pads are well moistened with hot water, the dry salicylate dusted over the wet surface, and an additional piece or two of lint laid over the salicylate powder. They must be proportionate in surface area and in depth to the milliamperage intended to be utilized. For a current quantity up to 100 milliamperes in brachialgia, and 150 to 200 milliamperes in sciatic neuritis the pads may be of sixteen to twenty folds of lint varying in extent from twenty by twelve centimetres for the shoulder to twenty-eight by twelve centimetres for the lower limb. In sciatica the pads should be applied to the skin along the course of the sciatic nerve on the painful side extending from eight centimetres below the crest of the ilium to eight centimetres above the popliteal space. Lead or tin foil, connected carefully to conducting wires attached to negative pole or binding screw, is laid on and firmly smoothed to the outer surface of the pad; the whole is then covered with a suitable piece of mackintosh or muslinette and secured to the body by a three inch bandage. The indifferent pad, saturated with salt solution and with a slightly larger surface than the active one, should be applied over the sacral region, or upon the opposite hip. Direct current, sinusoidal current, or a combination of the two may be utilized. The quality of the current will depend upon the result desired.

Treatment by diathermy is in many respects preferable to ionization. Dry application of electrodes may be adopted, time is economized, and a larger quantity of current can be passed through the body. A through and through heating of the tissues is a very important result of its action. Diathermy is a high frequency current of low tension. The voltage is raised by a transformer from 100 to 2,000 volts, by which pressure the condensors are charged, which discharge across a very short spark gap. The disks are of copper, 1.5 centimetres in diameter. The treatment current is obtained through the secondary of a high frequency coil. The physiological action of diathermy currents is to raise the temperature of the tissues which they traverse. Its application may be made by a fine metal foil applied directly to the slightly dampened skin by immersing the foil in warm water, or by an absorbent pad about five millimetres thick soaked in strong salt solution interposed between the skin and the electrode. The size of the foil depends upon the region to be treated. Care must be observed that neither electrode becomes detached from its support during treatment, as a very severe burn will be rapidly produced by the free terminal. The diathermic action is set in motion by a switch and the resistance is then slowly reduced until a sufficient quantity of current, indicated by the milliamperimeter, is passing through the body; if applied to the forearm about 300 to 400 milliamperes; if to the shoulders 700 to 800 milliamperes; the gluteal or sciatic region will take 1,000 milliamperes, and over the back as much as 2,000 milliamperes can be used. When an uncomfortablly hot sensation is experienced reduction must be effected at once or a burn will ensue. In about twenty minutes the current may be diminished to zero, switched off, and the bandage, pads and electrodes removed. The bared limb will be flushed or sweating, and the skin will be red and hot along the border formed by the electrode. A suitable dusting powder will render the surface comfortable after the application. The treatment is to be repeated on alternate days for two or three months.

Treatment of Asthma in Children.—Fritz B. Talbot (*Long Island Medical Journal,* July, 1917) deals only with cases of asthma which remain after the exclusion of renal, cardiac, and thymic asthma and the form due to pressure of bronchial glands. These cases are now known to be manifestations of anaphylaxis to some form of protein and can be divided into those due to inhalation of the proteins, such as pollens and animal emanations and those due to ingestion of various forms of food. The precise cause of each case is to be sought by careful history taking and established by means of the cutaneous test for hypersensitiveness. This consists of applying fresh solutions of the suspected proteins to linear scarifications and observing that one which produces a typical reaction when the causative agent has been discovered the treatment resolves itself into two general methods. In the one the object is to prevent the further absorption of the offending protein. This can be accomplished in the case of the inhaled substances, by change in abode and in many of the cases due to ingestion by the total elimination of the sources of the protein from the diet. In the latter group, however, it is often impossible to accomplish this end and maintain adequate nutrition. Resort must be had, in such cases, to the effort to establish some degree of immunity. This is best accomplished by total removal of the offending food from the diet and the administration of the protein in ascending doses, beginning with a minute one, until some degree of tolerance is established. In the case of egg hypersusceptibility, for example, the initial dose is usually only one milligram and the maximum is reached at about ten grams. In the case of a number of the vegetable proteins the sensitizing properties can be largely destroyed by exposure to high heat. Where milk is the cause, boiled milk or buttermilk can sometimes be taken, or goat's milk may be used. In most cases if the acute manifestations can be controlled the child will outgrow his hypersusceptibility.

Treatment of Bronchopneumonia in Children.—J. E. Measham (*Practitioner*, June, 1917) employs the following treatment: The child's chest is enveloped in a light Gamgee jacket, and over this a pair of woolen combinations is worn. The bed is placed in a part of the room free from draught and not more than the usual amount of bedclothes is used. A fire is kept constantly burning, and the window always open. The child is encouraged to take frequent sips of cold water. No medicines are given by the mouth, but a subcutaneous injection of quinine hydrochloride is given morning and evening. A solution is prepared in which one grain of the quinine salt is dissolved in ten minims of water; the dose is five minims for a child under six months; ten minims for a child under one year; fifteen minims for a child under two years, and twenty minims for a child over two years.

Treatment of Carriers of Amebic Dysentery.—W. Waddell, C. Banks, H. Watson, and W. O. Redman King (*Lancet*, July 21, 1917) report their experiences with the treatment of 102 carriers of amebic dysentery with emetine bismuth iodide, given in the form of sixty mgm. ceratin coated tabloids. The usual course was to give three tabloids at one dose each day after the midday meal and continue for twelve days. Some of the patients received smaller total doses than this, however, for one reason or another. The treatment caused purgation or vomiting in practically every case, but usually only one of these effects was marked in any given case. A few were violently affected in both respects. The vomiting usually began about one hour after the dose, the diarrhea generally more than three hours after. Tincture of opium was the only sedative which seemed to have much influence in controlling either of these effects. At times the course of treatment had to be cut short on account of the severity of the effects. In a number of instances the vomitus contained some of the drug, showing that the ceratin coating had been dissolved in the stomach. Nineteen of the 102 cases were unquestionably not cured by the treatment, but this is far smaller a proportion of failures than is recorded for treatment with emetine hydrochloride. It is possible that the form in which the drug was given had something to do with the relatively large proportion of failures. The remainder of the cases were apparently cured, as shown by repeated stool examinations for several days to weeks after the close of treatment. While they were apparently cured, it was not certain that a small number of them would not later relapse, though this seemed doubtful since those cases which did relapse showed the ameba cysts in their stools very promptly after the end of treatment. The results with total doses smaller than the usual routine were about as good as with the full courses and it seemed probable that in the future less of the drug might be used. Other intestinal parasites, except the Amœba coli, were not influenced by the drug. This parasite was often greatly reduced in numbers or entirely disappeared from the stools for several days during and after administration of the emetine. Postdysenteric diarrhea, following either amebic or bacillary dysentery has proved very resistant to treatment, but it was found that it could be cured fairly promptly by the administration of large doses of rhubarb until the stools resume their normal bile-stained character. The usual doses should be from fifteen to twenty-five mils of the tincture, given at once and repeated every two days if necessary. When the stools have returned to normal color two or three doses daily should be given of the following mixture:

Acidi hydrochlorici diluti, }
Tincturæ opii, ... } ....āā 0.6;
Bismuthi subnitratis, ...2.0.

The diet should be soft and bland, and a tonic containing pepsin should be given after the diarrhea has been controlled.

Hemorrhoids.—Charles J. Drueck (*Chicago Medical Recorder*, July, 1917) contends that the treatment must depend largely upon the type of hemorrhoids present in any given case. Thrombotic external piles should be operated upon under local anesthesia produced by placing a drop of pure phenol at the base of the pile and then introducing a needle through this spot for complete anesthesia by means of 0.5 per cent. cocaine solution. The pile should then be transfixed at its base with a sharp bistoury and split through to its apex, making the cut in a radial direction from the anus. If the clot does not pop out it should be removed with forceps. All clots should be removed and the cavity packed with a 1:1000 solution of epinephrin on gauze. In twenty-four hours this should be gently removed and a new one inserted if there is still any bleeding. If the bleeding has stopped the wound should be allowed to granulate, being dressed and cleaned carefully each day until this is complete. The wound should never be sutured. In the varicose external hemorrhoids the chief treatment should be medical to correct the pernicious habits which are the cause of these tumors. Constipation and prolonged sitting or standing, as well as straining at stool, should all be corrected. The patient should be encouraged to answer every call to stool and warned to remain for only a few moments and not to strain. After a movement he should lie on his side and apply cold cloths to the anus for at least five minutes. The parts should then be dried and anointed with the following astringent ointment:

Acidi tannici, ...2.0;
Unguenti hydrastal, ...30.0.

This should also be applied to cotton wool and held in place at the anus with a T bandage. This latter part of the treatment should be carried out each night and the patient should secure a prolonged period of rest lying down. Inflammatory external hemorrhoids should be treated by applications of ice bags and compresses soaked in hot two per cent. boropine solution until the inflammation is reduced. Then the following ointment should be applied every two hours

Unguenti belladonnæ, }
Unguenti stramonii, } ....āā 4.0;
Unguenti hydrastal, ...30.0.

After the subsidence of inflammation the remaining skin tabs should be removed surgically and fissures, ulcerations, or internal hemorrhoids treated. The sphincters should also be well dilated.

Peptone Injections in Septicopyemia.—Potel (*Presse médicale,* July 12, 1917) reports the case of a man wounded in the shoulder in whom, in spite of several operations and prolonged Carrel treatment, a septicopyemia developed. The latter proved refractory to various measures, including the Leclainche and Vallée serum and sea water injections. Blood cultures revealed a streptococcic infection. The patient soon passing into a cachectic state, Potel administered peptone injections, as recommended by Depage and Nolf, with the result that after the twelfth injection—ten c. c. being given on alternate days—fever completely subsided and the patient was on the way to recovery. In this treatment bacteriological peptone is used; it should be odorless and as pure as possible. A ten per cent. solution in sterilized water is made and heated to 120° C. A flocculent precipitate forms, and is filtered off on a hot filter. The solution remaining is put up in ten c. c. ampoules which are sterilized again in the autoclave. Subcutaneous injections of the solution are safe if one makes sure the needle has not entered a vessel. For the first injection the solution should be diluted. If it is well borne, ten c. c. of the ten per cent. solution may be given in the second injection. Intravenous injections, if employed, should be administered very slowly, in three to five minutes, with the patient's pulse and face under careful observation. If facial congestion and a sensation of oppression supervene the injection should be stopped at once and five c. c. of camphorated oil injected, after which gradual recovery will take place.

A Method of Indirect Blood Transfusion.—G. Rosenthal (*Bulletin de l'Académie de médecine,* July 3, 1917) describes a simplified method of blood transfusion intended to enlarge the field of the procedure both in civil and military practice. It is based on the view that the mechanical function of transfusion in filling out the vessels of the recipient can be carried out by normal saline solution instead of blood, and that for the additional purpose of hematopoietic stimulation only a relatively small amount of blood is required. With the customary precautions a short needle of 0.9 millimetre calibre is introduced into a vein of the recumbent recipient by simple puncture or by dissection under novocaine. A receptacle containing 500 to 1,000 c. c. of saline solution is connected with the vein and the saline solution run in under the charge of an assistant. The operator meanwhile deals with the donor, having at his disposal several twenty c. c. glass syringes of the Luer type, sterilized in Carrel's paraffin mixtures, then washed in very hot saline solution. The arm of the donor, lying about a yard from the recipient, with the operator between, is prepared with tincture of iodine. The operator now inserts in a vein, the arm being compressed above by a second assistant, a heavy nickel needle one to two millimetres in diameter fixed to a twenty c. c. syringe, which is then filled in four seconds. The operator now quickly turns to the recipient, the saline infusion having just been stopped, and injects the blood. The procedure of blood transference lasts but ten seconds, and is repeated five times in succession, either with the same syringe washed in saline solution or with a series of syringes.

Serums and Vaccines under War Conditions.—G. W. McCoy (*Medical Insurance and Health Conservation,* August, 1917) recommends keeping vaccine virus in a cold place. The reason why much of the vaccine virus obtained is nearly or wholly inert is because of improper storage. In Europe, every wounded soldier receives a dose of tetanus antitoxin. The dose is 500 units and it is repeated every seventh day. As a curative agent 3,000 units should be administered intraspinally. At the appearance of the first symptoms 10,000 units in addition should be given intravenously. The intraspinal dose should be repeated daily until improvement sets in and the blood should be kept antitoxic by further subcutaneous doses of 10,000 units. Typhoid vaccine is best given in an initial dose of 500 million followed by twice that amount in seven to ten days. After another interval of seven to ten days a third dose, of the same size as the second, is administered. Revaccination is being practised annually in the European armies. Antipneumococcic serum has given good results. When possible, the serum for the particular group organism should be employed. Against cholera 500 million bacteria, followed by 1,000 million within a week are used prophylactically. Where hypersensitiveness is suspected a small dose of serum, 0.1 c. c., should be given half an hour prior to the full dose.

Prevention of Deformity Following Poliomyelitis.—Walter Truslow (*Long Island Medical Journal,* July, 1917) lays the greatest possible emphasis upon the prevention of deformity as the most important phase in the treatment of poliomyelitis. He expresses the belief that adequate prevention can be made to eliminate almost wholly the later deformities and disabilities. The essence of the methods of prevention is to keep the patient in bed for many weeks, during which time each portion in which there is partial or total paralysis is to be maintained constantly in a neutral position. The neutral position is that in which damaged muscle is not stretched and its stronger opponents are not permitted to act against it. Combined with this plan there should be a gradual application of massage and muscle training designed to increase the strength and hasten the recovery of the damaged muscles. In this stage of the treatment the greatest care must be exercised not to increase the development of the normal muscles, as that will delay recovery by tending to produce deformity. The maintenance of the neutral position should be accomplished by the simplest and lightest form of apparatus which will meet the desired ends. One must be careful not to focus the attention too greatly on the lower extremities, but a careful examination should be made of the entire musculature of the body, including the abdomen and back and similar methods of treatment applied wherever there is a weakened muscle. The victims should also be kept off their feet until all or most of the muscle power has returned. Where braces are applied to the extremities these should be reduced in length as one joint after another comes under normal muscular control. The method is long and tedious, but its results are worth many times the temporary discomforts and inconveniences.

Miscellany from Home and Foreign Journals

Purulent Bronchitis.—J. A. B. Hammond, William Rolland and T. H. G. Shore (*Lancet*, July 14, 1917) describe a form of purulent bronchitis which has occurred frequently among the troops and which has very often proved fatal. There are two general clinical types of the disease. The one is very acute and presents a picture closely similar to that of the ordinary lobar pneumonia with a sustained fever of about 103° F.; blood streaked sputum at first, changing to purely purulent in a few days; pulse rate out of all proportion to the fever; dyspnea and cyanosis; "lung block" with embarrassment of the right heart, and death on about the fifth or sixth day. The second type is less acute and far less fatal. It has a swinging fever with a range of two to three degrees from day to day; initial frothy sputum, soon becoming purulent; a prolonged course of several weeks; much wasting; night sweats; slow convalescence; and relatively low mortality. In the great majority of the cases studied the Bacillus influenzæ was isolated from the sputum, often in pure culture and often in association with the pneumococcus. Other organisms were also frequently present. The morbid anatomy of the condition varies from a lobular to a lobar pneumonic type with very pronounced inflammation and thickening of the smaller bronchi. There are also well marked signs of acute parenchymatous degeneration in the various important organs of the body including kidneys, liver, spleen, lymph nodes, and heart. Treatment is not satisfactory, but continuous inhalations of steam with benzoin or eucalyptus seem to give some symptomatic relief. The condition appears to be epidemic.

Acute Febrile Polyneuritis.—Gordon Holmes (*British Medical Journal*, July 14, 1917) describes a form of severe and widespread polyneuritis, occurring acutely and of unknown origin, which he has encountered in private practice and at the front. The onset is generally rapid with malaise or fever and no local manifestations. Then pains develop in the legs and lower part of the back, usually on the second or third day and persist. Weakness begins in the legs usually a day or so later. The paresis increases rapidly and the upper extremities are soon affected similarly, but less severely. At about the same time the patients complain that their faces are drawn and stiff and there may also be some interference with the power of articulation or swallowing. In the established disease, when fully developed, the symptoms are very characteristic. The lower extremities are equally affected, flabby, without tone, and extensively paralyzed. The paralysis is seldom complete in all groups of muscles and all are often more or less uniformly affected. Muscular atrophy is never marked. The feet are dropped; there may be no movement possible at the toe and ankle joints, but there is nearly always some at both hip and knee. The arms are similarly but less severely affected, no one movement being totally paralyzed. The trunk muscles are less seriously involved than the arms, though there may be some paresis of the respiratory movements. The deep reflexes are absent, but the superficial ones usually persist. The picture closely resembles a generalized peripheral neuritis of the motor nerves. There is relatively little sensory affection, though some pain may be complained of, especially when the parts are moved. The facial muscles are invariably severely affected from the onset and there is often much difficulty in eating and drinking, both from facial paresis and from paresis of the pharyngeal muscles. The tongue is not affected and the palate but seldom. The sphincters are usually more or less disturbed. Vasomotor, sensory, and trophic disturbances do not occur. The course of the development of the affection is rapid and restoration of function is usually steady and rapid. Two cases resulted fatally from pulmonary complications, probably aggravated by respiratory paresis. The condition is highly typical and can be differentiated from other forms of polyneuritis with ease.

Effect of Trinitrotoluene on the Blood.—P. N. Panton (*Lancet*, July 21, 1917) reviews the literature and presents the results of a series of investigations of his own. A group of fifty persons at work with trinitrotoluene was studied to determine the effects of the substance on the blood. It was found that no ill effect was manifest on the red cells and hemoglobin, but, on the contrary, there seemed to be some stimulation of the erythroblastic tissues. There was also an appreciable increase in the numbers of leucocytes, apparently due to a stimulation of the leucoblastic tissues. Some degree of cyanosis was common among the workers and this was found to be due, probably to the production of NO hemoglobin, methemoglobin, or both. Bible pigment was found in an abnormal number of samples of blood serum from the workers and suggested that even in the absence of any symptoms there may have been some damage to the liver. A second group of cases was studied, including those made ill by exposure to T. N. T. Among these toxic jaundice and anemia were the principal troubles. A careful investigation showed that the toxic jaundice was due to a destructive action of the substance on the liver cells and not, as suggested, to an increased hemolysis. In fact the red cells were usually found to be less fragile than normal. The anemia was of a special type, best described as aplastic. The red cells were greatly reduced in numbers, but there was no alteration in their morphology and no abnormal forms appeared. The hemoglobin content of the individual red cells was increased so that there was a high color index. The total leucocytes were also diminished, chiefly at the expense of the granular, neutrophile polynuclears, which fell below ten per cent. in some cases. The anemia was often latent and very slow in developing and in almost every case ran a slowly progressive course to a fatal termination. In some of the cases it was complicated by purpura and hemorrhages from the mucous membranes. Fortunately the occurrence of anemia was rare.

Congenital Abnormalities in the Infundibulum of the Pulmonary Artery.—E. Lenoble (*Bulletin de l'Académie de médecine,* July 10, 1917) adds to already known congenital cardiac abnormalities a group of disorders involving in particular the infundibulum of the right ventricle during intrauterine life. He has recently met with five cases of this description. The disorder is ascribed to alcoholism or syphilis in the parents rather than to an inflammation of the endocardium and myocardium. The lesions seem to occur especially in two definite situations, viz., the lowest portion of the infundibulum, near the anterior tricuspid leaflet, and its upper portion, in contact with the sigmoid leaflets. Lenoble recognizes, therefore, two clinical forms, the inferior infundibular syndrome with a presystolic or combined presystolic and systolic murmur, and the superior infundibular syndrome, which may be accompanied by changes in the sigmoid leaflets and simulate pulmonary stenosis and insufficiency, in the absence, however, of the arterial dilatation which occurs in actual stenosis of the pulmonary orifice. These conditions, which might be confounded with extracardiac murmurs, are not incompatible with prolonged survival of the individual. They may occur either alone or in conjunction with malformations of, for instance, the nervous system, or with faulty development of the entire organism, all dependent upon the single initial cause.

Silent Peritonitis and Sudden Death.—J. Minet (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris,* February 8, 1917) remarks that the term latent peritonitis has hitherto been used only in reference to chronic peritonitis in its early stages or to encysted forms of peritonitis. In three cases of acute peritonitis encountered by him, however, complete latency as regards symptoms was likewise noted. In the first case, that of an apparently healthy soldier, suffering from incipient renal tuberculosis, the patient was found dead, without suspicion of any other abdominal condition on the part of either the physician or the patient's ward neighbors. At autopsy an acute peritonitis was found related to a constriction of the bowel by adhesions of long standing. In the second a soldier exposed to dinitrophenol was treated for dyspnea and cough without suspicion of any abdominal trouble. Next morning he was found dead. Pulmonary edema due to the dinitrophenol was suspected, but on opening the abdomen a diffuse suppurative peritonitis of appendicular origin was found, together with an old chronic nephritis. In the third case, the patient had received a kick in the abdomen; losing consciousness for a moment, he had soon after gone home and later resumed his work. Four days later he suddenly expired, following vague discomfort and vomiting of greenish material. The autopsy revealed a diffuse stercoral peritonitis with double rupture of the intestine. These cases demonstrate the possibility of complete latency in the presence of grave peritoneal disease, and serve to emphasize the necessity of a thorough examination of all cases, especially in the many individuals who seem unable properly to analyze their subjective sensations. The cases as reported are also deemed of importance from the medicolegal standpoint.

Hemoglobin Value of the Blood in Surgical Shock.—F. A. Bainbridge and H. B. Bullen (*Lancet,* July 14, 1917) point out that hemoglobin determinations may be of considerable prognostic value as to the probability of recovery and the progress being made in cases of surgical shock with or without hemorrhage. In simple shock the blood becomes concentrated by loss of plasma. In hemorrhage the blood becomes diluted by the influx of fluid to make up for the loss. Where the two are combined there is a result depending on the predominance of one or the other factor. In shock with hemorrhage a hemoglobin reading nearly normal indicates that the patient cannot restore the loss of blood by the absorption of his tissue fluids. The blood volume becomes inadequate for maintenance of life and infusion of hypertonic saline is indicated. Where the hemoglobin value is decidedly below normal it indicates that the patient has compensated for his hemorrhage by the absorption of his tissue fluids.

Causes of Error in the Wassermann Reaction and Their Prevention.—H. Telmon (*Presse médicale,* July 19, 1917) greatly prefers the use of fresh serum with its natural complement to that of heated guineapig serum, as in the older Wassermann methods. Even the fresh serum methods, however, are subject to error and variation in results. These difficulties he deems due to the use of a serum that is too recent and still retains a marked excess of complement. In a positive serum some of this excess will remain unfixed, and will later induce hemolysis in the second step of the reaction. The practitioner thus obtains frequent negative reactions which are incorrect and undermine his confidence in the test. To eliminate the disturbing excess of complement, Telmon sets the fresh blood aside at room temperature for about forty-eight hours, then subjects the serum to test. A test tube containing 0.4 c. c. of saline solution and 0.1 c. c. of serum is placed in the incubator at 38° C. for an hour and a half; 0.1 c. c. of a six per cent. suspension of rabbit or sheep corpuscles is then added, and the tube put back in the incubator. If complete hemolysis now follows in less than five minutes, the serum is too rich in complement and must be set aside and tested again after twelve to twenty-four hours. Where hemolysis takes at least seven minutes, there is no disturbing excess of complement and the serum can be used at once. If the excess of complement seems unusually great, its disappearance can be hastened by keeping the serum in the incubator for ten or twelve hours; if the serum grows too weak in this process, fresh serum can be added to restore sufficient complement. Heating serum in this way to accelerate loss of complement can also be practised from the start where the test must be hurried. Telmon likewise warmly counsels this slow serum inactivation at 38° C. in place of the half hour heating at 56° C. of the old Wassermann technic. Frail, thermolabile specific amboceptors in the serum are thus spared, and if all tests, whether by the older or newer methods, were performed with these precautions, concordant results throughout should usually be obtained.

New Physical Sign in Pneumothorax and Pleural Effusion.—Oliver K. Williamson (*Lancet*, July 7, 1917) observed that in these two intrathoracic conditions there was a lower blood pressure in the leg than in the arm on the same side as the effusion or pneumothorax. The blood pressure was always read with the patient lying horizontal so that the arm and leg were both on a level with the heart. The difference in the two blood pressures was at least ten and often more than twenty millimetres of mercury. The sign seemed to be due to a partial compression of the descending thoracic aorta by the air or fluid in the chest cavity. The sign was positive in five out of six cases of pneumothorax and five out of seven of pleural effusion observed.

Ingestion of Coffee, Tea, and Caffeine and Uric Acid Excretion in Man.—Lafayette B. Mendel and Emma L. Wardell (*Journal A. M. A.*, June 16, 1917) review the literature of the effect of the ingestion of caffeine on the excretion of uric acid and point out the marked variability in the results obtained due to the want of adequate methods of determining uric acid. They conducted a group of carefully controlled observations with the newer and more exact methods of analysis and found that the addition of strong coffee, tea, or caffeine to a purin free diet led to a marked increase in the excretion of uric acid. The effect was proved to have been due to the caffeine, since decaffeinated coffee failed to cause such increase. Further, the increase in uric acid was proportional to the amount of caffeine given and was found to equal the quantity of uric acid which would result from the demethylation and oxidation of from ten to fifteen per cent. of the ingested caffeine.

Some Clinical Forms of Tuberculosis Encountered among Soldiers in Active Service.—P. Nobécourt and E. Peyre (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris*, February 8, 1917) refer only to men who upon examination had been considered free of tuberculosis, and after service at the front had been sent back to a hospital for contagious diseases because of some acute febrile disorder of unknown origin. Among nearly 2,000 men thus sent back, without suspicion of tuberculosis, about 2.5 per cent. were found to have tuberculous manifestations. Men between twenty and thirty years of age yielded a larger ratio of these cases than men between thirty-one and forty-one. In nearly one fourth of the cases conditions suggesting a former infection with the tubercle bacillus were noted. Fever was usually the chief symptom. Rather frequently the temperature curve resembled that of a typhoid or paratyphoid infection, blood cultures and the Widal test often proving necessary to determine the diagnosis. The tuberculous origin of the fever was shown by early or late appearance of local lesions of the disease, usually in the lungs and pleuræ. Copious pleural effusions were rather often met with, requiring prompt evacuation. Involvements of the peritoneum, meninges, tracheobronchial ganglia, larynx, and spinal column were also encountered. Three out of forty-nine patients died; twenty-nine had to be sent elsewhere for prolonged treatment, and seventeen after treatment were discharged as cured.

Effect of Vaccinia on the Wellbeing of Children.—J. Parlane Kinloch (*Lancet*, June 30, 1917) says that vaccinia has been alleged to prejudice the chances of infants and hamper their development in later years as well as to diminish their resistance to other infectious diseases. In discussing the latter point the author concludes from a study of 3,058 cases of febrile disease with vaccination scars and 746 unvaccinated cases, that there is no evidence that vaccinia prejudices the child's future wellbeing as judged by his response to subsequent infections.

Meningococcic Purpura.—Netter, Salanier, and Blanchier (*Presse médicale*, July 12, 1917) point out the feasibility of ascertaining by microscopical examination of material obtained from purpuric spots for the diplococci of cerebrospinal meningitis, whether a condition from which a patient is suffering is actually meningitis of the epidemic type. The morphological characteristics of the organisms seem sufficient, under these circumstances, for positive identification. In most instances of meningitis accompanied by purpura a form of meningococcus different from that of the classic type is probably responsible, and correspondingly, in the treatment, the use of a polyvalent serum is indicated.

Marching Fractures.—A. Howard Pirie (*Lancet*, July 14, 1917) gives this name to fractures of the second third, or fourth metatarsal bones of the feet resulting from prolonged marching with heavy packs. The fracture occurs without the patient's being aware of it and the usual history is one of increasing soreness and pain in the foot which finally becomes unendurable. The mechanism of the fracture is probably as follows: The continued strain of marching with heavy loads breaks the arches of the foot, allowing the weight to fall abnormally severely on the central three metatarsal bones. These three bones are the weakest of the metatarsals and one or more of them finally gives way at its weakest point, which is near the head of the bone. The fracture is not due to direct violence, but results from a combination of muscular action and indirect violence.

Acute Osteomyelitis of the Frontal Bone.—Herbert Tilley (*British Medical Journal*, July 7, 1917) reports the case of a woman who developed frontal sinusitis following an attack of "influenza." The sinus was opened and parts of the bony walls were found to exude pus from the diploetic spaces. Drainage and hot fomentations did not relieve the condition and evidences of spreading osteomyelitis of the frontal bone appeared. About one month later a second operation was performed, exposing the entire frontal bone which was found to be generally inflamed and partially necrosed. Some of the loose portions carried the underlying dura mater and superficial parts of the brain substance with them when removed. As much of the inflamed bone was removed as seemed possible and a multiperforated drainage tube was passed around the margins of the bone remaining. The scalp was then replaced and hot fomentations were given for several days. The patient made a rapid and complete recovery, although she subsequently passed through an attack of erysipelas which began in the end of the original incision.

Proceedings of National and Local Societies

THE NEW YORK ACADEMY OF MEDICINE.

Stated Meeting held May 17, 1917.

The President, Dr. WALTER B. JAMES, in the Chair.

Food Supply in War Time.—Dr. ALONZO E. TAYLOR, of the Department of Agriculture in Washington, one of the most noted food experts of the country, gave a résumé of the situation confronting the world, proposed some measures for the extension of this supply, and pointed out some of the mistakes that had been made abroad. In a consideration of some of the more crucial features of the problem of food supply in war time, the whole matter might be divided into three groups: production, distribution, and consumption. People were being urged to produce more food, but this by itself did not mean anything and might be ill judged advice. It was decidedly incorrect in the instance of a man who raised a large crop of tomatoes which he could not sell because there were not enough cans being manufactured to preserve them. Sometimes it was impossible to ship all harvested foods. One should select a particular food of particular importance that actually meant something in the diet of a people. The same was true of advice as to waste, some forms of which were of no importance. It was also an error to assume that the nutritive aspect of food supply in war time was of first importance. The problem of the fluidity of the marketed commodity was also of importance; so, too, was the fact that food could not be considered independent of industries and, most important of all, the psychology of food and the consumption of food were of importance equal to the physiology of nutrition. It was not possible to teach a people the science of food in a brief period of time and one could not force the psychology of a people. This had been the difficulty in attempting to ration masses by compulsion. Nutritionally, many diets were good on paper, but to an individual whose ideas of diet were fixed on different forms, the nutritional aspect did not make the food satisfactory. For this reason to prisoners of war the diet became impossible. A German officer, a prisoner of war in England, could not eat what he called the "anemic bread" supplied. This occurred with every people, and where any attempt was made by any external agency to induce the people to modify their diet, the psychological reaction must be taken into consideration.

The present situation in regard to food was due to two factors: 1, The United States faced the necessity of bearing the burden of feeding not only the people here, but her allies. 2. The world had suffered a visitation of a peculiar type with regard to its wheat crop which had this year and last failed everywhere with a few minor exceptions; this was more striking when it was considered that both winter and spring wheat was affected in countries whose climates were entirely different. The importance of this lay in the fact that wheat was the keystone of the diet of the whole civilized world. The following figures gave the flour consumption in grams of all the countries engaged in the war: America, 285; Austria-Hungary, 315; United Kingdom, 275; England alone, 310, because of the larger use of cereals in Scotland and Ireland; Germany, 320; Italy, 340; France, 410. It had become encumbent on America to supply England, France, and Italy with their quota. The supply to these countries could not be cut down or experimented with; America could better bear to do so than the countries already depleted and in the midst of the other hardships of war. Germany began with a 225 gram ration which had first been reduced to 200 and now to 175. If a people received each day the amount of bread and milk to which they were accustomed, widespread changes might be introduced in other articles. Therefore it would be necessary to secure a sufficient amount of flour; this was particularly true in regard to France, whose people were not accustomed to the use of other grains or cereals. That was why it was not possible to consider sending them corn, of which there was a plentiful supply; it was the duty of Americans to see that every man, woman, and child of France received their 410 grams of flour a day and next send their quota to England, whose people understood the use of oatmeal, etc. The reduction must be on this side of the ocean, which could still tolerate an experiment.

How was America to perform that duty? The future for wheat might not be as bad as anticipated, but this had to be taken into account, for there was only a moderate carry over. A solution might be found in stretching the supply of flour, and this could be done in three ways: saving grain now used for other purposes, getting a higher milling extract, and using a proportion of mixed flour. The best method was by increasing the milling extract which in this country was now seventy-two per cent.; abroad they milled seventy-one, seventy-six, eighty-one, and eighty-six per cent., and had gone as far as ninety-seven per cent., but experience had shown that it did not pay to mill beyond eighty-one per cent., as the flour did not keep and did not agree with the consumer. The matter did not end here, however; when a grain was milled higher than normal the dairies were robbed of feeding material for the cattle, which affected the milk supply. Therefore, if the milling ratio was not to be increased too far, a substitute protein for flour must be found. In this country several varieties of beans, cotton seed, etc., could be substituted without adding to the price the cost of transportation. Experiments in Germany with high milling flour were unsuccessful. England was more successful in working out the problem of mixing because she had the freest choice with ten per cent. rice, ten per cent. bran, twenty-five per cent. barley, and twenty-five per cent. rye. The barley mixture, especially, was very perfect and by this means flour for bread could be stretched twenty-five per cent. America could increase her flour production thirty to thirty-five per cent. by this means, the only mode at her disposal should the final crop of wheat prove as disappointing as experts feared it would prove to be.

A necessity for the future was the maintenance of milkage. Here the Germans made a mistake in spite of the advice of the best experts on nutrition in the world. The differential in price between beef and milk was not maintained; the low price for milk was made a standard, and in consequence the farmer naturally fed for high beef instead of for low milk. The agricultural classes all over the world would consider their own interests first, so that it was essential to see that the producer received a fair price over and above the cost of production in raising grain and keeping milch cows. Throughout the most trying times, it would be necessary to see that every American received 270 grams of flour and at least 350 c. c. of milk every day. This would mean a balanced diet no matter what the other articles might be and if absent made the diet unsatisfactory. Substitutes for butter could be used in cooking, but nothing replaced milk. It was not altogether a question of calories, though it was of course absolutely important in the diet of children, but it had a definite rôle in that without it a diet was unsatisfactory. What Dr. Graham Lusk said some time ago should be made an axiom: "No housewife should buy a pound of beef until she has bought three pounds of milk." If the differential in price was maintained, it would be seven times as profitable to raise for milk as for beef. Grain for flour and feed for milch cows must be sent to England, but particularly to France, for it was essential that the normal milk intake be maintained in view of her national ill health. Prices in this country could not be regulated; the producing class constituted forty-five per cent. of the population and nothing could keep the producing class from supplying those with the means of purchase in spite of the needs of the country at large. This could only be accomplished through the exercise of altruism of the class with the purchasing power. A man could be forced by law to sell at a profit, but could not be forced by law to sell at a loss.

The question of waste was another point to be considered. In this country 3,600 calories per diem were listed per capita, 2,400 were consumed, and 1,200 wasted. If these calories were cut down to 3,500, investigation would show that 2,300 would be consumed, while the number of those wasted would remain 1,200. There was no instinct about waste. It required education which was difficult to accomplish because it occurred through so many phases and under so many heads, but a proportion could be saved for human food or for animal food. A large proportion occurred in the hands of growers, in excess fruit and vegetables in transit. On Saturday afternoon in many cities fruits and vegetables were destroyed because they could not be kept over Sunday. This waste might be eliminated by the installation of some process for preserving. There must be an entire reconstruction in the point of view of every man and woman in the country if they were not to fail, not only in their duty to themselves but in the largest duty ever imposed upon a people—the saving of the freedom of the world.

The Honorable James W. Gerard opened the discussion by expressing his regret that he was not a food expert. When it was necessary for him in Berlin to represent the interests of the British and other prisoners of war, he learned something about the food supply and in consequence begged the State Department to send over as camp food instructor some one expert on the question of food. Doctor Taylor volunteered to go to Germany and during 1916 did the most wonderful and efficient work in the face of and combating the food experts of Germany set up in opposition to the speaker's views. Doctor Taylor spoke of the incident of the German officer in a prison camp in England. In a camp near Berlin where British prisoners were confined a sergeant complained he was being starved to death because he could not eat the bread made of rye, the staple grain of Germany, mixed with potato flour. It had since been necessary to substitute turnip flour for the potato flour.

The matter of fertilization had a great deal to do with the scarcity of food in this war. For ground to be fertile, it must hold certain proportions of nitrate, potash, and phosphates. Before the war, America imported from Germany $25,000,000 worth of potash for fertilizer; since then that supply has been cut off and the productivity of food in America correspondingly reduced. By burning seaweed in California a little potash had been recovered but only sufficient to meet the demand for the purposes of munitions. The Germans refused to allow the export of potash after the beginning of the war for fear it might be used in making munitions to kill their soldiers. They formerly obtained nitrates from Chile, a material also essential in the manufacture of explosives; now they secure it from the atmosphere by means of electricity. Phosphates in Germany used to come from America so now they were minus that element so necessary for their productivity. It was suggested to the speaker before he left Germany that he try to find some way in which phosphate could be exchanged for potash, but this of course had not proved feasible.

The card ration system in Germany was instituted early in the war but there were certain articles not listed such as duck, goose, chicken, turkey, and game. These were sold at exorbitant prices to people with money who could thus secure more meat and fat then was available to all. Later on, an amendment was made to include chicken and all poultry. The problem of feeding the world, America and the Allies, was complicated by the fact that we were already feeding, and must continue to do so, a great proportion of Belgium and northern France. Argentina had contributed to this; Switzerland also had been dependent on food from America and Argentina coming in at a French port. Coal and iron were received in Switzerland from Germany, so she was dependent on the good will of both France and Germany. A year ago the speaker passed through northern France on the way to visit the Kaiser in an effort to influence him in regard to the submarine warfare. He motored through the country, visited some of the German officers, and saw the population being fed with food received principally from America. A list was posted of what they were to receive in each town and the price they were to pay for the first fifteen days in May; the people were divided into three classes; those who could pay were required to do so; those who expected to be able to pay later promised to do so; and there was the class who could not pay. They were all given equal rations. The money used was printed in the French towns and was guaranteed by a certain number of rich people and was likely all to be redeemed after the war. The rations consisted of flour, bread, rice, beans, bacon, lard, coffee, sugar, and hard soap. Those who talked to Mr. Gerard prayed there would be no war between America and their conquerors for fear they would starve. The Germans allowed a man one square yard of his own farm to raise food and the soldiers cultivated the rest of the field, using cavalry horses which in trench warfare were useless. At this time the speaker noticed a great number of women and girls working in the fields whose appearance was so unusual as to excite comment which the German officers evaded. Later on an American engaged in the work of relief in that part of the country explained that twenty to twenty-five thousand of these women and girls had been seized by force from three industrial towns and compelled to cultivate these fields for the German army and the German people. The German Chancellor knew nothing about this; it was an act of the military alone and it took the combined efforts of the Pope, President Wilson, and other powers before the practice ceased. There was no question that the suffering of Poland exceeded in horror anything in this whole war. Nothing could be done to ameliorate these conditions for there was no guarantee that food sent to feed the starving Poles would not be seized by the army of occupation. The misery of Poland had only been relieved in slight measure by such shipments as the Rockefeller Commission succeeded in getting into the country.

There were many points to be considered in connection with America's problem of food supply. There was the one Doctor Taylor outlined of fixing a maximum price for the producer, but going into that one encountered many difficulties. Fixing a price on food engendered a bitter feeling as the producer could not see why a price should not be fixed for other commodities. Then there was the difficulty of agreeing on a fair price. The speaker suggested that the main attack be against waste in homes, hotels, and restaurants where the waste of bread alone was enormous. This was a practical way of immediately solving part of the problem.

When the question of diet first came up in Germany with its attendant limited rations, experts felt that it might have the effect of increasing tuberculosis in Germany but that apparently had not yet occurred. There had been a terrible increase in tuberculosis in France, and in Paris the strongest request was for workers along social lines who understood the care and treatment of people suffering from this disease. One of the reasons why infant mortality had not increased in Germany was because of the great number of social workers there, seven or eight thousand women being engaged in this in Berlin alone. The French were not so advanced in the knowledge of personal care; the Department of Health in this city was more efficient than anything of the kind anywhere in France. There was no doubt that the people of this country would do their part in every way and as problems arose they would be surmounted. Educational propaganda would point the way and waste eliminated, supplies conserved and generously shared with those who had fought so long, politics forgotten, the nation would emerge after trial strengthened in spirit and far advanced in the characteristics that come to those who learn to deny themselves for others.

Dr. GRAHAM LUSK said that it was fortunate in times like these for the whole world that there were such men as Doctor Taylor, who could express the truth and the whole truth so that every one could understand it. In England and Germany and the other warring countries they were tightening their belts, but that did not mean they were dying of starvation. A man could reduce his weight thirty per cent. and reduce the quantity of food intake forty-four per cent. and still maintain himself; this in the case of a man resting quietly and not working. One could starve the women and children and the old and they would get along. One could starve oneself also and continue to exist. Life statistics proved that a loss of twenty per cent. from the average weight of man at fifty-five years of age increased his value as a life insurance risk; he had ten per cent. more chance of living than he had at the average weight. The question of work was a different matter; doing work of a certain kind demanded a certain amount of food in order to support the worker. Meat was necessary for repair of tissue, but only a certain amount was needed. The campaign for the conservation of the food supply should be started by reducing the quantity of meat and this would thereby increase the grain crop for the world. By slaughtering many of the male cattle, the grain feed could be preserved for feeding milch cows.

One must have food fuel to do a certain amount of work. If men were taken off the farms and put in munition factories, shipyards, or army, who was going to produce the food fuel absolutely necessary? This was the planting season, but had the farmer any guarantee that he would have the labor to harvest what he planted now, that he would receive a sufficient price to pay for the labor? The country was raising money to send men to the front, but something else must be done or there would not be enough food fuel, which was the basis of it all. It was all right to raise the army, but other work must be done; the machines must be fed or they would fail, not only our own but those of France and England. It was a tremendous responsibility and required tremendous wisdom and absence of all political chicanery; it required the united power of an intelligent people. Failure or success would prove whether we were incompetent or competent.

Professor C. E. A. WINSLOW, of Yale University, said that in the past war had always brought pestilence and famine. Pestilence, during the present war, had been conquered and the world was now face to face with its first opportunity of applying exact science to this other problem of famine. The problem was real and serious. A speaker had said that the United States faced this year a food stringency such as had never before been faced by the white race on this continent since the Pilgrims at Plymouth. It was accentuated by the responsibility that rested on us to care for those who had suffered so much more on the other side of the world.

This crisis might be met in many ways, but chiefly by taking advantage of advances in scientific knowledge. For instance, a baking firm found that its bread made in Cleveland was better than that made in Pittsburgh, although the materials were alike; investigation showed the difference was in the city water, from which was recovered a mineral salt that stimulated the yeast so that half the quantity of yeast and two per cent. of the flour was saved. Much could be done by the intelligent selection of food, but in this line the problem was, as Doctor Taylor said, a psychological one. The knowledge was there; the question was how to apply it. The Pilgrims survived by using sea food, many forms of which were now utilized. There were healthy substitutes for butter, but they were hedged about by prejudice. In Connecticut substitutes for butter would not be delivered; the purchaser had to carry it home. This prejudice was a far reaching one, not founded on a knowledge of food value. The habits of the people must be changed and an example had been set toward this end. How had the victory over disease been achieved? In the main by educational methods and their spread from individual into individual homes. The same sort of popular educational methods must be used in regard to food. Plans must be made if people were to act upon them in the homes. It was a tremendous question if people like Taylor, Lusk, and Mendel were taking it up, for too many had too long been led by pseudoscientists. The Government could do something by regulations, but what was chiefly needed was systematic public education. The machinery was ready in the public health nurses who could get this knowledge to the people who have to use it and who would reap benefit from it even in the future after the war was over.

In New Haven the fact of war was felt very keenly; many had sent off their sons and those who had not gone were drilling night and day; everywhere were khaki clad forms, alert, upright, alive. Boys, who a few weeks ago were half baked, shiftless, ordinary college boys, were now keen, well knit in body and in mind, dead earnest, being reborn. All our young country was going through this same sort of thing. We were shiftless and careless and happy go lucky about our resources, but this would have to change. This change meant conformity to law. Discipline meant conformity to natural laws, working together, obedience to scientific laws, and cooperation with our fellows for the good of all. Discipline must be learned as a nation if we were going to do our bit as we ought to in the next two years.

Dr. **Haven Emerson** closed the discussion by a few remarks regarding the attitude of the Board of Health of the City of New York on this matter. A year ago, recognizing the advance in the price of meat, it was so arranged that there would be a supply of what was recognized in European countries, in Belgium and in France before the war—horse meat. It was now possible to buy and sell horse meat in the city of New York, and many poor people had meat in the soup pot this winter who otherwise would have gone without. Another regulation had been effected so that now it was possible to get skimmed milk in New York, as it was a safe and valuable food, under proper control, as clear, clean, wholesome, and free from bacteria as whole milk. Plans were under way for getting facilities for drying and preserving the surplus fruit and vegetables now wasted through improper handling and improper shipping every week. There had already been a marked reduction in the waste from the homes. Doctor Taylor said that when there was a saving it was usually at the expense of increase in waste, but the tally kept at the garbage disposal plant on Barren Island showed that they now disposed of the day's refuse at noon instead of at three o'clock as previously, the gross figures showing about twenty-five per cent. diminution.

The babies' clinics at the hospitals and the milk stations could be used in the educational work of diet training, teaching the poor mothers how they could best use the food they could afford to buy. If this were done all over the country by the administrations and the doctors America could afford to be generous and not stingy with her national food supply.

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Letters to the Editors

STETHOSCOPIC ELECTROVIBRATORY PERCUSSION.

Buffalo, *September 6, 1917.*

To the Editors:

Referring to the interesting report of Dr. J. P. Hickey, in the September 1st issue of The Journal, I would say that a somewhat similar device is described and illustrated in my article on Auscultatory Percussion in the *Transactions of the Medical Society of the State of New York*, 1895. The article was also published in the *Medical and Surgical Reporter*, of Philadelphia, in the same year. The vibrator, or rather the stem used at that time and previously, to conduct the vibrations of the interrupter to the body, was the core of a rather large coil and was not very convenient. Subsequently, about 1902-1907, I used an ordinary flat, round, desk buzzer, fitted with a hard rubber stem. This worked very well and could be carried with a dry cell for examinations outside the office. As implied in my article of 1895, the principal indication for using electric vibrations was to secure a more even and continuous sound than by the finger or other purely mechanical device and to obviate the inconvenience of the tuning fork in regard to brevity of vibrations of sufficient intensity. While in Paris in 1908, I had a large deep pitched tuning fork fitted with a hard rubber handle and as this produces vibrations of sufficient intensity and duration for most examinations, at most requiring two or three blows for mapping out any single organ or pathological area, I have not used the electric vibrator to any extent since. The original, small, high pitched tuning fork is, however, quite often used, especially for work outside the office. It is now rounding out a quarter of a century in this service, having previously served my father for at least as long for its original musical purpose.

It may be of interest to note, in the same connection, the soft rubber whips of Abrams; the plessigraph—a hard rubber stem for transmitting finger percussion—of Peter; ordinary lead pencils with and without rubber tips; an unsatisfactory though rather successful original experiment with a padded dental plugger; more or less accurate results from a watch, the trouble being rather with the size of the object than the acoustic quality of the ticking; very beautiful effects by combining coin percussion with the stethoscope; and occasional instances in which a distended stomach has rendered the patient's own heart available as percussor. All sorts of substitutes for percussion by the fingers alone have been tried and occasionally quite extraneous noises may enable one to map out an organ.

An important factor in the secret of success in the use of auscultatory percussion and allied methods for which perhaps the best term suggested is visceral transonance, is the stethoscope and I have not been able to formulate any general principle in this regard but find it necessary to experiment more or less in any given examination to get the best results. For example, I carry a small double disc —heart and lung sizes on opposite sides selected by rotating the aperture of the conducting tube—with the soft rubber tubes wound around the narrow middle part of the disc and packed in a leather case about as large as for a collapsible drinking cup. In my office, I use an ordinary Cauman instrument, occasionally some kind of monaural tube, and attach soft rubber tubes by means of a hard rubber Y to chest pieces of various sizes. My favorite instrument has ear pieces made of the ends of a hard rubber thermometer case, sawed off and bored at the ends, and the chest piece consists of a cylindrical vaginal syringe tip, sawed off and polished. For the heart especially I have an instrument made of two rather large metal tubes, one sliding in the other, the distal tube being a cylinder, the proximal being fitted with a cap with a central opening to receive the Y of the tubes leading to the ear. By sliding the tubes in and out, this instrument can be set to resound approximately with the percussion note of the heart, or with those of the valvular closures when simple auscultation is performed, or with the tuning fork for mapping out organs generally. For some reason, the phonendoscope with stem did not give good results, nor has the attempt to use the electric telephone receiver succeeded. Water filled stethoscopes closed at the chest piece and ear tips with rubber dam have failed.

In regard to what is made out by auscultatory percussion, my own work has not gone much beyond the ability to say that a certain area represented a structural unit as a given organ, in most cases shown by other methods or general probability, as location and size. However, areas of consolidation in the lung cavities, accumulations in the thorax or abdomen, etc., may also be made out. Occasionally a definite resonant unit exists within another organ than the lung. For instance, the article mentioned refers to a hepatic cancer localized within the general liver area as determined by ordinary percussion and palpation. Of course, auscultatory percussion could not determine that the process was cancerous but, knowing that there was a definite unit of different conductivity from the rest of the liver as determined otherwise, the inference was almost positive from other indications and was confirmed by necropsy. Similarly, auscultatory percussion has determined, in the same suggestive sense, abscess and hydatid cyst. Again, auscultatory percussion has determined abdominal cyst as against ascites, the translucency test, size, position, etc., pointing to the correct diagnosis of intraligamentary cyst. Auscultatory percussion may in some cases determine whether a bone is fractured or not, the main requirements being a large bone situated so that fairly direct contact can be secured.

As clearly implied, I have limited the technic of visceral or other test of transonance to digital percussion and the use of the tuning fork for practical use in the majority of cases, varying the stethoscope to get the most acute transmission. Doctor Hickey's implication that, all things considered, the spleen of normal size or moderately enlarged affords the most difficult problem in this method of diagnosis is one with which I heartily agree. The electric vibrators that I have used have not given me better results than digital percussion or that through the plessigraph of Peter or the tuning fork, but it may be that his instrument is a decided improvement on those that I have employed. For many years, though quite confident of the results obtained by this general method of diagnosis in its general application, I have been rather sceptical of my ability to locate the spleen unless considerably enlarged so that confirmatory evidence is obtained by palpation. In many cases I have been convinced that what at first seemed to be the area of the spleen was really the projection of the stomach on the posterior body wall and in others have strongly suspected that it was the area of the splenic flexure of the colon. In 1897 I originated the bismuth method of locating the stomach by x rays, Roux, of Paris, having anticipated me without my knowledge by a few months, and have often checked auscultatory percussion findings by x rays.

A. L. Benedict, M. D

PITY THE POOR REPORTER.

New York, *August 8, 1917.*

To the Editors:

Apropos of the letter under Errata in your issue of August 4th, I should like to be permitted the opportunity of answering the implied reproof of the reporter. If the medical gentlemen who address the meetings, with or without notes, would facilitate the work of the reporters who are endeavoring to represent them with accuracy in the necessarily condensed versions that must be turned in by correcting the notes sent them within a specified time or lending their own notes to the reporter, there would be no cause for complaint. The profession may consider it unethical to have any dealings with representatives of the press, medical or otherwise; but the reading public, especially physicians who are unable to attend the meetings, have a right to consideration, and it is in their service that the reporters toil, many times not only unassisted but thwarted in the endeavor to reproduce in print the transactions of the various medical societies. A patient who evades questions, refuses examination, and lends no assistance to the physician who is endeavoring to help him is a source of exasperation to the physician, who must, nevertheless, persist in his efforts to help; the action of such a patient is analogous to that of the physician whose worth while utterances the reporter is endeavoring to reproduce in condensed form; incorrect reproduction injures the physician as incorrect diagnosis hurts the patient who has impeded a correct one by his lack of cooperation.

Inaccuracy in reporting medical meetings should be treated in one of two ways: If the reporter is at fault, he should go into some other occupation where his services will do no harm to others. But if the speakers, through carelessness in correcting or returning notes in time, or through utterly ignoring the reporter's existence, are to blame, they should not complain when they suffer for it.

A Necessarily Anonymous Medical Reporter.

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Book Reviews.

[*We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.*]

Jesus, the Christ, in the Light of Psychology. By G. Stanley Hall, Ph. D., LL. D., Professor of Psychology, President of Clark University. Garden City, New York: Doubleday, Page & Co., 1917. Vols. I and II. Pp. xix-733. (Price $7.)

No one is more competent, perhaps, than this author to speak with authority upon the place which the successive interpretations, philosophical speculations, and critical studies have held but are ceasing to hold in regard to Jesus and the doctrines of the Christian religion. Hall's pedagogical experience combined with his keen psychological insight peculiarly fits him likewise to evaluate these phases of Christian thought and belief and their failure now to serve the race in the demand for something more vital and more widely expressive of the soul of the race unconsciously seeking fuller utterance through its religion. All this past history of Christianity he gathers under a purely genetic concept. His insight into a dynamic psychical life, which follows a progressive evolution, discovers the active principle which has made the Christian religion. It recognizes the truer pragmatic truth which can if necessary disregard the historicity of Jesus or accept it, finding in either case the soul of man coming to its healthful expression. The Jesus of history may well have embodied through his intuitive insight this seeking of the soul of man for his greater self in the soul of the race, to which unconsciously he belongs, and the realization of its highest aspirations through his entrance into its depth of impulses and effort. This he has formulated in his messiahship, his sonship, his concept of the kingdom; in the consummation of his life and teaching, his eschatology; even in his apparent failure and death. Man alone has been able to build up for himself, through projection and externalization, such an incarnation and unfolding of these racial wishes and impulses with their sublimation into a new adjustment to reality. Whether Christ is merely the projection of this unconscious cycle or by a rare ability to embody it in himself formed a centre for such a psychical development, the process has been the same. By it man has healed himself. He has found expression for mighty hidden impulses and deliverance from an obsession of sin which arises from his primal sense of selfconsciousness at war with the racial soul, all of which to save himself he must externalize and then receive again to himself in a heightened sublimation, spiritualization, and application to reality, which could come alone through the resurrection and the ascension. With God, who is the racial soul, atonement has been made and man himself arises, both God and man rising from the dead in Jesus and entering the world as a new creature in man.

Psychological, pragmatic truth therefore far transcends historical fact, as it also surpasses the limited concepts of truth which have in turn held Christendom. The detailed study of the psychology of the interpretations which have followed the history of Christianity as well as of the person and history of Christ, as revealed in the gospels and subsequent Christian writings, forms a deeply suggestive field for practical appropriation and further development. Its definite therapeutic message is the widest and most profound. For it takes hold of the things of man's effort and striving through the highest and greatest sublimation which the racial soul has been able to take upon itself. It presents this Christian religion as but beginning instead of finished, offering in this new psychological fullness an agency to arouse the psychical life, carry it back into the greater unconscious where are the sources of life and out through its large projections into active achievement. This is finding holiness, or wholeness or health. There is much to learn from such a study of the therapy working through individual parable, prayer, or miracle, things not of magic formula but of profound truth. There is still far more of the greater therapy of this wholeness of life without which no one attains that salvation which is the end of medicine as of all other means for the betterment of mankind.

Building Human Intelligence. By Dr. ARNOLD LORAND, Physician to the Baths, Carlsbad. Translated from the German by Philipp Fischelis, M. D., Acting Professor of Histology and Embryology, University of Pennsylvania. Philadelphia: F. A. Davis Company, 1917. Pp. xii-451. (Price $3.)

It is difficult today to discover any great value applicable to neurological or psychiatrical problems, or indeed to the normal building up of intelligence, in a book of this sort. There is much erudite reference and a number of instructive descriptions of certain interrelations of the activity of various organs of the body which bear a conspicuous part in nervous and mental health. Even such descriptive passages, however, are limited and fail of therapeutic or educational interest through the shortsightedness of the author in regard to these interrelational implications. A materialistic conception of the brain and its activity seems to be responsible for this. The eye fixed only upon the machinery and the amount of physical nutriment supplied it and regulated for its needs may record accurately, but has no appreciative understanding of the symptom manifestations of disorder or of actual accomplishment through the neural apparatus. Entire absence in this consideration of an energic force which moves the nervous machinery, and which in the human organism is both energy and directing power, grants no interpretation and no working comprehension of the actual unfolding of intelligence and its meaning as a product of human evolution. It is therefore no true guide to an actual progressive building of human intelligence, toward which the body contributes through its function in serving the individual psyche behind it. To lay out the intelligence as a definite section of human individuality as something now to be expanded by a certain amount of sunlight, now freed through brain activity induced by a clearing of the nasal passages, to locate improvement of memory in improvement of cerebral circulation, presupposes an utterly limited viewpoint for the great psychic economy. It offers therefore no helpful suggestions to the real control and increase of intellectual power. The chariot of medical science does not move with its horses hitched behind it. An author who implies or practically states that the low intellectual level of the savage is due to the low grade of his food fails to inspire any new conception of the course which human intelligence has discovered for itself. He furnishes no appreciation of its building through the influence of factors within and without, which are both its means of growth and objects of its advancing effort.

Handbook of Anatomy. Being a Complete Compend of Anatomy Including the Anatomy of the Viscera, Chapter on Dental Anatomy, Numerous Tables, and Incorporating the New Nomenclature Adopted by the German Anatomical Society, Generally Designated the Basle Nomenclature, or BNA. By JAMES K. YOUNG, M. D., F. A. C. S., Professor of Orthopedic Surgery, Philadelphia Polyclinic; Associate Professor of Orthopedic Surgery, University of Pennsylvania; Orthopedic Surgeon to the Philadelphia General Hospital; etc. Fifth edition, revised and enlarged. With 154 engravings, some in colors. Philadelphia: F. A. Davis Company, 1917. Pp. xv-435. (Price $2.00.)

The author presents a concise synopsis of anatomy chiefly for the use of students of medicine. The completeness of the larger works has been attained with the avoidance of their bulk and much matter not essential to the beginner in dissection. It is based largely on the last edition of Gray's Anatomy, but free use has been made of the other standard works of English writers. The appearance of a fifth edition testifies to the popularity of the book among medical students. The present edition contains a large number of additions and a special chapter has been prepared on dental anatomy. The author has accomplished in a successful manner the difficult task of combining conciseness with thoroughness and in this way has furnished a textbook which is superior to many in the literature which have been written with the same object in view.

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After Office Hours.

The Doctor's Lame Dog, in *Outing* for September, tells how a faithful canine friend loses a leg in order to save his medical master's life.

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In the *Smart Set* for October, H. L. Mencken, under the caption of Woman, Lovely Woman, takes a fling at the conjugal relation. The hymeneal tie, he declares, binds the man, but not the woman. Hence the growing reluctance of men to be married.

* * *

The humors of a sanatorium populated by victims of their own imaginings and indulgences are delightfully portrayed by Douglas Fairbanks in a moving picture now making the rounds. In Down to Earth the irrespressible Doug kidnaps the whole sanatorium and forces them to rough it, and thus they work out their salvation.

* * *

That ill defined psychological boundary which looks back on immaturity and forward on man's estate is the subject of Joseph Conrad's latest book, *The Shadow Line.* The young mate of a ship, moved by some vague unrest, throws up his good job, and is unexpectedly offered the command of a fine ship. Immediately on weighing anchor he is beset with calamities. His whole crew become fever stricken and he finds that his predecessor has dishonestly sold the whole stock of quinine. A dead calm ensues for eighteen days, during which he drifts about with a delirious mate, a sick crew, and the malign influence of the late evil captain hanging about them like a curse. From these turbid waters of despair the character of the young captain crystallizes and he comes forth from the ordeal a man, having crossed the "shadow line."

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The opening scenes of a novel by Frank R. Adams, Pleasure Island, in the *Blue Book* for September, are also laid in a sanatorium. Frank is, in our opinion, the funniest fellow now writing for the popular magazines. We recall especially a story of his where the timeworn situation of the beautiful model and the Don Juanish artist was cleverly burlesqued by making the model an effeminate youth, upon whom certain female artists work their hellish designs.

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Many physicians in the past have exchanged the stethoscope for the pen, but we do not know of so many trained nurses who have graduated from the writing of clinical records to other fiction. Among them one thinks first of Mary Roberts Rinehart. In the *American* for October she tells of her life's creed and work; she has just passed her fortieth birthday and has been writing for the past twelve years. Better even than her writing is her ideal family life.

Meetings of Local Medical Societies

TUESDAY, *September 25th.*—New York Dermatological Society; Onondaga Medical Society, New York; Valentine Mott Medical Society, New York; Washington Heights Medical Society, New York.

THURSDAY, *September 27th.*—Ex-Interne Society of Seney Hospital, Brooklyn; Medical Union, Buffalo.

FRIDAY, *September 28th.*—Society of New York German Physicians; Manhattan Medical Society; Italian Medical Society of New York.

Official News.

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending September 12, 1917:

GARDNER, C. H., Surgeon. Granted one week's leave of absence from September 19, 1917.

GRIFFITTS, T. H. D., Assistant Epidemiologist. Directed to proceed to designated points in Southern States for duty in malaria surveys and studies.

HARRINGTON, F. E., Assistant Epidemiologist. Directed to proceed to Guntersville, Ala., on special temporary duty.

LUMSDEN, L. L., Surgeon. Directed to resume duties in studies of rural sanitation in extra cantonment zones.

MCMULLEN, JOHN, Surgeon. Directed to proceed to Louisville, Ky., for conference relative to extra cantonment survey.

PHELPS, E. B., Professor. Directed to proceed to Hot Springs, N. C., on special temporary duty.

RIDLON, J. R., Passed Assistant Surgeon. Granted three days' leave of absence from September 9, 1917.

ROSS, F. B., Scientific Assistant. Directed to proceed to necessary points in Jefferson County, Ky., for duty in field studies of rural sanitation.

WILLIAMS, C. L., Passed Assistant Surgeon. Directed to proceed to Little Rock, Ark., on special temporary duty.

WITTE, W. C., Assistant Surgeon. Directed to deliver a lecture on rural sanitation before conference of health officers at Iowa City, Iowa, September 20, 1917.

Boards Convened.

Boards of commissioned medical officers convened for the examination of candidates for appointment as assistant surgeon on Monday, September 17, 1917, as follows:

Marine Hospital, Chicago, detail for the board: Surgeon J. O. Cobb, chairman; Passed Assistant Surgeon F. A. Ashford, recorder. Marine Hospital, Chelsea, Mass., detail for the board: Surgeon H. S. Mathewson, chairman, Surgeon M. H. Foster, recorder. Marine Hospital, San Francisco, Cal., detail for the board: Surgeon W. C. Billings, chairman; Assistant Surgeon D. S. Baughman, recorder. Marine Hospital, New Orleans, La., detail for the board: Surgeon G. M. Corput, chairman; Passed Assistant Surgeon C. P. Knight, recorder. Seattle, Wash., detail for the board: Surgeon B. J. Lloyd, chairman; Passed Assistant Surgeon Emil Krulish, recorder. Ellis Island, N. Y., detail for the board: Surgeon E. H. Mullan, chairman; Passed Assistant Surgeon E. R. Marshall, recorder.

Births, Marriages, and Deaths.

Married.

CAUGHLAN-CORCORAN.—In Hamburg, Ia., on Tuesday, September 4th, Dr. Gerald Vaughan Caughlan, of Omaha, Neb., and Miss Elinor Corcoran, of Pacific Junction, Ia.

COWLES-MEGGETT.—In Beverly, Mass., on Wednesday, September 6th, Dr. Frank A. Cowles and Miss Bertha Helen Meggett, of Calgary, Alberta.

HAMMER-DORN.—In San Francisco, Cal., on Saturday, September 1st, Mr. Alrik Hammar, of Vallejo, Cal., and Dr. Dora Dorn.

Died.

ALDRICH.—In Des Moines, Ia., on Monday, September 3d, Dr. Stewart W. Aldrich.

ALLEN.—At sea, on board the S. S. *Panther,* on Thursday, September 6th, Dr. David G. Allen, of Savannah, Ga., aged thirty-eight years.

BIENVENU.—In New Orleans, La., on Sunday, September 2d, Dr. Delphin Bienvenu, aged eighty-one years.

BRADLEY.—In Chicago, Ill., on Thursday, August 30th, Dr. Hubbard N. Bradley, of Bay City, Mich., aged forty-three years.

COLE.—In Newbern,, Tenn., on Saturday, September 1st, Dr. Jefferson Davis Cole.

CURRY.—In Danville, Pa., on Thursday, September 6th, Dr. Edwin A. Curry, aged fifty-four years.

HENDRICKSON.—In Brooklyn, N. Y., on Thursday, August 30th, Dr. Skidmore Hendrickson, aged seventy-six years.

HULSIZER.—In Delanco, N. J., on Friday, August 31st, Dr. Green Robins Hulsizer, of Philadelphia, Pa., aged fifty-four years.

KELLY.—In Brooklyn, N. Y., on Thursday, September 13th, Dr. Thomas E. Kelly, aged forty years.

LAWRENCE.—In Washington, D. C., on Sunday, September 9th, Dr. Albert L. Lawrence, aged fifty-three years.

LINDSEY.—In Roxbury, Mass., on Saturday, September 8th, Dr. Joseph F. Lindsey, aged sixty-seven years.

PECK.—In New Britain, Conn., on Monday, September 10th, Dr. Frederick W. Peck, aged fifty-one years.

PECK.—In Oneonta, N. Y., on Sunday, September 2d, Dr. Solomon H. Peck, aged ninety-two years.

PRATHER.—In Dayton, Ohio, on Saturday, September 1st, Dr. William F. Prather, aged fifty-five years.

ROBERTS.—In Atlanta, Ga., on Thursday, August 30th, Dr. John Benjamin Roberts, aged seventy-six years.

ROY.—In Boston, Mass., on Wednesday, September 5th, Dr. Pramath N. Roy, aged fifty-six years.

RUSSELL.—In Pittsburgh, Pa., on Friday, August 31st, Dr. John McDonald Russell, aged forty-three years.

SALMON.—In New York, N. Y., on Monday, September 10th, Dr. Henry A. Salmon.

ST. JOHN.—In Berne, N. Y., on Friday, September 14th, Dr. David St. John, of Hackensack, N. J., aged sixty-seven years.

SCHNECKER.—In New York, N. Y., on Thursday, September 13th, Dr. William Schnecker.

SHARMAN.—In Meriden, Conn., on Tuesday, September 4th, Dr. Jack R. Sharman, aged sixty-five years.

SHREVES.—In Des Moines, Ia., on Friday, September 7th, Dr. Thomas J. Shreves, aged eighty-two years.

STIMSON.—In Shinnecock Hills, Long Island, on Monday, September 17th. Dr. Lewis Atterbury Stimson, aged seventy-four years.

WOELFFEL.—In Willits, Cal., on Tuesday, August 21st, Dr. George A. Woelffel, aged forty-nine years.

YOUNGQUIST.—In Marquette, Mich., on Friday, September 7th, Dr. Osain G. Youngquist, aged fifty-nine years.

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Original Communications

THE EYE AND EAR SURGEON IN THE GENERAL HOSPITAL.

By FRANK ALLPORT, M. D.,
Chicago.

Of all specialties ophthalmology and otology are the most highly specialized. In this paper I shall refer to these two departments as one for purposes of convenience. This was the first specialty to be established in the medical profession, and it has retained its isolation from that day to this. Even those "general specialists" who attack everything from childbirth to corns, avoid treatment of eye and ear diseases, especially operations. They usually announce apologetically that they "don't pretend" to do eye and ear work and refer the patient to a specialist. The avoidance of this department of our profession extends to hospitals, hospital superintendents, interns, and nurses. Surgeons, internists, obstetricians, pediatrists, orthopedists, etc., all meet with a hearty welcome and cooperation in general hospitals, but the eye and ear surgeon usually finds himself more or less isolated and the service more or less reluctant and unskillful, and is obliged to do his work amid many difficulties and perplexities. His patients are scattered in many wards and he is dependent upon a variety of nurses, none of whom is really competent to administer to his necessities. Nurses or interns may be, and usually are, competent to care for the average patient. They can give medicines, enemas, and baths and dress and care for injuries and other surgical cases, etc., but when it comes to putting drops or ointments in eyes, irrigating eyes or ears, and dressing and bandaging eyes and ears, their services are, as a rule, not only inadequate, but a source of actual danger. Many eyes have been lost from the awkward, ignorant, and bungling attention of incompetent interns and nurses. For this they are not to blame; they do not know how, because they have not been properly taught and trained. They are the victims of a bad system.

It remains for us to correct these conditions. As patients are scattered the materials for treatment are kept in various places and in diverse conditions. As the surgeon passes from one ward or room to another he meets nurses of different qualifications who have charge of his patients. None of them have much experience in this special work, but some are worse than others. Through their incompetency the surgeon is almost compelled to do the nurse's work himself. He may as well recognize the fact that if he wants dressings done properly he will have to do them himself. It is simply flying in the face of Providence, for instance, to allow the ordinary intern or nurse to dress a cataract case after operation when the slightest pressure on the eyeball may mean the destruction of the eye. Besides this, how is the surgeon to know, beyond a reasonable doubt, that solutions, bandages, ointments, cotton, droppers, etc., are actually aseptic when he proceeds to dress his cataract, iridectomy, advancement, or mastoid cases? I knew of two cataract cases that were lost in one week in one ward from impure dressings, for which the surgeon was in no way to blame. Surgeons should be assisted in their work by competent interns and nurses, and should be able to depend absolutely upon the purity of all dressing materials. This can scarcely be possible where patients and materials are scattered all over a hospital, with nobody particularly responsible for them. Under these conditions, solutions and ointments are hardly ever fresh, and bandages, droppers, probes, cotton, etc., are hardly ever sterile. Even if an eye and ear tray, properly stocked, is used, its contents are usually not reliable, as it is a general hospital tray, subject to many adventures, and under the care of no definite person, and not properly guarded when not in use. One annoying feature of the present system is that the instrument, drug, or appliance that is wanted at a certain moment, is rarely on hand. The atropine solution is perhaps on another floor; the probe is in the operating room; the eserine ointment is in some other building; the ophthalmoscope is in the supply room, and when found, is out of order, or no proper illumination can be found, etc. It is exasperating to work under such conditions, and the wonder is that we consent to do it when it really is not necessary.

The evil of the ever changing intern and nurse is also a source of irritation, poor service, injustice to the patients, and annoyance to the doctors. They are both changed every few weeks in most hospitals, and they no sooner get to be of some little real utility to the suffering surgeon and patient when they are changed to another service or ward, and the work has to be begun all over again. Truly life is hard, and our dolls are, more or less, stuffed with sawdust.

How about the operating room and how can the

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many trials of this department be described in a few words? In the first place, few general hospitals possess adequate instrumental armamentarium for the eye and ear surgeon. He therefore usually has to take along his little bag and generally leaves in his office the very thing that he most needs. His instruments have to be prepared for operations after he arrives, which always consumes considerable unnecessary time. In the operating room he is usually confronted with new nurses, just taking the operating room training, who know nothing, or little of his individual needs. The average operating room nurse has little respect for ophthalmological instruments. She throws them around with the same ease and assurance as in handling tools for ordinary surgical procedures. She has no regard for a cataract or iridectomy knife and allows their points and edges to be dulled in an instrument tray, little realizing that a bad knife may mean an unsuccessful operation and blindness. Operating in an alien atmosphere is disastrous to all parties concerned, and especially to the patient, who confides his sight or life to the safe keeping of the surgeon and the hospital. The operator should be able to work in a calm, peaceful, and undisturbed frame of mind, giving the best he has to his patients. He should not be obliged to watch the nurses or interns to see if sterile solutions are being used or if instruments are being rendered unfit for service. His mind should be given undividedly to his work, and he should be able to realize that all details will be properly cared for without his personal supervision. The eye, ear, nose, and throat surgeon should never be obliged to carry instruments to the hospital. They should be provided by the hospital, kept locked in a private cabinet, and be kept in perfect order by the special and permanent eye and ear nurse and the chief operating room nurse.

Much more might be said concerning the unsatisfactory conditions prevailing in most general hospitals, as far at least as our special work is concerned. You can all supply any missing evidence yourselves, for we are all fellow sufferers. What we are principally interested in is relief, and my object here is to point out some practical methods toward this end. In the first place, we must realize that we must not seek to throw all the blame on the hospitals and we must acknowledge our own sins, before we mention the sins of others. It is best for us to make connection with a good hospital and then stick to it. One should not change from one hospital to another, seeking to test them or to extend our acquaintance and influence. This method may extend our acquaintance, but it will surely lessen our influence. All our work or at least nearly all should be done in one hospital. By doing so, much time is saved, we become familiar with the hospital, and the hospital becomes familiar with us, and gradually gets to understand our wants and necessities. After a while, by pursuing this policy, we become a feature of the hospital, and acquire some influence in its management. By thus concentrating, instead of scattering, our patients, we become a financial asset to the hospital and are in a position to ask for better and still better facilities for our work. Hospitals must have financial resources, like any other business, and unless it is abundantly endowed or supported by funds, must look to its medical friends for its support. Hospitals will, therefore, naturally favor doctors who constantly send them business and are loyal to their organization. If you want sympathy, support, and cooperation, give constant loyalty to your hospital, and it will naturally do all it can to help you in your work. Few ophthalmologists have a sufficient number of hospital cases to make much impression on several hospitals, whereas most ophthalmologists in mature and active practice have enough patients to command attention if they are all sent to one hospital.

We should connect ourselves with a hospital that is willing and glad to admit charity cases to its wards. This adds materially to experience, enlarges operative possibilities, and enables us to build up a clinic or to establish operative day or days. Unless an eye or ear surgeon has a rather large number of charity patients his hospital and operative cases will be more or less limited in number. We all need experience and plenty of it to keep us up to the mark and unless we are connected with some eye and ear infirmary or dispensary, we cannot grow as we otherwise would. Therefore, we should become connected with hospitals that really welcome charity patients in order to enlarge our scope of usefulness.

Another point that I regard as very important is to encourage other eye and ear surgeons to come on to the staff, and help to build up the eye and ear department. Some ophthalmogists are so narrow that they want to monopolize the entire department, or as much of it as they can. This is very poor policy, as the more eye and ear work done in your hospital, the greater will be your influence in instigating reforms calculated to make your service easier and better. Therefore, encourage the entrance of good, congenial, and prosperous men in the staff, and you will find it will be beneficial to all parties concerned. I would advise you to institute an operative day or days at your hospital, especially for charity or semicharity patients. This may be done in connection with some medical school if possible, but in any event it should be done. Take any day in the week, in the morning or afternoon as best suits your convenience, and set it aside for operations. Do your best always to fill these hours and let it be known that operations can be seen at these times. Welcome doctors to your clinics and make yourself as instructive and entertaining as possible. If your work grows, have two operating days or even more. After a while these days will become a feature of the hospital and well known to the profession. Upon these days, you can operate on your charity cases. Many people are poor, but still wish to pay something for an operation. You can tell such people that you will operate for a greatly reduced fee, if they will allow you to operate in the clinic; most of them will gladly avail themselves of the opportunity.

These are some of the things which you should do in your hospital in order to perform your part of the partnership. You may convince the hospital authorities that it will be a good move for them to make to improve your service and facilities as much as they possibly can. What can they do to help you in your work, add to the reputation of the hospital, and increase the chances of good results to patients? I believe the most important things they can do is to give the eye, ear, nose, and throat department a special nurse. Of course, a graduate nurse is really required, who can stay with you permanently and who lives at the hospital and receives an adequate salary. In no other way can the best services be obtained. But if this is not possible at first, you should at least be given an undergraduate nurse who will be the exclusive nurse for your department for at least from three to six months. This will help considerably and will almost surely lead eventually to a permanent, graduate, salaried nurse. A nurse of this kind will help you more than anything else in your hospital work. She will accompany you as you see your patients. She will carry with her a tray of drugs, solutions, instruments, etc., all fresh and aseptic, and such other things as are necessary in treatments, examinations, etc. You can leave all instructions with her as to the care of your patients and she will take entire charge of them while you are away from the hospital. She will take charge of your instruments, keep them in order, get ready for all your operations, and assist you in their performance. You will be dealing with one, intelligent, experienced, and responsible person, instead of with many ignorant and irresponsible people. This must make your work easier and your results better. As soon as possible you should be given an intern who will stay on your service for one year, for in no other way can you secure good and helpful intern work. Short intern service is unsatisfactory in any event, but it is especially unsatisfactory in eye and ear work. It is particularly unfair to the medical and surgical staff, for under this system they never secure really satisfactory intern service. Some means should be devised by which young doctors can secure not only experience in all hospital departments, but after this has been accomplished, can obtain a long service in the special department in which they intend to develop their life work. In this way, they not only would be fitting themselves for their ultimate occupation, but they would render better service to the patients, and last, but not least, to the doctor.

It should always be remembered, that while it is the duty of hospital staff doctors to educate interns and nurses, it is also their duty to look after the best interests of their patients, and it should furthermore be their privilege to make their own work as comfortable as possible, and this can be done best by perfecting their hospital service in every conceivable detail. It may be thought that it would be difficult to secure the services of an intern who would serve in this department for an entire year, but this has not been our experience in St. Luke's Hospital in Chicago. We have always had a waiting list, for it must be remembered, that while many young doctors desire to become eye and ear specialists, the number of eye and ear hospital internships is distinctly limited, and not easy to secure. As soon as our program was formed at St. Luke's and it became known that we were prepared to retain an intern for one entire year and that the position was desirable and possessed reasonably good possibilities, we had no difficulty in securing efficient and earnest interns. We take pains to teach our interns, to place responsibilities upon their shoulders, and to assist them in doing all kinds of operations. This produces a good service and one that is desired. The eye and ear intern and nurse should always have an assistant intern and nurse working under them to stay on the service at least three months and longer if possible.

After a special intern and nurse have been secured, the next step should be to obtain a special ward with an up to date examination, treatment, and dressing room, fitted up as efficiently as a downtown office, so that all kinds of work, including refraction and perimetry, can be thoroughly performed. At St. Luke's, for instance, we have our own ward of twenty beds with their backs all to the windows, which is a most desirable feature in an eye ward, as it is important, especially after eye operations, that patient's eyes should not be unduly exposed to the light. This ward is quiet and has a private hallway, washing and lavatory room, dining room and kitchen, and a beautiful examination room twenty feet long by ten feet wide. This room contains everything necessary for our work, and is a great inspiration to the attending staff, the nurses, and the interns. The last appreciate it particularly for here is a place where lenses can be fitted, field of vision taken, operations performed, and patients treated and examined, etc. Besides our regular permanent nurse, there are two day nurses and one night nurse always on duty in this ward under the direction of our intern and permanent nurse. We also have a small female ward of six beds. Of course, we have the hospital laboratory and x ray department always at our command. We still need a few private rooms for our own use, and one or two special operating rooms, and these will come when our new building is erected on Indiana avenue. It has taken us years to build up this service, but now we have something that is tangible and enables us to do the best work with the least friction. It has, however, only been accomplished by persistent effort toward a definite goal, by demonstrating that it was a desirable and necessary reform, and through the unfailing assistance and support of our efficient superintendent who has always been our friend and willing coworker. What we have done, others can do!

7 West Madison Street.

Flatulence.—H. S. Schwartz (*Medical Sentinel*, July, 1917) says that a well balanced and chemically harmonized diet is of most importance in the treatment of gastrointestinal derangements, especially in chronic gastritis, of which flatulence is so constant and troublesome a symptom. Much attention should be paid to the proper combinations of foods. All fermented foods or drinks should be strictly prohibited. The alkalinity of food also plays a very important rôle in the dietetic treatment of flatulence. Yeast bread should be omitted from the diet, for a while at least, until a normal condition of the stomach has been reestablished.

THE VEGETATIVE NERVOUS SYSTEM.*

A Discussion of its Relation to the Internist and Surgeon.

By Thomas J. Orbison, M. D.,
Los Angeles, Cal.

Vegetative neurology has heretofore been well nigh *terra incognita.* For several years an immense amount of intensive work has been done by research investigators who were studying the same anatomical structures but were making their observations from the standpoint of their own several fields of activity. The correlation of this vast array of data is making the reclamation of this field a veritable discovery of capital importance, inasmuch as it concerns one of the most important kinetic systems of the human body. To give an idea of the quantity and quality of this research it will only be necessary to give the names of a few of the workers mentioned in one monograph on the subject of vegetative neurology (1), viz., Frorup and Kuntz in embryology; Broek, Jacobson, Onuf, Collins, L. Müller in comparative anatomy and histology; Gaskell, Langley, Lewandowsky, Bunke, Kieidl, Karplus in physiology; Loewy, Falta, Rudinger, Frölich, Noorden, Myer in pharmacology; Head, McKenzie, Eppinger and Hess in clinical material and kinetics. To this list could be added many other notable names. The work done by these investigators has unearthed evidence concerning many laws governing activities heretofore hidden or hazy. Working from different directions they have made a discovery that is as important and fascinating as anything in scientific medical research and compares in importance with the work which made possible the present day knowledge of the endocrine glands. Heretofore even the anatomy of the vegetative nervous system has been little known or discussed. Its physiology was shrouded in the obscurity of ignorance. The symptomatology of its disease forms was either attributed to disease of the various organs which it administered or was characterized as hysteria or its equivalent.

The importance of the vegetative nervous system cannot be overlooked when once the fact is realized that it absolutely controls by its nerve fibres the marvelous mechanism that regulates our physical and mental attributes, that prevents us from becoming monstrosities, that maintains our sexual integrity and allows of procreation and propagation —namely, the secretory glands of the body. Furthermore, it energizes all automatically acting organs having a smooth musculature; e. g., the intestines, genital apparatus, the pupils, the bloodvessels, the ductless glands, and so on. In the words of Higier, the vegetative system "plays an enormous rôle in the economy and metabolism of the organism," because it regulates organs which are essential to life—organs which must not cease functioning for one moment, e. g., the heart, lungs, liver, stomach, thyroid, adrenals, bloodvessels, etc.; and because its fibres and ganglion cells are widely distributed through the entire trunk and lie through almost the entire extent of the internal and external coverings of the body. Pathologically, its disturbance is seen in every infection and intoxication. This last sentence expresses a vital truth and might be amplified to bring out more in detail what seems to be borne out clinically as a law; namely, that the toxins of the infections have a selective action upon the vegetative nervous system; e. g., vegetative neurasthenia as a sequel to one or more of the infections.

Comparative anatomy.—According to embryologists and anatomists the phylogeny of the central nervous system of the adult individual of the human species plainly demonstrates the most completely developed product of evolutionary processes. Each separate act and movement of every striped and smooth muscle is the result of nervous energy and nerve conduction. In connection with this Higier draws attention to the fact that one cannot understand the meaning of the end product without some knowledge of its phylogenetic development. He thereupon marshals the data bearing upon the subject of the development of the human nervous system. The stepping stones upon which Evolution has borne her precious burden have been scientifically identified. What her "perfect work" will be, when carried to its ultimate, remains for Evolution to accomplish.

A brief and sketchy quotation of certain steps of this development is a useful memorandum at this point: 1. "The various parts of the nervous system which receive the stimuli from external and internal organs, resulting in the muscular acts spoken of above, are designated as the *Urhirn* or archeopallium of Edinger. This exists in all animals from fish to man. 2. All activities in the *Urhirn* are reflexes. The oldest are reflxes for guarding against harmful stimuli (noci reflex). 3. One of the earliest organized forms of the *Urhirn* of the central nervous system (invertebrates) is that of the loosely connected pairs of ganglia, the ganglion system. In the lowest vertebrates the so called metameric system, together with the *anlage* of the vertebræ, is built upon the ganglion system of invertebrates. 5. In the next highest vertebrates (reptiles) there is built up upon the now very important midbrain—what has been designated as the corticosomatic cerebral system—the new brain or neopallium of Edinger. This is the most important part of the cerebral cortex. 6. In the lower animals there remain isolated, relatively independent nervous connections which have been left from the ganglionic metameric and midbrain systems. 7. In the higher animals, the psychical growth finds its anatomical expression in the addition to the corticosomatic system of a corticoassociative system with scattered areas located throughout the surfaces of the cortex. This system, according to von Monakow, represents in man the 'preliminary worthy conclusion of the phylogenetic development.' 8. In this organization, old and new phylogenetic functional systems work by the side of and with each other in wonderful fashion. The new brain (neopallium) presents at first only in traces, and finally comes to equal the *Urhirn* or archeopallium in dimension. In monkeys and man it even surpasses it in size. Relegated to the background is the reflex and automatic vegetative life. 'This leaves an animal with more of a "soul" and freed from the continued activity of its reflexes.' "

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*Read by title at the California State Medical Society.

Physiological and anatomical data.—For the purposes of this paper the nervous system as a whole may be divided into two parts: 1, the sensorimotor, supplying the paths for nervous energy to the cross striated muscular systems of the body; and 2, the vegetative neuron system. It is with the latter that we are here concerned. The vegetative neuron system is composed of two parts: 1, the autonomic; and, 2, sympathetic. The autonomic fibres, called by some the extended vagus, arise in part from three localities: the brain, the medulla, and the sacral portion of the spinal cord. Comparative anatomy and physiology show many distinctive differences in the sensorimotor nervous system and the vegetative neuron system; e. g., the fibres of the former that supply cross striated muscles go direct to their distal extremity along one neuron, whereas the vegetative nerve path is interrupted by its ganglion cells ("synapse"). Again, as pointed out by Eppinger and Hess (2): "If vegetative nerve fibres are stimulated peripheral to their origin in the central gray of the cord (Clark's columns) definite manifestations are obtained. These may be eliminated at once if nicotine is painted upon the ganglion between the site of stimulation and the periphery. The functional manifestations of the activity of the sensorimotor nerves are on the contrary unaffected by nicotine."

The sympathetic system arises from the midthoracic and upper lumbar cord and forms an anatomical entity. These two parts of the vegetative system are distinct and separate and do not come into relation with each other, anatomically speaking. Functionally and from the standpoint of kinetics they are in one sense antagonistic inasmuch as the stimulation of one will give an opposite result to the stimulation of the other: for example, adrenalin, which is a universal stimulant to the sympathetic system, will abort a vagotonic attack of asthma by inhibition of bronchial muscle, whereas, pilocarpine, administered to a vagotonic individual, may induce an attack of asthma by its action on the already irritable autonomic system. On the other hand, atropine, or a combination of atropine and morphine, will abort the same attack by paralyzing the end filaments of irritable autonomic fibres, causing a blocking of nervous irritability.

Looking at these apparently opposite actions of autonomic and sympathetic systems in another way, they represent the complementary kinetic antagonism exhibited by a team drawing a load, or the rhythmic to and fro antagonism in the piston of an engine: the perfect interplay of opposites makes in reality for progress and tone; whereas, any loss of integrity in either part will at once cause imbalance, loss of tone, disturbed kinesis and disease. As was said above, the autonomic vegetative system arises from three localities: midbrain, bulbar, and sacral. "The midbrain fibres go distalward through the oculomotor paths, being interrupted in the ciliary ganglia," and administer certain internal and external eye functions—pupilary reactions, opposite to the sympathetic, elevation of the eyelids, etc. The bulbar fibres supply the glands and vasodilators of the head via the facial and glossopharyngeal nerves. Its most extensive excursion is through the vagus to the bronchi, heart, esophagus, stomach, intestines, and pancreas. The sacral division supplies the descending colon, sigmoid, anus, bladder, and genitals. The sympathetic division of the vegetative system has been spoken of not only as the "alpha and omega of the visceral system, but also the bearer of the burden of the mechanical work of our vegetative life" (Higier). Anatomically, it is composed of a cord and its branches. It will only be necessary to point out briefly the distal points of the three divisions of the branches in order to appreciate the widely extended field they administer. When this is understood, the symptomatology of any disease or imbalance of this system becomes clearer. Furthermore, it becomes plain why symptoms of sympathetic disturbance and likewise the symptoms of disease and imbalance of the autonomic system may well seem to be so bizarre and anomalous that, without the knowledge of the laws governing their distribution and functions, the clinician must surely and necessarily fail in making a correct diagnosis. Until very recently it has been the custom of clinicians to subscribe to the hypothesis that this symptomatology is based solely upon parenchymatous disease of the organs to which these systems go as afferent and efferent conductors of nervous kinetic energy. In the past and up to the present time, our whole system of internal medicine has in large measure been built up, about, and upon the theory of parenchymatous organic disease and has almost entirely, and in some instances wilfully, neglected the laws governing the neurology of the internal organs.

The three branches of the sympathetic system are distributed as follows: 1. Arterial branches to cranial or cortical plexus supplying the cranial cavity with sympathetic fibres; to the thoracicoaortic plexus which supplies the heart, aorta, lungs, and esophagus, and to aorticoabdominal plexus which supplies the abdominal viscera and mesentery. 2. The peripheral connect with the important cardiac branches of the abdominal cavity, the splanchnic going to the gastrointestinal tract and its appendages. 3. The communicating branches "connect the sympathetic ganglia with the anterior spinal roots, making an important connecting path between the sympathetic and central nervous system."

Even this short description of the variety of the organs whose tone depends upon the integrity and perfect interplay of the two divisions of the vegetative nervous system cannot but impress one with the necessity for a most careful consideration of its physiology, pharmacological reactions, pathology, and the clinical manifestations of its diseases. In connection with this it may be well to call attention to a few examples of seeming anomalous symptoms of disturbance of one or other of the segments of the vegetative system that are only cleared up by a study of its embryological development, the important truth being emphasized that in disease of the vegetative system these various segments may and often do exhibit symptoms alone or associated with other segments in a bewildering manner—symptoms of irritability or imbalance showing themselves now in one, now in another, and again in a variety of combinations of different segments and divisions.

Higier gives the following examples of apparently unrelated and anomalous symptoms and their explanation:

The testicles descend from the renal region into the scrotum; but the scrotum and testicle are not derived from the same body segments and are therefore supplied by different nerves—the former by the lower sacral and the latter by the upper lumbar. This accounts for the testicular pain in renal stone and for increased irritability of the external genitals and maintained irritability of the testicle in conus and candal lesions. Another example is pain in the arm in cases of cholelithiasis and diaphragmatic pleurisy due to the fact that the phrenic nerve arises in common with the fourth cervical. It supplies the diaphragm and the liver. Still another example is the urinary bladder which is supplied by the lumbar nerves in that portion of it which is developed from the alantois, while the lower part, being developed from the cloaca, is supplied by the middle sacral nerve.

Attention is called to these seeming anomalies for the purpose of emphasizing the known fact that reflex pain, being always based upon fixed anatomical grounds, may be due to the painful stimuli coming from a distant zone, whether it contains an area of inflammation or of pressure of a foreign body in an organ, a break in the continuity of the parenchyma, as in renal stone, or excessive irritability of the nervous mechanism alone, causing certain distant as well as neighborhood symptoms. The same laws apply to the vegetative as to the sensorimotor systems. It is possible for an irritable nerve path—a nerve path, e. g., that has been especially affected by a toxic or infectious agent—to convey painful or otherwise confusing and seemingly unreliable stimuli, even when the end organ supplied by that nerve tract may be healthy. Cases are here cited in which removal of normal appendices or ovaries has been accomplished as a result of subjective symptoms which seemed to point accusingly to a diseased organ; likewise, cases in which removal of healthy intestinal section, for the relief of intestinal stasis, pain, and motor distress, has not effected the expected cure but has been followed by new symptoms engrafted upon the old and intensified by shock, dismay, and lost hope. The last state of these unfortunates is many times worse than that from which they attempted to escape. It has been proved that the psychical centres have more control, or at least more influence, over the vegetative nervous system than over the sensorimotor. It therefore follows that the shock of trauma, including operative procedures, implicating the vegetative system will react more potently than trauma elsewhere. The vegetative nervous system is, *sui generis* and because of its functions as well as because of the widespread field of its operations, potentially more powerful for good or evil in the individual human economy than the sensorimotor system. It is certainly as important as the parenchymatous organs themselves for the reason that it administers those organs, i. e., conducts kinetic energy to and from them.

The object of this paper is, therefore, to emphasize the importance of the vegetative nervous system in its relations to the everyday cases that are presented to the physician for advice and help. It is essentially a plea for a more general recognition of the differences between the sensorimotor and vegetative system. It especially emphasizes the error of overlooking disease and imbalance of the nervous elements when considering any case exhibiting functional disturbances of those organs supplied by the autonomic and sympathetic divisions of the vegetative nervous system. It is not intended in this paper to make any undue claims to a new discovery, to attempt to explain every symptom complex upon new hypotheses or to exploit any new propaganda in medicine; nor is it a vehicle for reckless carping criticism directed against those who may not place a similar emphasis upon the importance of the vegetative system.

The clinical work in vegetative neurology that has been done is not as yet of sufficient volume to allow of fine classification in individual cases. It must remain until the wider application of the principles of vegetative neurology by a greater number of clinical workers, reinforced by more completely analyzed and thoroughly studied case records supplied by more observers, before our knowledge may be standardized. Until that time shall have arrived the array of data will be, as it is today, very much in the same condition as an army while in the preparatory stages—first the mass or rabble stage, later the trained units, and still later mass formations that are effective because they have been tried and found to be effective.

Sufficient work has been done, however, to admit of certain definite dicta. Competent observers have described as entities certain symptom complexes that are more or less constant in their manifestations and which are based upon a pathologically irritable condition of one or the other division of the vegetative nervous system: e. g., heightened irritability of the autonomic division, or the so called extended vagus, is given the name "vagotonia." In these subjects there is a hypersusceptibility to pilocarpine and a relatively hyposensitiveness to adrenalin. A similar condition of the sympathetic division is called "sympathicotonia." In these subjects there is a hypersensitiveness to adrenalin. Analyses of many hundreds of these individuals, who show a tendency to imbalances of the vegetative nervous system, have demonstrated that there are those whose dominant symptoms are referable to an irritable autonomic system and they are therefore classed as vagotonic individuals. They are subject to or predisposed to vagotonia.

Other individuals have, on the other hand, a predisposition to sympathicotonia. These individuals may never be subjected to the frank diseases vagotonia or sympathicotonia any more than one who is susceptible to any other disease must of necessity acquire that disease, but they are nevertheless just as surely predisposed to disturbances of the vegetative system. These predispositions may be demonstrated by certain pharmacological tests and the individuals thereby fairly well classified. Furthermore, very many individuals present a mixed form of imbalance of the vegetative system, whether of heightened or lowered tone, which at one time manifests itself in the autonomic and at another in the sympathetic distribution. It is inevitable that the nomenclature of these disturbances will become more definitely applicable as these various disease forms permit of standardization. The symptoms of vegetative imbalance will, therefore, depend upon which division is the more disturbed and upon the character of that disturbance and its locality.

To repeat for the sake of emphasis, in disturbances of the vegetative system the following symtoms may depend upon whether the autonomic or sympathetic is more at fault: In the head region there may be the ocular symptoms of myosis or mydriasis; accommodation spasms; widened or narrowed lid slits; infrequent winking; exophthalmos or enophthalmos; salivation or dry mouth; cephalalgia of vasomotor origin, i. e., migraine and the like. In the respiratory tract there may be laryngismus or asthmatic attacks. In the circulatory system there may be tachycardia or bradycardia; vasomotor angina; changes in blood pressure; peripheral hyperemias and anemias; acrocyanosis; urticaria, etc. In the digestive tract there may be esophagismus; cardiospasm; the gastric neuroses, achylia, gastrosuccorrhea, pylorospasm, gastrospasm, etc.; atonic and spastic constipation; nervous diarrhea; colic; anal sphincter spasm; convulsion or atony in various intestinal loops or segments. In the urogenital system there may be incontinence or retention of urine; pollakiuria and tenesmus; renal colic; disturbances of libido, of erection, of ejaculation, and of orgasm. In the cutaneous system there may be gooseflesh; hyperidrosis and anidrosis, either unilateral or bilateral; bromidrosis; pallor; flushing; dermographismus. In the endocrine glands there may be eosinophilia; status thymicolymphaticus; pigmentations; increased or decreased glucose tolerance, etc.

These symptoms in various combinations will certainly manifest themselves in organic disease of the parenchymatous organs to which they administer. In such organic diseases they will be restricted in their distribution to certain anatomical limits. In addition to this the laboratory findings of disease of the organs in question will be available. Evidence of true organic disease will probably not be lacking. On the other hand, in imbalance, constitutional inferiority or hypersusceptibility, atonia, hypertonia, shock, or other disturbed or diseased states or conditions of the vegetative nervous system alone, and without disease of the organs supplied by it, there will be manifested various, varying, and, it may seem to be, anomalous symptoms or groups of symptoms that may or may not adhere constantly to certain anatomical distributions. In these so called functional diseases there is little wonder that mistakes in diagnosis occur. Especially is this true of painful conditions seated in the abdomen.

Attention was drawn in another part of this paper to the fact that the toxins of the infections seemed to have a selective action upon the vegetative nervous system. This is a personal opinion and may be wrong. Examples of this are the well known pupillary reactions to syphilitic toxemia; the nasal and pharyngeal irritabilities, among others, following rheumatic infection; many of the sequelæ of the exanthemata; certain recognized remains in the vegetative system of pneumonia, typhoid fever, and influenza. These might be multiplied indefinitely. It is a most common occurrence in any neurological practice to obtain the history, from those suffering with the indefinite symptoms of a vegetative neurasthenia, of having had "all the children's dis eases," or "I always took any disease that was going around," etc.

A few cases will be recorded here as examples of disease or imbalance of various portions of the vegetative nervous system.

Case I.—Male, age sixty-seven years, seen December 28, 1915. Diagnosis: cardiospasm. The family history was not significant except that one sister was a sufferer from asthma up to the time of her death. The patient's previous history included diabetes at twenty years of age, from which he recovered; cystitis five years ago; chronic renal disease with arteriosclerosis. The cardiospasm began about one year ago when he found himself unable to complete the act of swallowing iced liquids. Hiccough ensued. After a time the liquids would foam up into his throat, being regurgitated forcibly. Vomiting became frequent. In time the ingestion of food was so interfered with that he found no pleasure in eating though he was hungry. About one month ago while making an attempt to reach the toilet he suffered an apoplectiform attack which was evidently an intercapsular involvement. He recovered quite completely from the latter. The cardiospasm had at one time been diagnosed carcinoma of the esophagus and operation considered. Our röntgenological examinations demonstrated the gourd shaped esophagus during its spasm against a bismuth meal. Laboratory examinations, physical findings, and clinical symptoms gave no evidences of esophageal tumor or stricture. A simple dilatation was therefore performed and the offending spasm forcibly overcome. The result was most happy. A few minutes after the dilatation the patient for the first time in a year swallowed a glass of water in comfort and without the slightest disturbance, much to his surprise and delight. He had almost complete relief from spasm following the first dilatation.

The esophagus is supplied and its activities are administered by the vegetative nervous system. Irritability of the autonomic division of this system was probably in this case an expression of the general nervous irritability due to the underlying disease conditions elsewhere and to the hyperkinesis that was characteristic of the man.

Case II.—P. M., female, aged fifteen years, seen October 25, 1916. Diagnosis: vagotonic asthma. The family history in this case was significant. The patient's mother was healthy but psychopathic. Her father and grandfather suffered with asthma. Except for the asthma she has been free from any sickness. She began to have mild symptoms at about three years of age. Ever since the establishment of her menstrual periods she has suffered from attacks of asthma that are synchronous with the periods. In addition to these attacks any excitement of overwork, mental or physical, would bring on an attack. Physical examination showed the large eyes, long lashes, flushed face, anxious expression, and other evident neurotic signs and symptoms of the vagotonic individual. Exhibition of adrenalin and atropine in suitable doses effected at least temporary cure. She had not suffered with any return for several months when last seen.

Case III.—S. W., aged forty years; female, single; teacher. Diagnosis: vagotonia. family history was negative. As a child the patient was healthy. Menses have been painful and irregular except during the last few years. Temperamentally she has been high strung and hyperkinetic. In 1909 she began to experience some dyspnea. At first it lasted only a day or so and recurred at irregular periods for a year and then ceased. She has complained of spastic constipation for years. Appetite has been precarious and at times there has been a feeling of gastric paresthesia. She has always had cold hands and feet. Her present complaint was that for the last ten days she experienced difficulty due to spasm of the diaphragm. With this there was the feeling of cold over the skin surfaces. Physical examination: Facies anxious; eye widely open; bradycardia; pulse 60 to 63 per minute. Reflexes exaggerated. Hands cold and clammy. Skin mottled—vasomotor imbalance. Auscultation showed normal lung function but a marked spasm of the diaphragm. No areas of anesthesia or other hysterical stigmata. Atropine, grain 1/75, was exhibited hypodermically. The effect was good. She was then directed to take tincture hyoscyamus in twenty minim doses every four hours upon the first signs of any return of symptoms. This was to be repated until they ceased. There has been no return of symptoms. After the acute disturbance had subsided three grains of sodium cacodylate and one c. c. of a 1:3200 solution of adrenalin were exhibited by hypodermic three times a week for several weeks. She felt better and more competent in her work and remained so.

CASE IV.—E. D., aged thirty-two years; female. Diagnosis: vegetative neurasthenia of vagotonic type. The patient's mother and two sisters died with tuberculosis. When she was two years old she was burned so severely that she had to learn to walk again after recovering from the burns. Up to her seventh year she was healthy, but through the second seven years she suffered with vomiting spells that came on frequently and lasted at times a week, during which periods she was taken out of school. Except for these spells she seemed well. At thirteen years of age she entered high school, the smallest girl, and in three years time she had grown to her present height, five feet nine inches. From seventeen to twenty years she lived a life of constant repression due to her stepmother's condition; the latter drank in excess and treated the stepchild horribly. At nineteen years she left home and has since held some exceptionally responsible places in the business world. At twenty-five years she suffered with a spasmodic respiratory disturbance. Later symptoms developed in various segments of her vegetative nervous system, e. g., spastic constipation, nausea, and vomiting, vasomotor imbalance, ovarian disturbances, vertigo, and intestinal spasm with consequent abdominal distress and pain. She still continued to complain of these symptoms. They came on in the most bizarre combinations. She has been treated for a great variety of ailments and various operations have been considered. The uterus was dilated at one time with unpleasant results. On physical examination she gave typical vagatonic reactions to pilocarpine and atropine. She presented the typical symptoms and physical signs of vagotonia. Treatment has been directed entirely toward the constitutionally inferior vegetative nervous system, and the results thus far have been eminently satisfactory. She is practically free from symptoms most of the time and is engaged in the trying occupation of administering a business office.

CASE V.—Mrs. E. H., aged thirty-nine years. Diagnosis: mixed type of vegetative neurasthenia. Both parents probably suffered with tuberculosis. Three of her father's sisters died insane; one became so after childbirth and two after the menopause. Up to the age of puberty she was strong, fat, and healthy. At that time she became nervous and restless. She entered nurses' training at nineteen years. Temperamentally she was excessively hyperkinetic. She made a great success in her profession and was chosen for some very responsible positions At twenty-one years of age she sustained a serious and potent mental shock which resulted in mental distress and later in nausea, vomiting, and abdominal paresthesias. These were mistaken for symptoms of appendicitis, and she underwent the first of a contemplated series of operations. A normal appendix was removed and she continued to suffer as before. For the next eight years she suffered with such a variety of symptoms that she has been under the care either of internists, neurologists, or surgeons, principally the first. Her symptoms included pain in the abdomen, skin, joints, and head; convulsive attacks of one or more loops of intestine; spastic constipation with hard, mucus covered stools; nausea and vomiting that would come in regular storms that lasted for days at a time; attacks of whirling sensations in the head and loss of the ability to maintain her equilibrium so that she was compelled to lie prone. At times the intestinal contents would lie for days in one of the loops of the colon. Cathartics at such times would only set up an intestinal convulsion. Her nights were dream ridden by attempts to accomplish the impossible, the sight of dead bodies and coffins, and other fearsome sights. She was tested exhaustively for every possible organic disease that could cause her symptoms without a positive result. These tests included duodenal buckets, sugar tolerance tests, and all the laboratory tests applicable. Her gallbladder was examined and drained. It was found to be normal. There were no abdominal adhesions found. Opinions differed widely as to what was wrong. She married and gave birth to a healthy child. This determined nothing diagnostically. Her life was spent traveling back and forth over the country looking for relief. She was told by a leading surgeon that there were no surgical indications, and by a very careful and painstaking internist, "I doubt very much whether any medical treatment is going to get you any better, and the whole question for you to decide is whether you are ready to face the serious operation of the intestinal anastomosis." In desperation she tried Christian Science for several months. The significant family history added to her mental and kinetic makeup, plus the theory that the beginnings of her trouble were based upon a condition of shock beginning as a mental insult and developing into frank vegetative disturbance, altogether made plausible the diagnosis of vegetative neurasthenia of mixed type. Treatment was directed upon these lines and included a preparatory rest course with exercises and massage in bed, a generous mixed diet, intensive psychotherapy, and strict discipline. The medication consisted chiefly in the exhibition of sodium cacodylate in three grain doses given by hypodermic every second day. At various periods adrenalin was administered on the alternate days in doses of one c. c. of the 1:3200 solution. There were times when a combination of chloral and strontium bromide were given to allay symptoms. She steadily improved after the first change for the better and had three months of freedom from symptoms Then there was a recurrence of two months' duration. This has been followed by several months of freedom. She has for the first time in years resumed her normal life at home on her orange ranch and is able to administer a large house without any distress.

These are but a few typical cases of many that have been and are being treated along these lines. In almost every instance they have been variously diagnosed as autointoxication, hysteria, abdominal adhesions, mucocolitis with spastic constipation, and so on, even in the light of negative laboratory and physical findings that would point to parenchymatous disease. Some of them seem to have been based upon a lowered tone that in its turn was due to an old tuberculosis that may or may not have been cured. Other cases seem to have been induced in susceptible individuals by a previous infection, all evidences of the infection itself having long been absent. Still other individuals seem to owe their symptoms to the constitutional inferiority and irritability of their general nervous system. In these people one often finds the exciting and determining cause to be a shock of some sort. Treatment of these cases is bound to be beset by countless difficulties and relapses. But in most of them great alleviation can be had and in many a practical cure. In many of them one has to decide whether an operation is necessary, advisable, or in any measure indicated. Surgical interference in these individuals should be done only when imperatively indicated and then only after thorough explanation of the probable delay in subjective comfort and the necessity of a more or less long period of postsurgical neurological treatment.

The closing remarks of Eppinger and Hess in their monograph (2) are as follows: "The value of researches which have been presented should be many sided. Above all, we believe that we have paved the way for a new subject, the neurology of the visceral organs. When one stops to consider to what degree the pathology of the peripheral nervous system has been developed, it must be a source of shame to the internist that he must admit that there scarcely exists a pathology of the nervous system of the visceral organs worthy of the name."

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1219 BROCKMAN BUILDING.

DOCTOR AND PATIENT.

By Joseph H. Marcus, M. D.,
Atlantic City, N. J.,
Attending Physician, Jewish Seaside Home, Atlantic City.

I have already had frequent occasion to remark upon the strong distrust of medicine and doctors on the part of the public. Since time immemorial doctors have been the favorite butt for caricature, epigram, and anecdote. The medical profession can be assailed with impunity, since it has long since grown accustomed to it. The healthy speak of medicine and the faculty with a smile; the infirm who have not derived benefit from its ministrations criticise it with unmeasured bitterness. These sneers and this distrust disconcerted me a great deal while I was a tyro. I felt that, at the bottom, both were merited, for there was no denying that our science contained much we well might wish to exclude. Under the influence of this feeling, in moments of expansiveness, I occasionally felt inclined to ventilate my poor opinion of medicine, but at the same time, in the bottom of my heart, my attitude toward medicine was both earnest and full of reverence. Clearly a deep misunderstanding underlay this. Medicine does not justify all the expectations that are entertained of it, and it is derided and discredited in consequence. But are such expectations either just or legitimate? A science dealing with the cure of disease, which we style medicine, is supposed to exist; those who have studied it are expected to recognize at a glance and to cure all illnesses forthwith and without fail. If they cannot do this, either they must be incompetent, or their science is a fraud and a delusion. Nothing could be more natural, and at the same time more mistaken, than such a view. A science answering more or less to the ideal of perfection and completeness, whose business it is to cure disease, is nonexistent. Such as it is, medicine is confronted by the human organism in its endless complex and involved life; we have arrived at an understanding of much of that life, but at the same time each new discovery reveals more and more of its miraculous intricacy. Many diseases develop in the system through dark paths that we can but haltingly follow; obscure and intangible are the combative powers of the human body; no means are known by which these forces can be sustained. There are other ailments more or less intelligible, but time out of number they run their course so secretly that science, with all the means at its disposal, is powerless to detect them. Does this signify that physicians are superfluous and that their science is utterly bankrupt? We must not forget that there is much else that is actually within their domain and ken; the field in which the doctor can dispense concrete help is sufficiently vast. No doubt he is often powerless to give relief, but a doctor alone is competent to judge of this—not the patient. Even in the presence of such a case, the physician is invaluable if only for the reason that he realizes the complexity of the morbid process, whereas neither the patient nor his entourage is able to comprehend it. People lack even the faintest idea either of the life processes or the powers and remedies at the command of medical science.

From this spring the great majority of such misconceptions; here lies the cause both of blind faith in the omnipotence of medicine and of the blind disbelief in its efficacy. Both lead to equally disastrous results. All manner of popular medical books are disseminated among the public. Every family, pretending to more or less education, invariably possesses a medicine chest, and before the doctor is called, the patient is nearly always sure to have been consecutively dosed with castor oil, quinine, or salicylate. If people possessed a reasonable understanding of elementary medical science, instead of blind faith, nothing of the kind would be possible. It would then be recognized that every new patient represented a novel and unique illness, highly complicated and involved, which even a doctor, with all his knowledge, often finds difficult to understand fully. Suppose a member of the family is constipated—he is given castor oil. Would anyone venture upon such treatment if he or she so much as suspected that sometimes a man may be killed by this means; that occasionally, for example, in cases of saturnine colic, constipation cannot be relieved by castor oil, but only by opium?

The exaggerated demands made of medicine founded upon an ignorant belief in its omnipotence, are the physician's bane and fetter him hand and foot. A patient ill with typhoid suffers from high fever, splitting headaches, night sweats and he is oppressed by delirium; these must be fought against with great precautions, natural remedies being chiefly resorted to. But tell the patient that he must suffer, bathed in perspiration and tormented by hallucinations, he will turn from you and apply to a colleague who will not stint him in quinine, phenacetine, and chloral. He says: "What doctor is this who does not alleviate the patient's pain?" No matter that this assuagement is bought at the price of the patient's strength; let the permanent ruin of his constitution be the result, let him lose for all days the power to combat disease independently; his pain was soothed, and that sufficed in itself. The most miserable patients in this respect are certain exalted personages, impatient and spoilt, who blame the doctor for the slightest malaise, even when it is impossible to remove it. This explains why many doctors, of whom their colleagues speak with contempt and to whom no medical man in his right senses would ever dream of applying, enjoy the greatest popularity with a certain section of the public.

People say that he is a doctor who is able to ease pain and cure diseases with facile confidence; but reality contradicts such an idea at every step, and those who had hitherto blindly believed in medicine cast themselves into the other extreme. Suppose that the patient suffers from a curable complaint, but one requiring long and systematic treatment; a week or two pass by without any appreciable improvement, and the patient throws over his medical adviser and applies to a quack. There are certain protracted diseases for which no efficacious remedies exist—for instance, whooping cough; the doctor who has been requested to treat this illness in a family for the first time may rest assured that his services will never again be asked for in that quarter. All that the physician can do is to keep an eye on the hygienic conditions and be on the alert to meet any possible complications; and it requires either deep and tried confidence in the doctor, or else full understanding to become reconciled to this passive rôle.

But the richest soil of all for the flourishing of this negation of medicine is furnished by the profession's mistakes. A doctor diagnoses a disease as typhoid, while autopsy disclosed general tuberculous infection—the clinical picture of both is often identical. I number among my acquaintances a man who has suffered for a few years from severe pains in the knee: one doctor diagnosed syphilis, another tuberculosis, a third gout; and treatment for none of the three afforded him any relief. Of course, this only shows that very often the manifestations of a disease are so obscure and vague that at times we have to depend on chance alone for hitting upon the right diagnosis. Personal experience is all to the individual, and my friend says: "Your profession is as necessary to mankind as a necktie; although entirely useless, conventional decency requires that civilized man should wear one. Accordingly, he uncomplainingly spends money on cravats, and those who earn their living by making them imagine that they are performing useful work." A lady confesses that she entirely disbelieves in medicine. She disbelieves in medicine, but she is absolutely ignorant of the subject! How can one believe or disbelieve in the importance of what one knows nothing about? Scepticism may easily be bred in persons whose faith in medicine has hitherto been blind. Knowing all, I exclaim with conviction: I believe in medicine! I believe in it, in the face of its limitations. How could my attitude be different, when every day of my life my training enables me to save my fellow creatures from death, when at times I see how those who renounce medicine compass their own ruin?

"I don't believe in medicine," said the lady. Perhaps it were as well to go to the root of the matter and find out what she really does believe in: that it is possible to stop whooping cough in a couple of days, or that the timely application of atropine in certain ocular affections can preserve a man's sight? Neither in a couple of days nor a couple of weeks is it possible to stay the natural course of whooping cough, but a few drops of atropine may save a man from blindness, and he who disbelieves in such truths is on the same mental plane as the sceptic who is incredulous that there should be parts of the world where the country folk speak French. A man suffers for long years from asthma: his nasal septum and turbinates are cauterized and he becomes well and happy in the consciousness of his health. A boy is slow and inattentive, lacks memory: the hypertrophic tonsils and adenoids are removed and mental transfiguration results. A child is exhausted by diarrhea: without any medicine, simply by regulating his diet and the hours of his meals, the child is brought back to plump health and high spirits. Often, knowledge enables one to ward off a serious illness by the timely prescription of the most trivial dose of physic, the application of the most simple treatment. And the more profound the popular ignorance, the more vividly does the importance of our knowledge stand out. In those difficult and involved cases which required the expenditure of a large amount of mental and nervous force, the enjoyment of the sweets of triumph was especially keen, and one fully realized the absurdity of the idea that it would have been possible to accomplish anything without scientific training. Pity those who do not believe in medicine.

The jeers at its expense are born of its deriders' ignorance. Still, there is no denying that in many cases we are impotent, and even ignorant, although the fault is not ours; but it is just this seeming contradiction which breeds unbelief in our science and gives rise to this ridicule. These jeers and this distrust being unjustified and unreasonable, the question naturally arises: what should the attitude of the medical profession be toward patients? Of course, honesty in dealing with them should be the first consideration. It is because we ourselves withhold from them the true extent of the knowledge at our command that the hostile and ironical feeling toward ourselves, which we invariably arouse, is made possible. One of Tolstoy's chief artistic merits lies in his strikingly human and earnest treatment of every one of the types he paints; he makes but one—a notable exception to this rule—when he deals with doctors; Tolstoy cannot describe them without irritation. Evidently there is something, an indefinable "something," which prejudices us in all eyes. And I fancied that it must be this cloaking of ourselves in a kind of nebulous mantle of mystery, the exaggerated confidence and expectation that we excite toward ourselves. Plainly this had to be remedied. But life lost no time in upsetting such a notion. Things could not be changed. Here is an example. I attended a clerk suffering from pneumonia; he was constipated and his abdomen was greatly distended. I prescribed calomel in the usual laxative dose and with all the customary precautions. When I paid my next call, the patient complained of an abundant secretion of saliva, his gums were red and swollen, his mouth emitted a disgusting odor; everything indicated the typical symptoms of a slight mercurial poisoning caused by the calomel. No reason existed for the slightest selfaccusation. I had taken absolutely every measure of precaution. What could I say? Was I to tell them that taking my medicine was the cause? Nothing could have been more idiotic. I would merely have shattered my patient's confidence, no useful end being attained thereby, and in future he would anticipate some catastrophe from my every prescription. So I wisely held my peace, evading the eye of the patient's wife, and listened to her remarks upon the wonderful variety of complications in typhoid with unruffled composure.

Upon a certain occasion a physician was called in to attend a child who had suddenly been taken ill; he was feverish, but made no complaints, nor were there any definite symptoms present; nothing could be done until further developments showed themselves. Not caring to prescribe at random, the mother was informed that certain hygienic measures should be taken, but that no medicine was necessary. Meningitis developed and the child died; the mother bitterly blamed the doctor for his death, because he had not stopped the illness in time.

Again, can we be honest with incurables? In their case it is ever necessary to play the hypocrite and to lie; one has to tax one's ingenuity again and again in making up all sorts of fictions to sustain the sufferer's drooping spirits. The patient is conscious of the deception—at least to a certain extent—and regards the doctor with sentiments of indignation. He would like to relegate medicine to the blackest depths of hell. How should one comport oneself under the circumstances? In such matters the ancient medicine of India was sincere and cruelly frank; it only busied itself with hopeful cases; the incurables had no right to its ministrations; his relatives conducted him to the banks of the Ganges, filled his nostrils and mouth with the sacred mud, and cast him into the river. The invalid loses his temper when the doctor does not tell him the truth. Oh, all that he wants to know is the truth! At first I was naïve and youthfully direct enough to acquiesce when the patient was persistent; only little by little did I realize what was really meant when he desired to know the truth, declaring that he did not fear death. The real interpretation of such words was to be read thus: "If there be no hope, lie to me with skill, that I should not doubt the truth of your words for a moment."

It is necessary in medical practice to be an actor everywhere and at every step. This is of the last importance because disease is not only cured by medicines and special treatment, but by the patient's spirits as well; a cheerful and hopeful mood is an immensely powerful factor in the struggle against sickness, and its importance cannot be overestimated. The sick stand in pressing need of this faith, detecting with fine instinct any note of doubt or vacillation in the doctor's voice.

Do not think that it is sufficient to win the confidence of the patient but once; the struggle for its maintenance must be unceasing. The patient's illness is prolonged; one must keep a sharp eye on his physical state as well as on that of his relatives; at the first sign of their losing heart, it is necessary, if only in outward appearances, to change the treatment, prescribe some new mixture, change the dose; one has to take a thousand trivialities into account, straining the power of imagination, finely studying the character, and taking stock of the mental development of the sufferer and those about him. What I had originally imagined to be the work of the doctor, the pedantic carrying out of the cut and dried ordinations of medicine, proved to be very remote indeed from all this. A Turkish physician of the people, a *hadja,* prescribes for his patient, hangs numerous amulets, and finally blows upon him; everything depends upon the last act; only a *hadja* endowed with a "good breath" can treat the sick. The same "good breath" is required of the bona fide doctor, too. He may be gifted with a magnificent talent of discrimination, be capable of discerning the finest details of the action of his prescriptions, and all this will avail him nothing if he lacks the qualities necessary for the conquest and subjugation of the patient's soul. Of course, there are truly educated persons who do not stand in need of this "good breath," who set a higher value upon talent and knowledge, and do not fear the naked truth. But such patients are as rare among men as genius itself.

521 PACIFIC AVENUE.

ANESTHETICS IN ORTHOPEDIC SURGERY.*

By WALTER G. ELMER, M. D.,
Philadelphia,
Instructor in Orthopedic Surgery, University of Pennsylvania.

The administration of anesthetics is becoming more and more a specialty and the public is beginning to realize its importance. Situations arise in which it is difficult to determine which must assume the greater responsibility—the surgeon who is selected to perform the operation, or the one who is chosen to give the anesthetic. The trained anesthetist now takes his place in the front rank. The custom of sending to the operating room the youngest and most inexperienced member of the resident staff to administer the anesthetic is gradually being given up, and official anesthetizers to the hospital are being called upon more and more to assume this important duty. Only a few days ago a young woman who was convalescing from her fifth operation in speaking of her former experiences remarked that she was etherized at twelve o'clock, but she was not conscious of her surroundings until six in the evening. The operation was a curettement. The question which naturally arises is, Why was this young woman unconscious for six hours because she had a minor operation? We cannot answer in her case, but we are not asking the impossible if we expect a patient to respond to questions before she is removed from the operating table, and when she is being put back into bed she knows where she is and what is happening to her. If she then falls into a natural sleep and sleeps until six in the evening, so much the better.

It is not my purpose to tell how to anesthetize patients, but I wish to mention from the standpoint of the surgeon a few of the practical matters which come up from time to time in routine work in the hospital operating room. I shall refer very briefly to certain actual experiences simply by way of illustrating the point I wish to make. My paper is not meant for a scientific treatise but only a simple practical discussion of practical matters.

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*Read before the American Association of Anesthetists in New York, June 2, 1917.

First is the relationship between the surgeon and his anesthetizer. It should be one of complete harmony and accord, otherwise the two cannot get the best results. It is far more important that the anesthetizer should know exactly what the surgeon wants and his way of doing things than it is that the first surgical assistant should know these things. The surgeon and his anesthetizer should be accustomed to working together. Before each operation the surgeon should explain to his anesthetist the nature of the operation; the probable length of time it will require; the depth of the anesthesia which he wishes maintained; the anesthetic he wishes used. If the anesthetist has not himself examined the patient, he should be told the condition of the patient's heart, lungs, kidneys, and blood and the blood pressure and any other facts which may be of service to the anesthetist in conducting the patient safely through the operation. The anesthetist should at all times feel perfectly free to speak directly to the surgeon during the progress of the operation and keep him informed as to the condition of the patient. The surgeon cannot give his entire attention to the operation unless he has this confidence and mutual understanding in cooperating with his anesthetist.

The anesthetic should be administered to the patient in a room immediately adjoining the operating room and it should be timed to the minute. It should not be started until all the preparations for the operation are complete, allowing only a few moments for the final preparation of the patient on the operating table. On an average eight minutes are required for an adult and six minutes for a child if ether is used; gas and oxygen considerably less—about six minutes for an adult and four for a child. Nothing is gained by keeping a patient unconscious under an anesthetic while the surgeon is completing an operation upon a previous patient. Sometimes, even toward the end of an operation, there are unlooked for and unaccountable delays in finishing it. The surgeon, having removed all the gallstones from the gallbladder of his patient and assured himself that there are none in the cystic and common ducts, directs that the ether be started on the next case. He then discovers that he cannot suture the gallbladder to the abdominal incision because the gallbladder is not long enough to reach it. He must therefore put in an extension drain, which adds another fifteen minutes to his operation. Meanwhile the patient in the next room is anesthetized and ready for operation and is kept fifteen minutes, a half hour, and sometimes even an hour awaiting his turn. This may do the patient serious harm; certainly it does him no good. It may even be the determining factor between a normal convalescence and an ether pneumonia or acute nephritis. Then, again, the surgeon may become so interested in giving his class of students all the details of a patient's history and explaining to them every step of the operation which he is about to perform, that he unconsciously keeps his patient and the anesthetizer waiting as the precious minutes drag by. The anesthetizer becomes anxious and worried, especially if the patient happen to be a weak and delicate child or if he is not taking the anesthetic well. Under these circumstances it should be not only the privilege, but the duty, of the anesthetizer to call the operator's attention to the fact that the patient is ready for operation.

Many years ago a certain surgeon who did not wish to be delayed in starting his morning's work would telephone to the hospital to one of the interns to start the ether on the first case. He would then leave his office, drive his horse two miles to the hospital, and when he finally walked into the operating room expected to find his patient fully etherized and everything ready for the operation. Happily that is past history, and anyway the interns never did begin the anesthesia until a few moments before the doctor entered the operating room.

The anesthetist requires an assistant quite as much as the surgeon does. A nurse should take her place beside the patient before the anesthetic is started and never leave even for a moment until the patient is placed upon the operating table and the operation actually under way. Who of us has not had the feeling of utter helplessness at being left with the patient just at the moment when we know he is entering upon the stage of excitement, the nurse having turned away to button up a doctor's gown, or perhaps being sent on an errand to another room. I was once etherizing an undergraduate nurse. She was a finely built girl, strong and vigorous and weighed about 150 pounds. The assistant directress of nurses who weighed ninety-seven pounds stood beside her to restrain her as she was going under the anesthetic. Everything was going along quietly when suddenly the patient without a moment's warning leaped from the table and she and the assistant directress went down upon the floor together. I managed to hold on to her head and kept it from striking the marble floor. The assistant directress, overcome with chagrin, extricated herself and we lifted the patient back upon the table. The patient was not injured and never knew of her adventure, but it was only good luck that it was not serious. This accident could not have happened of course if the patient had been strapped to the operating table, a wise and proper precaution with adults, but not advisable with children.

When unforeseen accidents occur we should be exceedingly careful not to place the blame unjustly upon some one who does not deserve it. I have heard an essayist in reading his address before a medical meeting attribute a patient's death to the ignorance or carelessness of the anesthetist when I happened to know something of the circumstances surrounding the identical case and realized how unjust the charge was. When a patient dies suddenly on the operating table or very soon after the operation, it may have been—in fact usually is—a death which was altogether unavoidable. But it may be faulty judgment on the part of the surgeon;

he may be attempting to do too much or he may not have correctly sized up his patient's resistance. For instance, a workman has had his thigh crushed and the surgeon attempts a conservative operation hoping to save the limb. After working for a time, he realizes the impossibility of doing so, and allows the patient to return to consciousness in order to explain to him the true condition and ask his consent to an amputation in the upper third of the thigh. He again has him etherized and amputates the thigh. Under these circumstances it is not surprising if the patient dies of this double and overwhelming shock. An elderly man with a strangulated hernia is etherized and an unsuccessful attempt is made to reduce it; he is removed to a hospital, prepared for operation, is again etherized and the surgeon proceeds with an operation for a radical cure. We should not think it strange if the patient dies of this double shock. In both cases it was faulty judgment. In the first instance a rapid amputation might have saved the man, and in the second case the patient doubtless could have been saved by a simple herniotomy taking scarcely three minutes to perform the moment it became evident that the hernia could not be reduced by taxis alone. The radical cure could have been postponed to a more opportune time. Certainly in neither of these cases should death have been attributed to the anesthetic nor the manner in which it was administered. It was faulty judgment. Sometimes the anesthetic is clearly at fault. I recall a case of spastic paralysis in a boy about ten years of age who was lightly etherized for not more than two or three minutes for a subcutaneous division of the Achilles tendon; and in a few minutes he was dead. There seems to be no doubt that it was the ether. But it was not purely an ether death; it was cerebrospastic paralysis plus ether.

And then we see instances where the family doctor is called upon to give the anesthetic when the operation is being performed in the patient's house. Possibly for some special reason the surgeon prefers chloroform, as in a case of empyema following a long bronchopneumonia, and directs that it be given. The family physician may have had no experience in the use of chloroform. We must not be surprised if we see the chloroform being given in about the same manner and quantity as though it were ether. I will digress here just for a moment to speak of this group of cases—the empyemas following pneumonia which always impose unusual responsibilities upon both the anesthetist and the surgeon and are accompanied by much anxiety. Time is very vital. The child should be placed supine upon the operating table, the surgeon and his assistant on either side, ready to begin. Upon a table within easy reach of the surgeon are placed the instruments in the exact order in which each is to be taken up; the surgeon nods to the anesthetist, the chloroform is started. At the instant the child falls unconscious the anesthetist gives the signal to the operator, who does a subperiosteal resection of a rib, opens the thorax, turns the child to empty the pus from the cavity, sews a drainage tube in place, puts on an abundant gauze and cotton dressing which the nurse is holding ready and the child is put back into his bed and surrounded by hot water bottles. The entire procedure required six and a half minutes; not a word had to be spoken, and only a few drops of chloroform were needed after the operation was started. The mortality of this procedure is close to zero.

This brings us to the choice of the anesthetic. Chloroform, as a pure anesthetic, is the ideal one. It has, however, a somewhat higher mortality than other anesthetics even in the most experienced hands. It must be looked upon as a poison from the first drop until the last. It has a very limited field, and I will therefore pass it by. Chloride of ethyl is far more dangerous than chloroform, although as a pure anesthetic it is quite its equal. Some years ago I used it very frequently in conducting an outpatient service in which I often wanted a general anesthetic of perhaps one or two minutes for simple operations particularly upon children. The patients went under it quickly and recovered as quickly without aftereffects. During several years everything went smoothly and I was reaching the conclusion that I understood how to give chloride of ethyl. Then one day, while using it to produce momentary anesthesia in one of my private patients who was to have her ear drum incised; she suddenly became pale, her pulse running, fluttering, scarcely perceptible and her breathing changed to short gasps. I stopped the anesthetic at once. The otologist waited twenty seconds and incised the ear drum, the patient screamed and promptly recovered. A few days later I learned of the sudden death of a child in a hospital; the operation was a circumcision. Not long afterward a wealthy man quickly succumbed in his own home when the anesthetic was being given him while his knee was being straightened and a plaster cast applied. I knew that these doctors were all careful and competent men. I have not used chloride of ethyl since.

We have then the choice of two, ether and nitrous oxide with oxygen. In the Hospital of the University of Pennsylvania in Philadelphia ether is generally used. It is usually given by the open drop method upon folded gauze, sometimes with the Allis inhaler, depending upon the personal preference of the etherizer. Sometimes nitrous oxide gas is used to introduce the ether, occasionally patients ask to have it, but it is largely a matter of individual preference and not really important. A combination of morphine and ether is sometimes advisable, but as a rule I much prefer to have my patients under the influence of ether alone rather than the more complicated effects of two drugs combined. I was present as a visitor at the clinic of a prominent New York surgeon and stood beside him as he was operating upon the hospital janitor for varicose veins. The patient was an elderly man, heavily built, and a poor subject for operation. The hospital anesthetist sat beside the resident physician who was giving the ether, instructing him in the method. The patient was breathing heavily and his face was cyanosed; one did not feel altogether at ease about him. The surgeon was obliged to leave and asked the assistant to finish the operation and went out of the room. The assistant surgeon wished to separate the patient's knees a little more in order to work on the inner side of the thigh. The muscles resisted and the operator, much annoyed, spoke sharply to the anesthetist: "He's still resisting, Doctor." The official anesthetist, evidently the senior in both years and rank, replied that if the operator knew more about the combination of ether and morphine and the difficulty they were having with the patient's anesthesia he would probably learn to adopt better manners in the operating room. And I do not wonder the anesthetist was angry. The patient was in exactly the right stage of anesthesia for the character of the operation which was being done. Why force him into a deep anesthesia and possibly do harm to his already overworked organs, simply in order to permit the operator to move one of the patient's limbs more easily a few inches upon the operating table? In choosing the anesthetic we should always bear in mind that ether properly given is, up to a certain point, a stimulant.

Finally, we are using a great deal of nitrous oxide and oxygen. It is most satisfactory and, except on young children, seems reasonably safe. It may be continued several hours if necessary. In two instances it was given in the general surgical department for three and a half hours. Both were tedious and difficult operations and the patients made good recoveries. The only disadvantage is that it is more difficult and sometimes impossible to obtain muscular relaxation when this is essential as in abdominal surgery. It is the anesthetic usually selected for brief operations and also for operations upon patients who are suffering from shock due either to traumatism or hemorrhage and to patients with a very low hemoglobin, thirty per cent. or thereabout.

In orthopedic surgery, whether the operation is to be of short or long duration, we keep our patients very lightly under the anesthetic. The pupils are always reacting to light, the eyeballs move from side to side, if the eyebrow is drawn upward by the anesthetist the orbicular muscle contracts and resists, the child moves his fingers, sighs or gives an occasional little cough; sometimes he moves his lower limbs and must be restrained. By the time the incision is closed he is turning his head, opening his eyes and responds when spoken to or when his face is rubbed briskly with a towel. The anesthetic is not continued for the application of the plaster of Paris dressing. A double osteotomy for knock knee requires not more than six minutes, but the plaster work is a half hour longer. The child receives no ether during this half hour. In this respect we differ from the department of general surgery, where a more complete anesthesia is usually maintained. We almost never see the children go into a state of shock. We know that sudden and severe pain causes shock. But the shock to the sympathetic nervous system occurs whether the patient is conscious of the pain or not. Deep anesthesia does not mean that the subconscious pain is blocked. In weak and delicate children a very slight amount of pain of which the child is directly conscious may act as a stimulant rather than a depressant. But if the pain becomes too severe it adds to the shock of the operation.

And now just a brief reference to the children with tuberculosis of the spine upon whom a bone grafting operation is to be performed. These children, while conscious and in control of their voluntary muscles, are able to protect themselves from accident while being handled, but when relaxed and unconscious under ether this power of selfprotection is lost. The child's body is limp and unresisting. Care in handling is of the utmost importance; otherwise an abscess might be ruptured at the seat of disease causing sudden or ultimate death. Even the spine itself may be broken. I refer to one case as an illustration.

Case.—A child of five was admitted to the orthopedic service in the University Hospital with tuberculosis of the spine and a kyphosis at the seventh cervical and first dorsal vertebræ. She was put to bed on a Bradford frame with a light extension on her head and lower limbs. She lay there contentedly with no unfavorable symptoms for five days. We had decided not to do a bone grafting upon her spine because of her age. Suddenly she became pale and cyanotic, pulseless at the wrist, the heart beating rapidly and her breathing almost entirely diaphragmatic; her ribs scarcely moved. There seemed to be no definite obstruction to her breathing. She was dead in about half an hour. The autopsy showed an abscess on each side of the bodies of the vertebræ at the seat of the disease, each about the size of a horse chestnut. The x ray plate had shown them quite clearly. A third abscess pocket in the midline between the other two. The body of the first dorsal vertebra had been entirely eaten away. The abscess pockets communicated with each other and the mass was pressing backward against the spinal cord but had not ruptured into the spinal canal. The spine was fractured right through at the kyphosis.

Our explanation of the sudden death was that one of the lateral abscesses had ruptured spontaneously into the central one and the sudden increase in pressure upon the spinal cord had caused shock, collapse, and death. This child was lying quietly in bed at the time and was not in any way disturbed by the nurse. The fracture of the spine occurred I believe after death in handling the child's body. Suppose you had been asked to etherize this child for a bone graft insertion. Sudden death would have been inevitable and in the absence of an autopsy would have probably been charged to the anesthetic. These children should be handled as carefully as though they were made of fragile glass, and from the time the anesthetic is started, they should be held motionless upon a rigid support which fixes the spine from the head to the pelvis. The general mortality of this operation has been found to be five per cent. With increasing care we should be able to reduce this one half.

I would like to express my appreciation of the splendid work which the American Association of Anesthetists is doing. It is teaching the public the great importance of skilled anesthesia, and that the anesthetist no longer holds only a minor position in the operating room, but one which should rightly be on a par with the surgeon. This enlightenment will surely continue to spread until it reaches the remotest parts of our country. That it will result in the saving of many valuable lives each year there is not the slightest shadow of a doubt.

1801 Pine Street.

SERUM AND BLOOD THERAPY.*

By Albert David Kaiser, M. D.,
Rochester, N. Y.

Serum therapy concerns itself with the use of blood serum in the treatment of disease. Its first scientific application was in connection with diphtheria. It is interesting to note that although the claims to recognition for its use in diphtheria were founded on the most rigidly scientific demonstrations it was received with scant courtesy and even denied for a considerable period of time. On the other hand, the professional attitude at present is to receive with open arms any and all sorts of vaccine and serum treatments resting on no sort of foundation or on the flimsiest evidence. Serum therapy holds a prominent place in our therapeutical measures, but in many instances it has been used empirically. I shall attempt briefly to review the application of serum or blood and point out whether it is used scientifically or empirically.

A serum is specific only against the toxin generated by the organism used in the preparation of the serum. A serum to be useful in treatment must contain either antitoxic or antibacterial products. In addition to the use of antitoxic and antibacterial serum, normal horse serum is utilized and whole human blood. In its various forms serum or whole blood has a very wide range of usefulness. An antitoxic serum, of which diphtheria antitoxin is the best example, is made by injecting into animals, preferably the horse, small or nonvirulent doses of this toxin which with repeated and increasing doses in time causes an immunity to the toxin; the serum of the animal so treated constitutes an antitoxic serum which is very potent in counteracting the effect of the specific toxin. An antibacterial serum, of which antistreptococcus serum is an example, is prepared from the bacteria that produce no toxins outside themselves but which contain endotoxins and so differ from the filtered cultures containing the toxins.

An antibacterial serum contains antibodies that counteract and sometimes destroy, or even dissolve the bacteria themselves. These serums are far from being as efficacious as the antitoxic serums which are produced in response to infection of definitely known toxins which can be isolated apart from the bacteria. A normal serum is generally taken to mean a normal horse serum. Its therapeutical application is generally limited to promoting the coagulability of the blood. Serum or blood is administered either intravenously or intramuscularly. Subcutaneous injections are absorbed poorly and are more apt to cause painful reaction. Certain serum preparations, as antimeningitis, antitetanic, and salvarsanized serum, are injected into the spinal canal.

The greatest danger in serum or blood therapy lies in the possible serum reaction. Mild reactions as urticaria and erythematous rash, are apt to occur frequently after the administrations of horse serum. A real anaphylactic reaction is relatively rare. In intravenous and intraspinous injections severe reactions must always be guarded against. A severe chill is rather a frequent accompaniment of an intravenous diphtheria antitoxin and also after blood transfusions. I have never seen a case in which the chill caused any permanent injury. The exact cause of these severe reactions cannot be ascertained. In all blood transfusions, that is, where the blood is injected into the vein, an agglutination test should be made between the donor's and recipient's blood. In most cases, according to numerous investigators, hemolysis will not take place unless agglutination is present. Failure to detect any agglutination under the microscope will assure a safe procedure in most cases. However, severe reactions may occur even if there is no evidence of agglutination or hemolysis. In all intravenous injections I think it is desirable to inject a small quantity of the blood or serum, about two to ten c. c., and then delay a few minutes before continuing.

In selecting the route for serum or blood injection, one must be guided by the individual case. Generally speaking, the intramuscular route is the safer. If immediate benefit is sought, intravenous injections should be made as in a septic or extensive case of diphtheria. Serum and blood therapy has a wide application, as mentioned before. Briefly I will attempt to summarize the various diseases in which either whole blood or serum has been used scientifically or empirically.

Diphtheria and tetanus respond well to the administration of an antitoxic serum. In both of these diseases there is a pure intoxication resulting from the presence of diphtheria or tetanus toxin. Little need be said about antitoxic serum in these two diseases. Here also is illustrated the most satisfactory use of serum for prophylactic purposes. Would that we could class more diseases in this group where the use of a specific serum has a perfectly definite action, not in an occasional case but in practically all if administered in time! There are several diseases in which the use of a serum has diminished the mortality, but the effects are not as constant as in diphtheria and tetanus. In this group belong meningitis, the epidemic cerebrospinal type, pneumonia, and streptococcus infections.

The antimeningococcus serum is a specific serum and has reduced the mortality from about sixty to thirty per cent. If the diagnosis is made early and the serum is injected merely upon suspicion much can be expected from this serum. Its failure in many instances is due to too late administration or too small doses for a sufficient length of time.

The use of antipneumococcus serum is still in its infancy. The work of Cole at the Rockefeller Institute has shown that a serum to be of any value in this infection must be specific to that type of pneumococcus found in each individual case. In other words, a typical pneumonia in which the etiological factor is an influenza bacillus, streptococcus, or type II, III, or IV pneumococcus, the infection cannot be helped by a serum. The Type I cases of pneumococcus infection have been favorably acted upon by an antipneumococcus serum. Intravenous injections of antipneumococcus serum are necessary. In all cases of lobar pneumonia, especially in adults, the causative agent should be ascertained at once.

Even less hopeful than the pneumococcus infections are the streptococcus infections. The use of antistreptococcus serum has been advocated in puerperal fever, acute septicemia, erysipelas, and scarlet fever. The reported cures from the use of this serum must be accepted with certain reservations. The latest investigations have demonstrated that there are types of streptococci as with the pneumococci. This probably explains the failures with this serum. It is to be hoped that agglutination tests will soon be available to detect the type of streptococcus and thus find a serum that can be used with some hope of success in this virulent infection. Thus it is evident that antitoxic and antibacterial serums have a very limited use.

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*Read before the Rochester Academy of Medicine, March 14, 1916.

A more hopeful and truly rational form of treatment is found in the use of convalescent blood in infections where there is no specific serum and where the etiological factor is unknown. In using convalescent blood, whole blood is preferable. The blood can be collected and by the use of sodium citrate may be preserved for hours. It is usually injected deep into the muscles. It is fair to assume that an individual recently recovered from an infection must have protective bodies or antibodies against that specific infection. The value of convalescent blood will depend upon the disease. Such diseases as scarlet fever and measles confer a very long or permanent immunity and undoubtedly contain specific antibodies thereafter. Erysipelas, pneumonia, and typhoid confer only a short period of immunity so that a convalescent blood in these infections must be from a recently recovered individual. Scarlet fever has offered the greatest field for the use of convalescent blood. In severe or malignant cases its action seems almost as specific as diphtheria antitoxin in diphtheria. In fourteen toxic cases in which I have used it recently the recovery was very rapid in all but one case. The reports from various institutions are favorable to its use in severe cases. Recently convalescent blood, that is, from a week to several months, is preferable. Usually one injection of four to eight ounces is sufficient, though at times two or more are advisable. In severe measles and erysipelas and also in typhoid, convalescent blood is indicated. There are undoubtedly unexplored fields where convalescent blood may be useful. Perhaps the most successful results in the treatment of anterior poliomyelitis were with the use of convalescent serum. In this disease the serum was injected into the spinal canal.

Specific serums and convalescent blood are not always available for certain diseases. The value of nonspecific whole blood cannot be underestimated. In any severe infection where the body is being overwhelmed by the infection and no specific serum or convalescent blood is at hand, whole blood either by intramuscular or intravenous injection is advocated. Certain antibactericidal properties may be introduced and not infrequently very definite results can be gained. I would recommend its use especially in cases of septicemia.

The uses of whole blood in primary and secondary anemia are well known. Repeated small transfusions in pernicious anemia are of greater benefit than fewer transfusions of large amount. After a certain period the blood fails to respond to the alien blood. Cases of secondary anemia aided by a transfusion of healthy blood will often improve rapidly. In diseases where the coagulability of the blood is delayed, as in purpura and hemophilia, injections of whole blood either intramuscularly or intravenously may be beneficial. Frequently where normal horse serum fails to hasten coagulability whole human blood yields good results.

During the last two years the so called autoserotherapy has been practised. This method consists in withdrawing from the patient several ounces of blood and separating serum and cellular elements. The serum is then injected intramuscularly and in chorea intraspinously. This form of therapy has been used in chorea, bronchial asthma, hay fever, and psoriasis and a number of other skin diseases. Its use is purely empirical. In injecting the serum of the patient's blood in bronchial asthma it is assumed that the foreign proteins responsible for the asthma are contained in the serum and by frequent injections produce an immunity to this irritating protein. Excellent results have been reported. Autoserotherapy in chorea, psoriasis, and other skin conditions has not been very satisfactory.

Blood and serum therapy has been applied in many conditions not mentioned, but often purely as experimental. Its use in treating marasmic infants should not be omitted. Fisher, of New York, has treated a large number of marasmic babies with whole blood and reports good results. Small quantities, ten to twenty c. c., are injected intramuscularly at intervals of two or three days. It is undoubtedly true that the value of blood and serum therapy has been overestimated, but it should not discourage its use, especially in severe cases where no other specific remedy is at hand. I believe that in the future new specific serums will be at hand and convalescent blood will find new fields.

29 Buckingham Street.

SYRINGOMYELIA AND LEPROUS NEURITIS.*

By Hyman Climenko, M. D.,
New York,
Attending Neurologist, Central Neurological Hospital; Adjunct Visiting Neurologist, Montefiore Home and Hospital; Chief of Neurological Clinic, Mount Sinai Hospital, O. P. D.

The differential diagnosis between some types of syringomyelia and leprous neuritis is one of the most difficult problems in neurology. Indeed, so closely do these two diseases resemble each other that Zambato and Marestang advanced the theory that syringomyelia is caused by Bacillus lepræ. Oppenheim, however, points out that in syringomyelia Bacillus lepræ has never been demonstrated and, while these two diseases have many clinical signs in common, the post mortem findings in leprosy are distinct from those in syringomyelia, for in the former, whenever the cord is attacked, the dorsal tracts are affected, while in the latter the changes are mainly confined to the central part of the cord, to its lateral tracts, and also to the anterior horns. The pathological changes are also distinct from one another; in lepra there is molecular degeneration of the cell, while in syringomyelia there is gliosis, that is, proliferation of the glia tissues, which subsequently break down.

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*Read before the New York Neurological Society, May 1, 1917.

Within the last few years the demonstration of the lepra bacillus in the excreta, particularly in the nasal discharges, and a positive Wassermann in leprosy have helped greatly in diagnosing this condition. Besides all this, it must be remembered that, while the clinical signs in both diseases resemble each other, they are not identical. The sensory signs may apparently in both diseases be of the same character, yet close observation will show that in syringomyelia the dissociation type prevails; that is, pain and temperature sense may be very much disturbed while that of touch remains intact. The temperature sense itself is dissociated in syringomyelia; in leprosy there is a general diminution or absence of all the senses. In syringomyelia the sensory changes assume segmental distribution; in leprosy they are more apt to follow a nerve distribution. In leprosy the face is almost always involved; in syringomyelia the sensations of the face are rarely, if ever, disturbed.

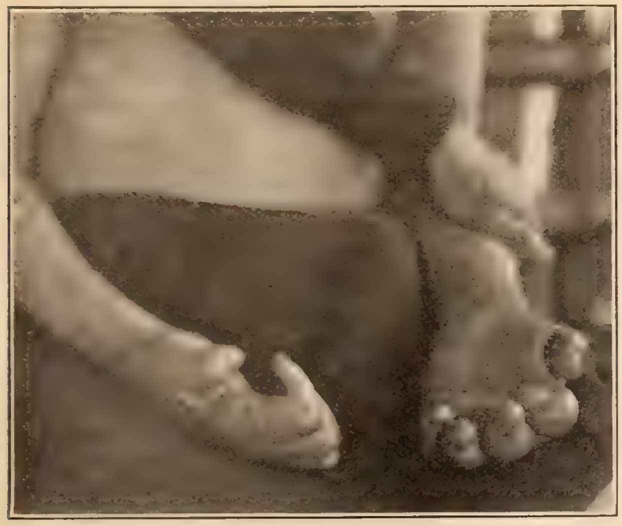

Fig. 1.—Palmar view of deformed hands.

The skin affections in leprosy come usually in well defined plaques, while in syringomyelia they are limited to the distal parts of the extremities and more often to the upper than the lower. The trophic changes in the face so commonly seen in lepra are rarely encountered in syringomyelia; in leprosy a facial paralysis is often observed. The muscular atrophies in leprosy are usually in the small muscles of the hands, while in syringomyelia the muscles of the shoulder may be involved. Leucodermic spots rarely, if ever, occur in syringomyelia; oval, cicatricial, leucodermic patches with anesthesia which have come from pemphigus bullæ point to leprosy. Bladder affections, severe multiple joint affections, humeroscapular types of atrophy, nystagmus, and bulbar symptoms point to syringomyelia. Tubercular thickenings along the peripheral nerves, particularly the auricularis magnus, speak for leprosy. So also does fever. The following case will illustrate the difficulty of establishing a diagnosis where many symptoms of both conditions are present:

Case.—C. B.; male; age fifty-eight years; single; born in Minnesota; occupation, grocery clerk. The patient's father is alive at the age of eighty-eight years and gives a history of pleurisy; a brother of the patient died of tuberculosis; otherwise the family history is negative. The patient himself had previously never been ill, but during school life was below par mentally and always had scoliosis. His present illness began thirty-three years ago when he was twenty-five years of age with some form of infection of the left arm with a secondary infection extending to the right arm. Several incisions were made in the upper left arm but it could not be ascertained if pus was obtained. These incisions had no relation to a later development of deformity of the hand and fingers, followed by similar deformity of the other upper extremity. He had defective speech and dysphagia for the last three years. He never had diplopia, incontinence, or pain anywhere. He has never had coitus or a desire for it. Status: Romberg was present with falling to left; spastic and ataxic gait; head bent forward and tilted to the left with active movement limited backward and to the left, less limited passively; lordosis at middorsal spine; left sternocleidomastoideus atrophied and only a few fibres left of the right. Innervation of the right side of the face was stronger than of the left. There was distinct nystagmus to left and also to right but less marked and of a rotary character. Pupils reacted to light and accommodation. Sensory changes: There was anesthesia over back of right and left phalanges, also beginning from wrist joint all along palmar surface of both hands; on right side from Poupart's ligament down to lower third of thigh on anterior surface, and from ankle joint to tips of toes; on left side from Poupart's ligament to middle of thigh and from ankle joint to tips of toes. No anesthesia over genitalia. Dorsally, anesthesia began at lower third of leg and goes down to tips of toes on both sides. Heat and cold could not be distinguished on the upper right extremity from the elbow down; complete dissociation of entire left upper extremity. Over chest and abdomen the temperature sense was lowered. In the lower extremities dissociation began at both ankles and extended to tips of toes. Analgesia: Touch was perceptible but not pain from root of neck to fourth interspace. There was analgesia from Poupart's ligament about one inch down. There was no tenderness along spine.

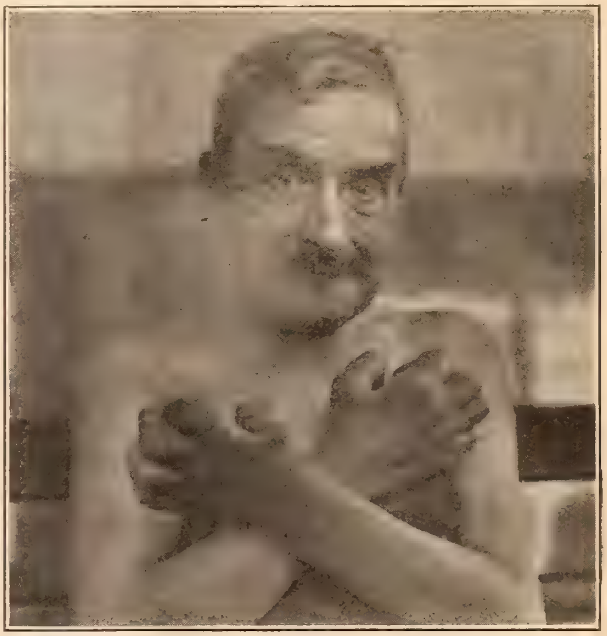

Fig. 2.—Dorsal view of deformed hands. Note the pawlike appearance of left hand.

The teeth were poor. The sensation of the mucous membrane was intact. There was a slight flush of skin on the left side of the face and some atrophy of the skin of the face of the senile type, but there was no leucodermia except at the root of the neck, where there was a small patch and some patches of pigmentation, on the hands. On the chest there was a dark red maculopapular lesion. There was distinct fixation of the right shoulder, the left being free, and there was myokymia at the deltoids. The left shoulder could be raised higher than the right. There was marked cyanosis over both arms, particularly at the hands. The deformity of the right hand consisted of a flexure at all the interphalangeal joints; slight passive movement was possible between the thumb and first finger; the rest were fixed. The whole hand was widened and there was pronounced atrophy of the thenar muscles. The fingers of the left hand were small, flattened, undeveloped, and thick at the base; it was aptly called paw hand. (See Figs. 1 and 2.) There were marked trophic changes of the finger nails on the left hand. The skin of both hands had a scaly appearance. Reflexes: The elbow and wrist jerks were present; knee jerks very lively; Achilles not lively; abdominals absent; cremasterics present. There was no Babinski nor ankle clonus. There was a scar in the midline of the abdomen where an incision was made for an enlarged prostate. The skin of the lower extremities was also scaly. Legs were markedly spastic. There was difficulty in lifting both feet together though there was no sagging. Trophic ulcers were present on left heel. There was marked atrophy of the right thenar and hypothenar eminences. All the interossei were intact. The Wassermann reaction of fluid and serum was negative. Examination of nasal secretion for the leprosy bacillus was negative. (Dr. Larkin's Laboratory). X ray pictures revealed marked atrophy, almost dissolution, of phalanges of left hand; also in the right, but to a lesser extent.

In analyzing the symptoms of this case, one is confronted with a number of difficulties. The onset of the disease, the frequent attacks of fever, the tuberculous eruption over the chest, paralysis of the right facial nerve, and leucodermic patches point to leprosy. On the other hand, the nystagmus, attacks of dizziness, difficulty in swallowing, husky voice, and finally the impotence speak for syringomyelia. The negative Wassermann and the absence of the lepra bacillus in the nasal secretions would substantiate the latter diagnosis.

In conclusion, I wish to call attention to the unusual type of deformity in the left hand; it is undoubtedly an exaggerated main en griffe. The case is presented as one of syringomyelia with an unusual type of deformity desulting in paw hand.

252 East Broadway.

TREATMENT OF SCLEROTIC MIDDLE EAR DISEASES WITH RADIUM.

The First Successful Application of the Method: New Apparatus.

By Zdenko von Dworzak, M. D.,
Denver, Colo.

With the discovery of radium, a substance of such striking attributes, there is a temptation to test it for therapeutic effects. The temptation was stronger because this substance, or rather some of its derivatives, occurs in many medicinal springs whose curative effects up to the present have not been clearly explained. Recent experiments have shown that radium, as well as its first product of decomposition, the gaseous emanation, is able to bring about curative processes which, especially in gout and the various rheumatic diseases, are quite remarkable. Considering the numerous grave anatomical transformations in rheumatic diseases and gout—degeneration and loss of cartilage, exostosis, thickening of the joints and the joint capsules, connective tissue or cartilage ankylosis of the joints, and the deposits of uric acid in various forms—it is evident that no single remedy can cure all of these conditions. Individually, however, some of those symptoms have reacted splendidly to radium treatment. These observations and successes have caused me to make experiments with radium in cases of sclerotic middle ear diseases, since these show such close relationship etiologically and pathologically to the joint diseases mentioned.

I must here mention an interesting case occurring in my practice:

Case I.—One of my patients, whom I treated for otosclerosis, severe tinnitus, and much impaired hearing, suffered at the same time from a cancer of the tongue. On my advice he went to Baltimore, where his cancer was treated with radium by Doctor Kelly. The result was perfect, the whole cancer tumor being supplanted by healthy scar tissue. At the same time the patient made the striking discovery that his head noises had almost entirely disappeared and that his hearing had so much improved that he could hear the ticking of a watch at a distance of fifty centimetres. As he had not undergone any treatment for his ear trouble in Baltimore I had to conclude that the radium rays had brought about this favorable result.

In medical literature I found only two treatises on radium treatment of the middle ear. Doctor Hugel (1) reported observations in cases of impaired hearing and head noises. He exposed the entire ear region to the rays of five mgm. radium for several minutes and he found an immediate improvement in hearing. They were mostly old cases in which radium treatment had been tried as *ultimum refugium* after everything else had failed. Dr. W. T. Bryant (2) reports similar results.

The middle ear diseases which I hold suitable for radium treatment are the catarrhal adhesive process and otosclerosis proper. In the first we have without lesion of the tympanic membrane adhesions between tympanum, auditory ossicles, and tympanic cavity due to inflammatory thickening, contraction of the folds of mucous membrane, and bridges of connective tissue. The cause of otosclerosis is not a disease of the middle ear mucous membrane, but a primary disease of the capsule of which the internal ear is formed; it leads to new formation and proliferation of bone tissue, to ankylosis of the stapes in the fenestra vestibuli, and finally to a severe ossification of this fenestra. In both these diseases we have to deal with obstacles in the sound conduction in the tympanic cavity. The etiological factors are about the same in both diseases. Heredity, constitutional diseases, such as syphilis, scrofula, rachitis, tuberculosis, uratic diathesis and anemia, excesses in the use of tobacco and alcohol, and finally the chronic affections of the nasopharyngeal cavity, are the most frequent causes of, or at least conditions favoring, otosclerosis and adhesions.

The clinical diagnosis is at times difficult, as we frequently find mixed forms of adhesive processes in the middle ear with otosclerotic transformations in the labyrinth cavity. To enter into details would lead me too far, but I should like to establish the following definition of typical otosclerosis: Normal tympanum; progressive deafness; transparent redness of the inner tympanic cavity wall, quite often thickened; Eustachian tube open; Rinne negative—deep tones are not apperceived, high tones perceived almost to the limit of the normal—these symptoms with complete certainty exclude everything else but the typical form of otosclerosis with its primary seat in the labyrinth cavity. The prognosis in all cases is doubtful. As we have to deal with organized disease processes in the middle ear, a return to the normal is almost impossible. The prognosis is limited to the problem whether the impairment of hearing in its further progress will increase slowly or whether a rapid decline in hearing is to be expected. Up to the present the prognosis in cases of typical otosclerosis was always very unfavorable in view of the anatomical changes in the labyrinth cavity. Our object therapeutically was to stop the rapid progress of the disease, to lessen if possible the torture of the subjective head noises, to eliminate the disagreeable head symptoms, and if possible to improve the hearing. Unfortunately all methods used up to the present were in many cases without result, and it would be a real blessing if the activity of radium with its destructive and stimulating qualities would give us a new remedy to combat this distressing condition.

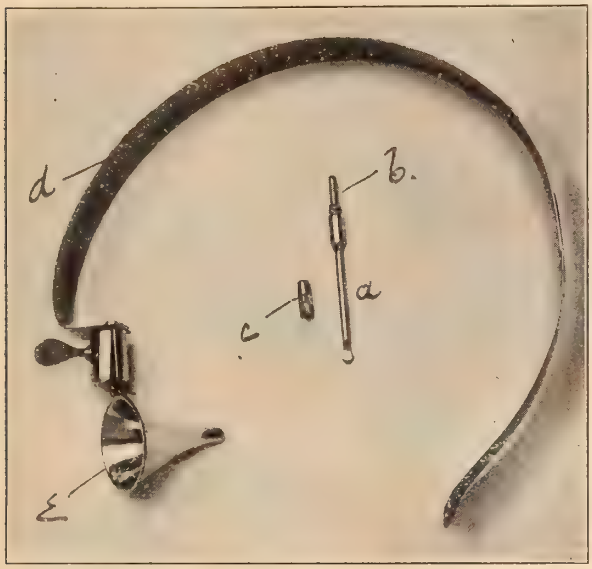

FIG. 1.—*a*, applicator with radium tube, *b*; *c*, brass filter; *d*, headband with adjustable ear speculum, *e*.

For the treatment I use the radium rays as well as the radium emanation. The use of the latter, I believe, is original. I apply it directly in the tympanic cavity, as the tympanum offers much resistance to the rays, like all other fibrous membranes. The amount of radium varies from one to ten mgm. radium element. The radium tubes are applied by means of the radium applicator (Fig. 1) and are centred in the ear by means of the head band (Figs. 1 and 5) to which is attached a small ear speculum by means of which it is possible to introduce and remove the applicator and watch the reaction. A brass filter eliminates the alpha and beta rays and the therapeutically active gamma rays penetrate the tympanum and middle ear. Besides this, I use a larger amount of radium to ray the entire ear region. The effect of the radium I believe to be purely destructive here in eliminating the proliferating pathological tissue and partly in a "selective" action on the terminal nervous ramifications.

The radium emanation I manufacture in an emanator of special construction (Fig. 2). Out of the tank (a) oxygen bubbles through the liquid in the bottle (b) which contains the radium in solution. The quantity of this oxygen is regulated to a nicety by means of two manometers and a gas meter. The oxygen in passing takes up the radium emanation and can be used for inhalation, by means of a mask or in room, for the activation of water for drinking purposes or for the treatment of the ear directly in blowing it through the Eustachian tube in the middle ear. In the latter case I use either the pressure of the oxygen alone or combine the emanator with the Meyer-Rowan instrument (Fig. 3) which I have adapted for that purpose, so that sound waves or air under pressure will force the emanation into the tympanic cavity, depending on the character of the disease which I am treating. At times I have the patient inhale radium emanation and let him inflate the Eustachian tube by Valsalva's test. In all cases it is necessary to remove the excess radium emanation after the treatment by means of suction from the external auditory meatus or by pressure through the Eustachian tube or both combined, for radium emanation remaining in the middle ear could ultimately cause damaging aftereffects. Radium D, one of its products of decomposition, lasts sixteen years and might remain active too long in the middle ear.

What is the effect of radium emanation? It acts like a strong and active ferment, and therefore it deserves a prominent place in the treatment of internal diseases, especially as we have no other means which brings about such an intense oxidation effect. Some of the results of the emanation when it is introduced into the body are hypersecretion of urine

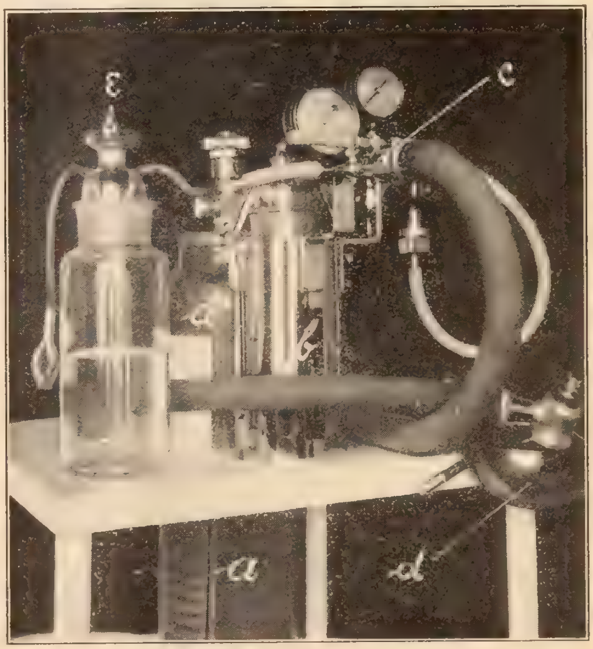

FIG. 2.—Radium emanator: *a*, oxygen tank; *b*, bottle containing radium in solution; *c*, air mixing chamber; *d*, inhalation mask; *e*, water activator.

and gastric juices; increase of metabolism, especially in regards to carbohydrates and albumin; heightening of sexual activity, etc. The point that is especially interesting here is the effect on the blood and bloodvessels, on the excretion of uric acid, and also the effect on pathological tissue. Radium emanation in smaller doses causes an increased growth activity and a propagation of healthy cells while pathological cells die off. This statement was first put forward by Madame Curie, and I do not think that I exaggerate when I say that it is the foundation of the whole emanation therapy of internal diseases. The bloodvessels dilate due to excitation of the vasomotor nerves, the viscosity of the blood is diminished, and the natural result is that the blood pressure is lowered, in consequence of which the pulse rate diminishes. The constitution of the blood is modified. This effect of radium is indubitable and represents one of the most important bases for its therapeutic use. The administration of even a few thousand Mache units causes, first, hyperleucocytosis and later leucopenia and an increase in the number of red corpuscles. The effect obtained in this direction is exactly proportionate to the dose employed. In my opinion another factor of great importance is the destruction of the leucocytes which are the carriers of potassium and of many ferments, producing a liberation of those substances. The next effect worthy of note is the excretion of uric acid in the urine. Radioactivity transforms the insoluble uric acid deposits into soluble ones and causes their elimination. On the other hand, there is also an increase of urea contents in the urine, which denotes either a more active metabolism of the organism or a more effective disintoxication.

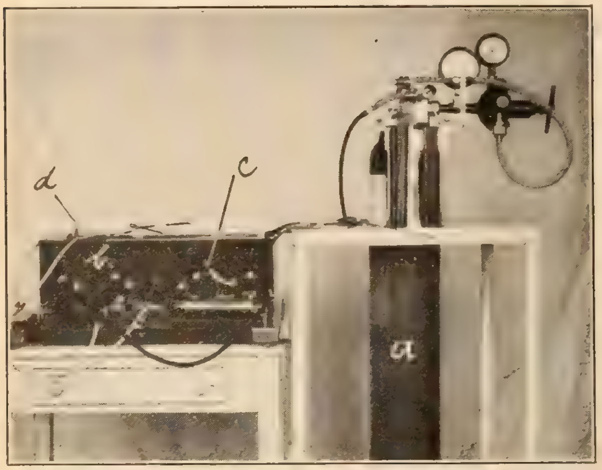

FIG. 3.—Radium emanator connected with the Meyer-Rowan instrument: *a*, emanator; *b*, Meyer-Rowan instrument; *c*, attachment for catheterization (pressure); *d*, attachment for air or sound wave massage (suction).

In the course of the treatment three phases can always be recognized: 1. The pathological symptoms become more severe and general unrest is exhibited by the patient. 2. Later a constant euphoria sets in and all the symptoms of the disease disappear. 3. Finally a supersaturation seems to arise with insomnia and unrest, occasionally accompanied by the old pathological symptoms. An intermission in the treatment causes a disappearance of these symptoms in a few days.

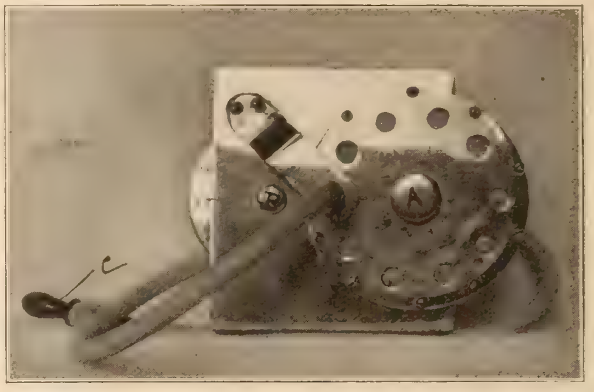

FIG. 4.—Audiometer: *A*, disc with openings of twelve different sizes; *B*, disc with ten openings closed with silk of different thickness; *c*, rubber tube connecting with ear.

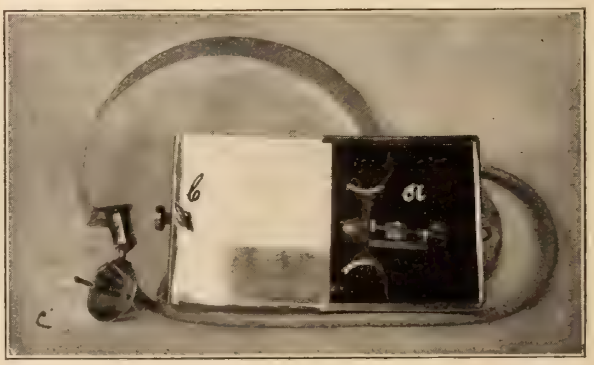

FIG. 5.—Audiometer (inside view), and headband with radium tube adapted; *a*, Politzer acouometer; *b*, handle to operate acouometer from outside; *c*, radium tube ready for use.

I also wish to give a short description of an audiometer which I have constructed and which I have found of great value in my investigations. A physician can never trust the statement of a patient with impaired hearing. Inasmuch as subjective auditory phenomena deceive the patient himself so frequently in regards to his ability to hear, it is absolutely necessary to measure the hearing capacity independently of the patient's own testimony so as to be able to keep an index card of the progress of the treatment. My apparatus consists of a metal box lined with felt to drown the sound, in which a Politzer acouometer (Figs. 4 and 5) serves as the source of sound, being worked from the outside by turning a small handle (b). The sound from this acouometer, which is always uniform, is conducted to the ear of the patient by means of a rubber tube (c). Two discs A and B, one of them with twelve openings of different sizes, the other with ten holes which are closed with silk of graduated thickness, serve to absorb the sound which is produced by the acouometer before it reaches the ear of the patient to a degree that can be measured. It is most important to arrange the discs at the beginning of the test so that no sound can be perceived by the patient; otherwise selfdeception would frequently occur. The cause of this deception, in my opinion, lies in the fact that nerve termini at rest need a greater sound stimulus to be disturbed from their equilibrium, and for that reason the sound should become louder only very gradually, until it is finally perceived. When the auditory nerve is once stimulated by vibrations of a certain intensity it will also receive vibrations of less intensity. By moving both discs one can estimate the quantity of sound which was perceived at the test, and by reading the corresponding figures on the discs a record of the tests can be kept. If the source of sound is too loud one can use an ordinary watch in place of the acouometer. The principal factor is always to use the same source of sound for the same patient.

I shall now mention a few cases in which I have followed the treatment described.

Case II.—Mrs. M. L. G.,; age fifty-one years; lawyer's wife. The patient had an attack of rheumatism at the age of forty years, which continued for six consecutive months and involved shoulders and elbows of both arms and both hands. She had a similar attack six years ago. She complained of painful knees but there was no swelling. Patient has never been entirely free from rheumatism since her first attack. Four years ago after a severe cold she noticed first a gradual impairment in her hearing, occasionally a buzzing in the ears, and tinnitus. The nose was stopped up, breathing was by mouth, and there was a feeling as if the right half of her head was filled with lead. She was sent to my office April 6, 1914. Diagnosis: Rhinitis hypertrophica, otosclerosis of the right ear. On April 14th I removed the right inferior turbinate and on April 26th I began the treatment of the otosclerosis with subcutaneous fibrolysin injections, massage of the tympanum and Lukae's pressure probe. Internally atophan and potassium of iodide, one gram a day, were prescribed. After six months of this treatment there was only a slight improvement. In September, 1916, I recommended the radium treatment. On September 8, 1916, her condition was as follows: Nasal cavity and throat normal; Eustachian tubes open. Left ear: Drum slightly retracted, and of a dull appearance; reddish lustre back of umbo; conversation and even whispering were clearly heard at a distance of one metre; sound perception through bones of head was good. Right ear: External auditory canal dry and pale; drum slightly retracted and dull; well defined reddish lustre back of umbo; whispering voice hardly perceived. Audiometer: A3-B5. Rinne negative, deep tones not perceived. Weber in the right ear perceptible; Gellé unchanged; Schwabach prolonged; Bing positive. Vestibular apparatus functioned normally. The subjective symptoms were occasional shooting pains in the depth of the ear and a continual severe buzzing localized in the interior of the head, in consequence of which there was severe neurasthenia. I did not consider the prognosis entirely hopeless, for Schwabach's test proved that perception by means of the bone conduction was still intact, a symptom which I found of great importance.

Radium treatment consisted at first only of use of the radium tube every fourth day for ten to twenty-five minutes. The length of treatment varied according to the length of time it took the reaction, slight redness of tympanic groove, to appear clearly. The patient usually stated at that time that she had a sudden feeling of warmth in her ear, a sensation which I ascribe to the hyperemia brought about by the radium rays. After three weeks the patient stated that the buzzing had lessened considerably; she still could hear it clearly synchronously with the pulse waves. Then I began the massage of the tympanum with the excellent Meyer-Rowan instrument, and used especially the deep sound waves, b $^{-1}$ and b 120 to 240 vibrations a second, applying them both from the outside and from the inside by means of a catheter in combination with radium emanation, 150 c. c. oxygen, 300 to 3,000 Mache units, under very slight pressure.

I would like to mention here that I have found the local treatment through the Eustachian tube in the sense of Politzer's air inflations in cases of typical otosclerosis not only ineffectual but really harmful. Urbantschitsch already pointed that out as well as the advantages of the so called reeducation of the auditory apparatus by means of sound waves.

The result of this treatment was that the patient at present could hear the ticking of a watch at a distance of five centimetres. The tympanum was almost normal, but slightly reddish. Audiometer A9-B10. The head noises almost entirely disappeared, a result which was very encouraging.

Having a radium emanatory at my disposal I give the patient a treatment by emanation inhalations for the cure of her rheumatism, using inhalations during two hours every second day, five to ten Mache units to the cubic litre.

Case III.—Miss N. H. F.; age thirty-six years; stenographer. Her grandfather was deaf at the age of forty-five years and her mother was hard of hearing since puberty. Every year since the age of sixteen the patient had one or two severe colds in head and her hearing had been poor for the last five years. There were head noises in the form of roaring, sometimes bell ringing or whistling. She came under treatment October 8, 1916. Diagnosis: Rhinitis chronica; catarrh of the Eustachian tubes; otosclerosis. Right ear: Drum membrane dull; light reflex poor; well defined reddish lustre back of umbo; whispering voice heard at sixteen centimetres; audiometer A5-B5. Left ear: Drum slightly retracted; mat and slight gloss; handle of malleus apparently shortened and reddened; whispering voice heard at one and one half metres; audiometer A8-B5; mouths of the Eustachian tubes were swollen; catheter showed restricted inflation in both ears. Rinne negative; Weber in the right ear; Gellé unchanged; Schwabach prolonged. Vestibular apparatus normal. Prognosis not hopeless. Radium treatment with rays and emanation was instituted and the tympanum was massaged with deep sounds. Thiosinamine injections in tubes and bougies were given. After six weeks' treatment the hearing improved; there was no more tinnitus in the form of whistling, but a continuous roaring synchronous with the pulse.

Case IV.—Mr. J. P. H.; age forty-five years; musician. He had had chronic suppurative otitis at the age of eleven years and discharge from both ears for about eight months. There was no rheumatism in the patient or his family. For the last three years his hearing had decreased, and he suffered at times from an almost unbearable buzzing in the head, which handicapped him badly in his profession. He came under my treatment in August, 1915. Drums showed normal scars in the lower outer quadrants. Nasopharynx was normal. The Eustachian tubes were open, their mouths somewhat swollen. Fibrolysin injections and pneumatic massage were continued for a month, with no change in tinnitus or hearing of the right ear. The hearing in the left ear improved. Diagnosis: Otitis media catarrhalis chronica. In September, 1916, radium treatment was recommended. On September 14, 1916, the patient's condition was as follows: Left ear: Tympanum retracted; in the lower outer quadrant a normal scar; an opacity in the form of a half moon back of the handle of malleus; tendinous gray opacities in small spots between dark parts of tympanum which seem more deeply situated; whispered voice heard at one metre distance. Right ear: Tympanum retracted, scar in lower outer quadrant, of the appearance of ground glass, posterior tympanic groove clearly defined; handle of malleus seemingly shortened; whispering voice perceived at twenty centimetres; audiometer A2-B1. Rinne negative; Weber in right ear; Schwabach prolonged; Gellé positive; labyrinth normal. Paracussis Willisii. The subjective symptoms were heaviness and pressure in the head without pains; continual deep head noises which during bad weather, colds, or after excesses in alcohol, became unbearable. Insomnia and severe neurasthenia. Prognosis doubtful. Radium treatment with oxygen administered under pressure with radium emanation was given; also pneumatic and sound wave massage, galvanization. General treatment included abstention from alcohol and tobacco. After the first ten treatments striking improvement in hearing was noted. Audiometer, right ear, A7-B5. Tinnitus in left ear entirely disappeared; in the right ear it was less pronounced and became annoying only when mastoid is compressed.

Case V.—Mr. F. C. K.; age forty-one years; cigarmaker. History of repeated colds. Adenoids operated when ten years old; abscess in right ear when seventeen. Small amount of pus from time to time. For the last two years there had been tinnitus and loss of hearing; sometimes dizziness, nausea, and vomiting. The patient came under treatment in September, 1916. Left ear: Normal. Right ear: Drum shows a large scar and a very small perforation discharging a small amount of pus; the tube was freely open to catheter; whispered voice heard before catheterization at twenty centimetres, after catheterization at forty centimetres. Audiometer, A3-B5. Rinne positive; Schwabach shortened; Gellé positive; deep tones perceptible; high tones not perceived. Congestion in the labyrinth, which called forth the Menière symptom complex when the vestibular and ampullar nerves were stimulated. There was nystagmus toward the diseased side. Attempts to rise heightened the nystagmus. The vestibular apparatus did not react on caloric stimuli. Prognosis was doubtful. Treatment: Radium, administration of oxygen with radium emanation under pressure, and douching with radioactive water.

After four weeks' treatment the suppuration was completely cured; tinnitus was very much decreased after eight weeks, but the impairment of hearing was unchanged.

I would like to point out the excellent influence which oxygen seems to have had on the suppuration. Neumann in Vienna recommended years ago the use of oxygen in suppurative otitis.

I have selected these four cases as types from fifty-three cases similarly treated. In almost all the cases I found either an improvement or a complete cure—in twenty-two cases—of tinnitus. In twenty-four cases there was striking improvement in the hearing; in eighteen cases, a slight improvement; in seven cases there was no reaction whatever. The rest of the patients—four—left town before treatment was completed.

The time of my investigation was much too short to speak with certainty of cures. Radium itself is still a mystery in its effects and aftereffects. I must give warning therefore not to use too large doses of radium at the beginning of the treatment. Every case must be handled individually and the reactions must be carefully studied. The results which I have achieved are so encouraging that they lead me to make this preliminary report. Only by means of communications from many sources can light be thrown on the technic and indications of radium treatment. I would like to lay special stress on the fact that radium is not a panacea, but an exceedingly valuable remedy in combination with other known methods of treatment. It has given very promising results in the treatment of a group of diseases which up to the present, because of their persistency, have sorely tried the doctor's patience as well as the endurance of the affected individual.

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210, 212, 228 METROPOLITAN BUILDING.

Paraffin Treatment of Burns.—J. M. and M. E. Perez (*La Semana medica*, July 5, 1917) report satisfactory results in the treatment of burns with their own preparation consisting of ninety per cent. paraffin and ten per cent. oil of amber. They remark the absence of pain, diminution of sensibility, the facility with which the dressings can be applied, and the ease with which they may be removed. The cicatrices resulting in their cases were at first smooth, firm, and slightly colored, becoming gradually less noticeable, until in some cases they disappeared entirely.

DERMOID CYST.

By W. R. JACKSON, M. D., F. A. C. S.,
Mobile, Ala.

A dermoid cyst is a teratoid tumor or teratoma. A teratoma is a "tumor composed of various tissues, organs, or systems of organs which do not normally exist in the place where the tumor grows." The highest type of a teratoma is a *fetus in fetu*. In the simpler varieties the tumor is composed of heterotopic tissues, such as bone, teeth, skin, mucous membrane, etc. All teratoid tumors are congenital; that is, the tumor existed at the time of birth or the patient is born with the essential tumor matrix. A teratoma never springs from a matrix of postnatal origin. Teratomata furnish one of the strongest evidences of the correctness of Cohnheim's theory concerning the origin of tumors, viz.: "The matrix of tumors has invariably a congenital origin and is produced in the embryo by errors of growth and by displacement of tissue by inclusion."

The origin of the higher types of teratoma, such as double monsters, is very interesting. Rauber showed that two embryos may spring up in union in the same blastoderm or close to one another, in which case they may after fuse. Fusion is more frequent at the caudal extremity, but occasionally it occurs at the cephalic end or elsewhere along the vertebral axis.

In the subsequent growth the embryos usually develop unequally until one becomes a parasite on the other. In many cases dermoid teratoid formations are found in the region of the coccyx. At the cephalic end, in the region of the hypophysis, teratoid tumors are occasionally seen. Williams, contrary to Rauber, does not believe such double fetuses are due to fusion of two embryos, but that one "embryo of undifferentiated protoplasmic cells divides into two symmetrical parts, each of which develops into homologous twins or double monsters whose sex is the same." The usual points of attachment are the sacrum, sternum, umbilicus, and head. "In some instances the distribution of protoplasmic cells in the embryo is unequal, so that only one of the two fetuses attain full development." The developed fetus is termed the "autosite" and the imperfect one the "parasite." The parasite is either attached to the surface of the autosite by implantation, or is surrounded by the tissue of the autosite by inclusion.

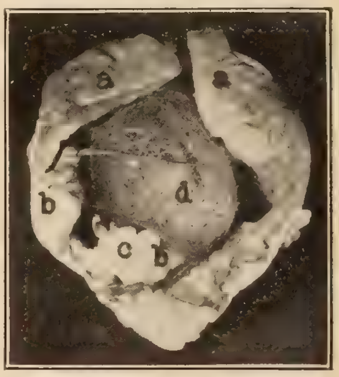

FIG.—Dermoid cyst. *a*, *a*, sac; *b*, *b*, bone; *c*, four molar teeth; *d*, ball of blonde hair.

Sometimes only a part of a new individual is formed in such a manner, which gives rise to tumor-like formations termed by Virchow "teratoma." "Such tumors are frequently found in the region of the ovary, testicles, sacrum, and sella turcica. They represent imperfect parasitic fetuses. Partial fission of the embryo at the cephalic end gives rise, according to the degree of fission, to duplication of the pituitary body, to the formation of two distinct and complete faces. Additional masses of protoplasmic cells result in the formation of all kinds of deformities, as supernumerary fingers and toes, supernumerary mammary and thyroid glands, and, if the cells only possess the intrinsic capacity to produce one kind of tissue, all conceivable forms of local hypertrophies, such as angiomas, moles, warts, lipomas, etc., result."

It is asserted by most students of this subject that double monstrosities are the result of fusion of two distinct embryos; while endogenous and exogenous parasites originate the same way, dermoids develop from embryonic matrix of congenital origin as described by Williams and others.

A dermoid cyst is a heterotopic tumor containing the product of epithelial proliferation, teeth, hair, nails, etc. Hair (lanugo) is the most constant of the cutaneous appendages and is of a blond or light brown color, even in the negro. In birds, dermoids contain feathers; in pigs, bristles. The hair in dermoids of aged persons turns white, and baldness is often met with as baldness of the scalp. Teeth and bone are found most frequently in ovarian dermoids. The teeth are composed of dentine, enamel, and cementum, arranged in the same manner as in normal teeth, and they are developed on the same plan. The so called "epithelial pearls," resembling in structure a cholesteatoma are also found in some dermoid cysts. They form where the epithelial cells are crowded together, being arranged in onionlike layers. The cutaneous lining of dermoid cysts, like the external skin, is subject to the formation of benign and malignant tumors.

Dermoid cysts, as a rule, grow slowly and do not attain a large size. With the exception of the dermoids of the ovary, tumors larger than a hen's egg are very rare. They produce no pain except when inflamed or by pressure on some nerve. They develop most frequently during the age of puberty, the matrix being always congenital. The location of dermoids is usually in the median line of the body from occiput to coccyx and along developmental fissures. They have been found in the brain as well as in the sacrococcygeal region. The ovary is a frequent location for dermoids which arise from "matrices derived from an erratic development in the embryo. . . . In the embryo the ovaries develop from the genital ridge, which at an early date is intimately associated with the cells lining the peritoneum and connected with the peritoneal funnels. The origin of the Wolffian duct is intimately connected with the epiblast; consequently the ovaries are the seat of the most complicated histological process during their development, and must necessarily very frequently become the seat of rests which, when excited to active tissue proliferation, furnish material for the different kinds of dermoids. We observe here the simplest kinds of dermoid cysts, containing nothing but atheromatous material, as well as the most complicated forms, in which there are found, not only hair and teeth, but also brain tissue, mucous membrane, and incomplete skeletons. So many fetal parts are sometimes found in dermoid tumors of the ovary that they have been regarded as instances of ovarian pregnancy, and been the means of questioning the morality of many innocent patients."

Plates of compact bone are frequently found in the cyst wall, held together by fibrous or ligamentous union. The teeth, which are often imperfect, project into the cavity of the cyst; they are often loosely inserted into imperfect alveoli and may vary in number from one to several hundred; tufts of hair often grow around the teeth. Some cases reported are said to contain nails, brain tissue, nerve filaments and an imperfect eye.

Case I.—Female, white, aged fourteen years. Family history good. Present history was as follows: For the past twelve months the patient has been complaining of a fullness in the pelvis with some pain and frequent micturition. The abdomen enlarged more on the left side. Menstruation was regular and painless. Palpation indicated a fluctuating mass on the left side about the size of a full grown fetal head. Operation revealed a spherical cyst about ten centimetres in diameter, growing from the left ovary, involving the whole gland. Its walls were thick and white, and upon pressure it felt "mushy." The cyst was removed and the patient had an uninterrupted recovery. On opening the cyst, a yellowish, grumous, atheromatous material escaped, leaving a spongy mass behind, which was observed to be a large ball of hair shown in the cut at *d*. Closer examination revealed four molar teeth seen at *c*; these full sized teeth were embedded firmly in a bone resembling the alveolus at the symphysis mentis. This plate of bone continued along the cyst wall, *a*, *a*, and connected with a larger plate of bone much resembling the ramus of the mandible *b*, all of which were firmly adherent to, and formed a part of, the cyst wall, *a*, *a*. Hair grew from the whole inner surface of the sac and was clustered into a well formed ball, *d*.

164 St. Michael Street.

White Marrubium in the Treatment of Bronchitis.—H. Leclerc (*Paris médical*, July 21, 1917) states that in the case of a Canadian soldier suffering from "influenzal" lung congestion followed by severe bronchitis with very thick mucopurulent secretion, terpine, sodium benzoate, and eucalyptol having had to be abandoned on account of the poor condition of the patient's alimentary tract, wine of marrubium was well borne and was followed in six days by clearing of the bronchial secretions, disappearance of the râles, and subsidence of cough. In the case of an officer subject to attacks of emphysema lasting a month, with copious secretion, paroxysmal cough, and dyspnea, pills of 0.1 gram of extract of marrubium, five being taken daily, shortened the most recent attack to less than a fortnight. In a third case, that of a man of thirty-five years with a condition suggestive of pulmonary tuberculosis but unassociated with tubercle bacilli in the sputum, rapid improvement followed daily ingestion of 0.6 gram of marrubium extract. Leclerc's experiences with this drug—Marrubium vulgare (hoarhound)—substantiate, in his estimation, some of the claims made for it by earlier therapeutic writers. It relieves cough in bronchitis by liquefying, asepticizing, and promoting evacuation of the secretions. It also seems to influence favorably the digestive functions, acting as a bitter and aromatic tonic. It contains an essential oil and a crystalline principle, marrubiine. It is best administered in an alcoholic vehicle.

Medicine and Surgery in the Army and Navy

A SURGICAL POST ON THE FIRING LINE.

By Charles Greene Cumston, M. D.,
Geneva, Switzerland,
Privat-docent, University of Geneva; Fellow of the Royal Society of Medicine of London; Honorary Member of the Surgical Society of Belgium; Member of the Surgical Society of Switzerland, etc.

After some months of war it became evident that every injury requiring an operation should be operated on as early as possible. If this principle could be applied everywhere at the front war surgery would be in the same position as that held by civil surgery. That early operations have given the best results is unquestionable and it is for this reason that advanced surgical posts have been established along the firing line.

It may be of interest to describe one. The particlar post to which I refer was constructed only 300 metres behind the first French trench, half way down on the southern slope of a hill, the defensive French lines covering the northern slope. It took a crew of thirty-five men ten days to build this subterranean post. It was composed of one shelter (see figure) nine by three metres, constructed with metal and divided into a receiving room (B), sterilizing room (C), and operating room (D); a second bombproof shelter measuring ten by two metres for a ward, and a third one, not in the figure, for the personnel. The first and second shelters connected so that the patient was undressed and prepared for the operation in room B, from there was transported to the operating room D, and from there to the ward E, without coming out from under the earth. It is of great importance that the wounded man should have a feeling of protection against the dangers from which he has escaped and this security is the essential condition for obtaining rest for the patients during convalescence. The receiving room was 3.5 metres long by three metres wide and was furnished with a rolling table with a stretcher support, a washstand, and a water heater. The sterilizing room (C) was two by three metres and possessed an autoclave, three tables, shelves for linen, instruments, and drugs, and several boilers. The operating room was the same size as the receiving room and was constructed so that as complete asepsis as possible could be carried out. The ground was cemented, the walls of brick were covered with a thin layer of cement, and the entire interior was coated with a layer of washable white material. The operating table was the regulation metal one used in the French ambulances. A washstand with pedals was constructed with much ingenuity. The room was furnished with hot and cold water. Three acetylene lamps gave excellent lighting.

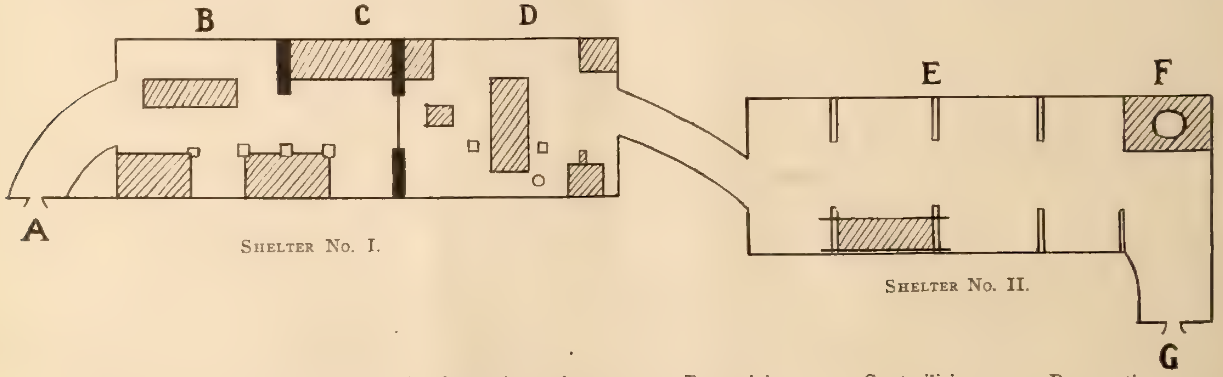

Fig. 1.—Ground-plan of surgical post on the firing line. A, entrance; B, receiving room; C, sterilizing room; D, operating room; E, ward; F, wash boiler; G, exit.

Shelter No. II communicated with Shelter No. I by a very short corridor and was used as the ward. Each bed was a stretcher covered with a mattress, sheets, and blanket. They were placed one above the other as in our sleeping cars. The ward contained sixteen stretcher beds. A heating apparatus warmed the room and there was a wash boiler in a side room (F). It is not always easy to have a water supply at the front, but in the case of this advanced surgical post two wells were sunk 100 metres deep, which gave an easy and plentiful supply. The personnel was composed of four surgeons and ten male nurses from Ambulance No. 3, which also supplied all the dressings, ligatures, drugs, etc.

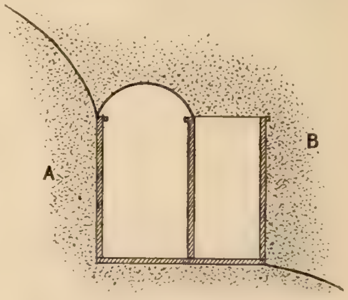

Fig. 2.—Cross section of a surgical post on the firing line. A, hillside, B, transposed earth.

The post was not organized to supply food and this was one of the weak points discovered by experience which must always be avoided in the future. The stay of the wounded after treatment was from two to six days. This was too short, especially for abdominal cases, which should not be sent to the base hospitals before the lapse of twelve days to a fortnight. Experience also showed the necessity of doubling the surgical staff in order to change duty.

Although this advanced surgical post was one of the first to be established and was an experiment the following figures will show what was accomplished. Let me say that it was in activity for exactly three weeks and during this period it received wounded and seventy-one major operations were done. Out of the seventy-one operations there were nineteen deaths. The operations were mostly for injuries to the limbs, cranium, and abdomen. Of the latter I would say a few words. There were twelve laparotomies with a mortality of sixty-six per cent. Eight laparotomies were done for intestinal wounds with seven deaths; two for wounds of the liver, with one death, and one for resection of the omentum with recovery. I think that any one will agree that this is a good showing when the circumstances are considered, as all these patients would have died on account of the serious nature of their wounds. After the end of three weeks the French had advanced about two and a half miles from the advanced surgical post, so that it no longer fulfilled its purpose and was abandoned. This was at the famous battle of Champagne.

BRITISH SURGERY AT THE FRONT AND ON THE LINES OF COMMUNICATION.

II.

SPECIFIC FORMS OF INFECTION.—SECONDARY HEMORRHAGE.

In the September 15th issue we reviewed the present accepted methods of treating infections of wounds in general, but made no mention of the methods to be employed in the case of each of the two specific wound infections which have been unexpectedly prevalent. The first of these, tetanus, proved to be a terrible scourge during the early part of 1914 and cost many lives. The disease is now relatively uncommon on account of the almost universal early administration of prophylactic does of antitoxin. Such injections are now given in all cases where there are wounds as well as in all cases of trench foot complicated by vesication. In the matter of prophylaxis it has been learned that a single dose is not always sufficient to protect against the late development of the disease and it is now recommended to repeat the dose every seven days until the wounds have healed and the patient seems to be out of danger. Even with such measures of prevention, however, cases still occur; some because of incomplete protection and others because it is impossible to rescue the men for so long a time after they are wounded that the organisms have already gained a foothold.

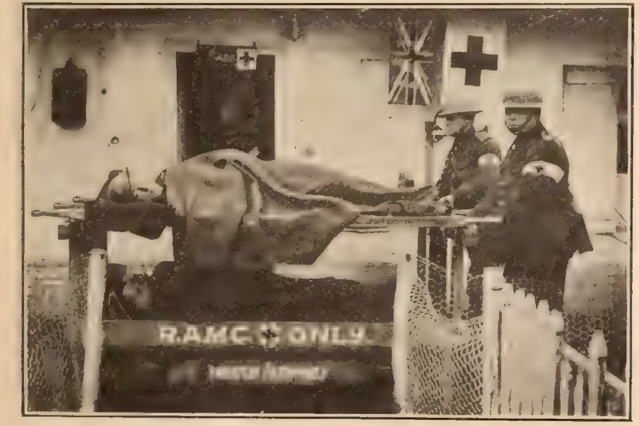

Fig. 9.—Light railway stretcher carrying four wounded.

All degrees of severity are represented in the cases now encountered, from the most acute to those which first appear months following injury. In the latter type the prognosis for recovery is generally good, irrespective of treatment, and it is chiefly in the acute cases that the serious problem arises. Experience has proved the uselessness of both phenol and magnesium sulphate, which were vaunted in the early days of the war. As to the curative value of antitoxin there is still a wide divergence of opinion and its use may be regarded as still unestablished. Certainly most are agreed that its subcutaneous administration for curative purposes offers but little prospect on account of the slowness of absorption and delay in the access of the antitoxin to the central nervous system. Intramuscular injection is viewed more favorably but many doubt its value, and the intravenous route of administration has not proved specially efficacious and has the associated danger of anaphylaxis in a certain proportion of cases. At present the plan of curative treatment with antitoxin which seems to have the most evidence in its favor is the early intrathecal injection of a fairly large dose followed by repeated intramuscular doses. The chief disadvantage of the intrathecal method is the large amount of fluid which must be injected and the consequent danger of disturbance of intradural pressure. This has recently been largely overcome by the preparation of highly concentrated serums. A minor drawback is the relatively serious nature of the procedure if it has to be repeated many times. At present, in spite of all forms of treatment, the general mortality from tetanus remains above seventy per cent. In general the outlook depends largely on the length of the incubation period; the longer it is the better the prognosis. Symptomatic treatment with chloral, morphine, etc., still retains its place, both for the relief of suffering and to aid in recovery by diminishing and delaying the exhaustion which so often proves fatal.

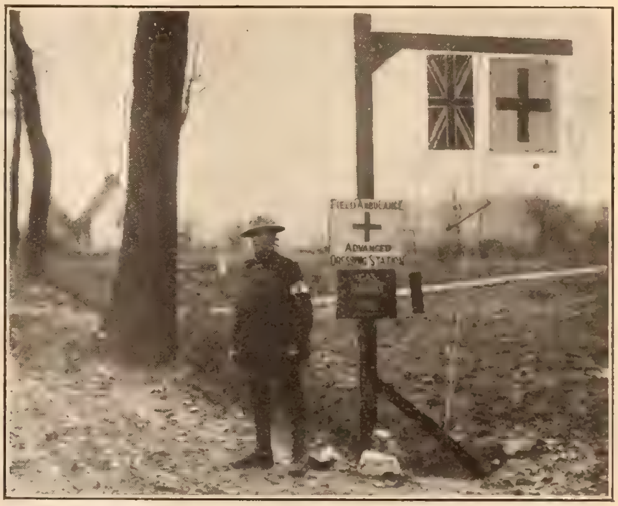

Fig. 10.—Outside an advanced dressing station of field ambulance. Each is marked with flags as shown.

The second great scourge among the specific wound infections is gas gangrene. This infection prove extraordinarily common in military wounds and had been so infrequent in civil life that much had to be learned regarding its causation and treatment. It was recognized early that there are two clinical types of the disease: one being relatively mild and involving the cellular tissues about the wounds primarily; the other being of great severity and affecting all the tissues of an extremity with surprising rapidity. To the former the name gaseous cellulitis was given, while the latter was termed massive gas gangrene. At first the great preponderance of limb involvement and the relative infrequence of extension to the trunk which, when it did occur, was usually confined to the subcutaneous cellular tissues, led to the belief that the trunk was seldom primarily affected. Wider experience showed the error of such a view and it is now known that the disease may be primary in the cranial cavity, pleura, pericardium, peritoneum, retroperitoneal tissues and the trunk muscles. The factors favoring the development and spread of the disease have been the subject of exhaustive study. The conditions favoring its development are now known to include: the retention of blood and wound secretions; interference with the circulation; the presence of dead or partly devitalized tissue; extensive comminution of the long bones; the presence of foreign bodies, especially clothing, in the wound. Whether the disease is a cellulitis or whether the organisms live mainly upon muscular tissue has not yet been definitely determined. The facts that the disease occurs so frequently in muscles and involves them so extensively, that it is often confined sharply to a single group of muscles or to a single muscle, and that the complete excision of an affected muscle may eradicate the disease favor the view that it is primarily a muscle infection. On the other hand, the view that it is primarily a true cellulitis is supported by the following facts: The milder type is often confined to the superficial cellular tissues; its spread almost invariably occurs in the subcutaneous or intermuscular cellular tissues, along fascial planes, or most frequently along the sheaths of the great vessels; the great body cavities are not uncommonly involved; and, finally, within the muscles themselves the spread seems to occur by primary separation of the individual fibres. The rapidity of spread of the disease seems to depend in part upon the virulence of the infecting organisms, but to a much greater extent upon the degree of damage to the circulation by the tension in the affected part, thrombosis of the bloodvessels, or their direct injury or ligation. Anemic patients usually succumb most rapidly.

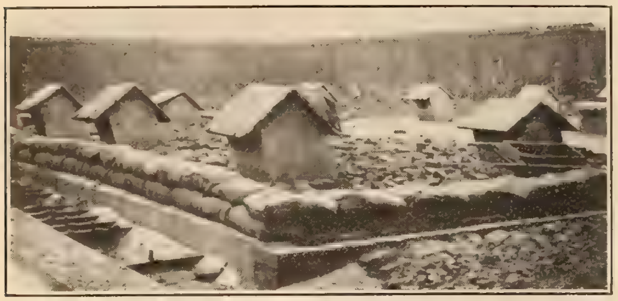
FIG. 11.—The ventilating funnels of an advanced dressing station.

Whether a pure toxemia or a true septicemia is the commoner cause of death is still undetermined. The organisms have been demonstrated in the blood during life in relatively few cases, considering the phenomenal rapidity with which they enter the circulation after death. There is evidence, however, that at an early stage there is often a bacteriemia. Thus it is not uncommon to receive patients with gaseous cellulitis of an extremity and localized patches at various distant points at the sites of previous hypodermic injections. In other cases gas has been voided in the urine and the organism has been cultured from this fluid. Finally, the frequent development of metastatic areas of infection at sites of pressure, etc., indicates the occurrence of a septicemia. All of the advances which have been made in the prevention and treatment of gas bacillus infection rest on the recognition of the conditions which favor its development. A very large proportion of wounds at the front contain the gas bacillus along with the common aerobic pyogenic organisms. The treatment of war wounds in general must therefore embody the essentials for the prevention of gaseous cellulitis or gas gangrene.

Wound dressings were discussed in the preceding article, but in the prevention of gas bacillus infection special attention must be paid to the question of providing for the free escape of blood and wound discharges. Dry dressings are unsatisfactory in this respect and some form of wet dressing must be used. There is little or no choice as far as the chemical agent is concerned, as long as moisture and free escape of blood and discharges are provided. Further, whatever the nature of the injury and of the dressing used, special precautions must be taken to avoid interfering with the circulation. The use of the tourniquet has been largely abandoned, but where hemorrhage cannot be controlled by any other means at hand the patient is hurried to the nearest dressing station as fast as possible in order to permit prompt restoration of the circulation. Circular bandages are also sources of danger and are avoided as much as possible.

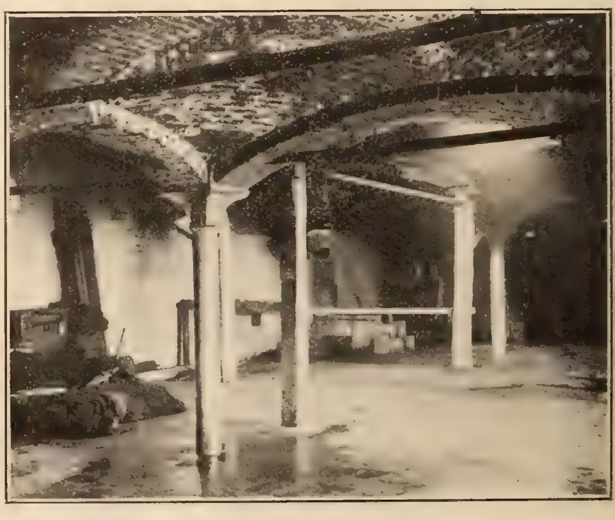
FIG. 12.—An advanced dressing station where patients are received.

This is usually easy in flesh wounds, but in cases of fracture the problem is more difficult. Much has been gained in such cases by the adoption of the Thomas splint, but it can be used at the extreme front in only a small proportion of cases. Therefore most fractures of the lower extremity are received at the casualty clearing station wearing the old Liston splint which is promptly removed and replaced by a Thomas. Efforts have also been made to overcome the obstruction of circulation from arterial rupture or thrombosis, but these will be discussed in a later section. Suffice it to say here that they have not proved successful in the great majority of cases.

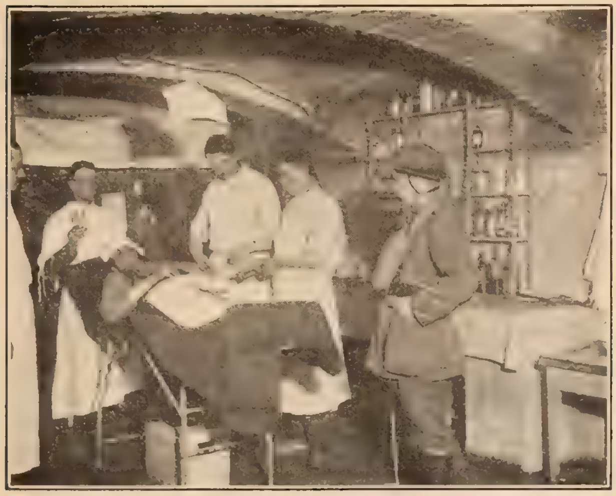

Fig. 13.—Interior of operating theatre of advanced dressing station.

When gas bacillus infection has developed in a wound the method of treatment depends mainly on three factors: the site of infection, superficial or deep; the nature and location of the wound; the condition of the patient. If the infection is of the superficial type, that is, gaseous cellulitis, the entire area of involvement should be laid wide open by multiple incisions and moisture and free drainage provided in the dressing. In cases in which gangrene involves the muscles but is confined to the region of the wound and where the patient's condition is fairly good, the essential points in treatment are the free opening of the whole wound and the complete excision of the infected muscles or muscle groups. Affection of muscles is manifested clinically by loss of contractility and change to a brick red color. If the condition is bad in cases of this type amputation is the safest measure. This should also be resorted to at once in practically all cases complicated with fracture of the bone and invariably in cases in which the main blood supply has been damaged.

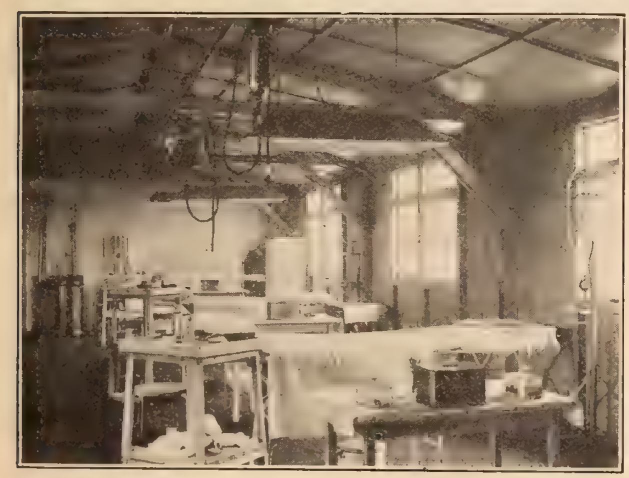

Fig. 14.—Operating theatre in a casualty clearing station.

Two types of amputation are performed in cases of gas gangrene: the one through the healthy upper parts of muscles which are gangrenous below; the other through muscles which are normal throughout. Following both types of amputation recurrence sometimes takes place in the stump. This may be explained in the first instance by the fact that apparently healthy muscles may contain many gas bacilli as a result of direct extension upward between the fibres. In the second class of amputations recurrence may be due to the localization of organisms circulating in the blood, since the occurrence of distant metastases shows that a bacteriemia may occur. Whenever either type of amputation is performed to check gas gangrene the stump should always be left open and free drainage provided. Recent laboratory studies by Wright have led to the suggestion that intravenous injections of sodium bicarbonate be used with the view to overcoming the acid production on the part of the organisms, which leads to the formation of an ideal culture medium for their further growth. The method has been tried in six cases, two of which recovered. The bicarbonate also increases the antitryptic power of the blood and tissue juices and further tends to inhibit the growth of the gas bacillus thereby.

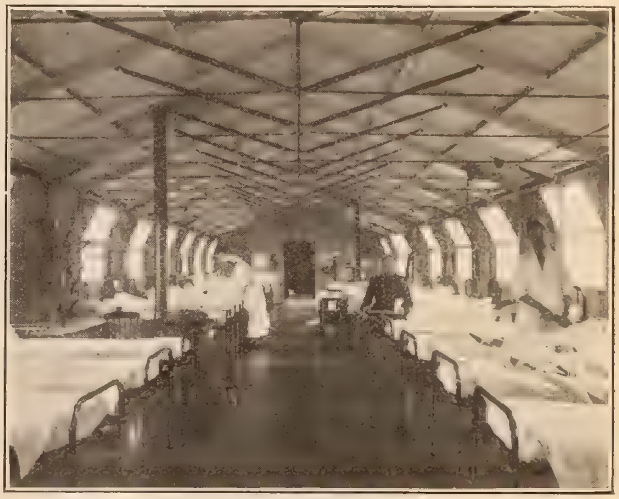

Fig. 15.—Interior of a ward of St. John's Ambulance Brigade Hospital.

A third variety of specific wound infection has been observed, though it is fortunately uncommon. It is diphtheritic in type and is manifested clinically by the development of a dense, tough, gray membrane over the whole wound surface. The membrane is firmly adherent to the underlying granulations. Soon the wound ceases to discharge, the surface dries and there is a condition of lymph stasis. The membrane rapidly thickens and becomes truly diphtheritic. The condition is due to a streptococcic infection and no form of treatment has proved successful, even amputation failing to arrest the disease. Death usually follows in four to seven days.

Septicemia has been encountered chiefly in connection with streptococcal infections and no material advance has been made in its treatment. Intravenous injections of hypochlorous acid in the form of eusol have been given rather extensive trial but no satisfactory results have been obtained. The same remarks are true in the case of the colloidal chloride of gold. In the matter of eusol the failure is not surprising on account of the relatively minute amount of hypochlorous, which can be given intravenously and its great dilution in the blood.

Before passing to a consideration of some of the special injuries a few words are in order on the subjects of secondary hemorrhage, shock, and primary amputations. Secondary hemorrhage has unfortunately been a frequent accident in spite of the advances of modern surgery. In so far as it results from septic infection its frequency has been much reduced as more satisfactory methods of wound treatment have been evolved. It must be remembered, however, that in gunshot wounds the surgeon's efforts are very commonly restricted to the secondary sterilization of an already infected wound. Further, incomplete lesions of the vessels are vastly more common in gunshot wounds than in other types and hemorrhage is frequently the result of the separation of a slough of originally devitalized tissue and not to the extension of an ulcerative process. The hemorrhage may be of the parenchymatous type in old toxemic or septicemic cases, or may take place from any of the large vessels. The latter type is much commoner in some locations than others, being specially so where the vessels are more fixed or lie on firm beds as in the case of the axillary circumflex, the subscapular and posterior scapular, the gluteal, the articular branches of the popliteal, circumflex branches of the profunda femoris, the femoral low in Hunter's canal, and the anterior tibial.

Direct local ligation, prolonged compression with forceps, and local plugging constitute the general methods of dealing with hemorrhage from these vessels. In rare cases proximal ligation may be resorted to in emergencies, but it often fails and is frequently detrimental. In persistent hemorrhage from the gluteal region, however, it may be practised with success, either the internal iliac or its posterior branch being tied. Where arterial trunks are exposed in wounds and are not seriously injured expectant treatment may be followed if they are patent and the wound promises to respond to treatment. If thrombosed, the vessels should be excised between upper and lower ligatures. The internal use of agents to promote clotting has proved fruitless, even in cases of parenchymatous hemorrhage. Some form of transfusion of whole blood is the only internal treatment which has proved of value, but it has been resorted to in only a limited number of cases at yet. It is far more likely to be beneficial in pure secondary hemmia from hemorrhage than in anemia complicated by septic infection; and is more valuable in primary than in secondary hemorrhage. Preliminary hemolytic tests can rarely be made, but it is often possible to make an initial injection of ten mils of blood before the full transfusion.

Fig. 16.—Interior of the operating theatre of St. John's Ambulance Brigade Hospital.

The question of shock and its management is of the utmost importance in military surgery on account of its frequent occurrence. Hemorrhage, exposure to cold, lack of sleep and food, pain, and the exhaustion of long and hazardous transport combine to cause severe shock even in the less seriously wounded. No accurate estimate of the real condition of such patients can be made until they have been warmed, fed, and rested. Warmth and rest have been shown to be more important even than food, and, in general, most operative procedures, unless truly urgent should be delayed for a few hours to permit of the recovery which follows these measures. If fluids are to be given they are best administered by mouth or rectum as the shocked man absorbs poorly from his subcutaneous tissues. Intravenous injection of normal salt solution has proved of very little value, but transfusion with blood toward the end of an operation is often permanently beneficial.

The decision as to when to perform a primary amputation demands considerable actual experience if the best results are to be secured and the discretion of the surgeon is a very important factor influencing the outcome. In some cases of badly shattered extremities delay may result in dangerous sepsis or gas gangrene and therefore it is often necessary to amputate earlier than one would wish. The most important single factor in determining when to operate is shock and if this is severe it is almost invariably safer to wait long enough for complete recovery from it and its associated effects. Many men will survive after such a delay who would have died had they been operated upon immediately.

The amputation itself should be done according to one or another of the methods generally accepted in civil practice if the local conditions will permit. The stump, however, must always be drained. As a general rule it is the best plan to amputate so as to save as much of the extremity as possible, rather than to choose one of the recognized sites of election. If need be a second amputation may be performed later after the man has completely recovered from the effects of his injury. An exception to the practice of saving as much of the limb as possible must be made in some cases in order to avoid amputating through a joint. Finally, in certain instances where the patient is pulseless and the extremity is still oozing and numb it is often best to amputate at once under light gas oxygen anesthesia, cutting through the soft tissues at the site of the fracture and tying the main vessels This need consume no more than ten minutes and will often save life in an otherwise hopeless case. It is a cardinal rule that whatever the site or type of amputation every inch possible of healthy skin should be saved.

(*To be concluded.*)

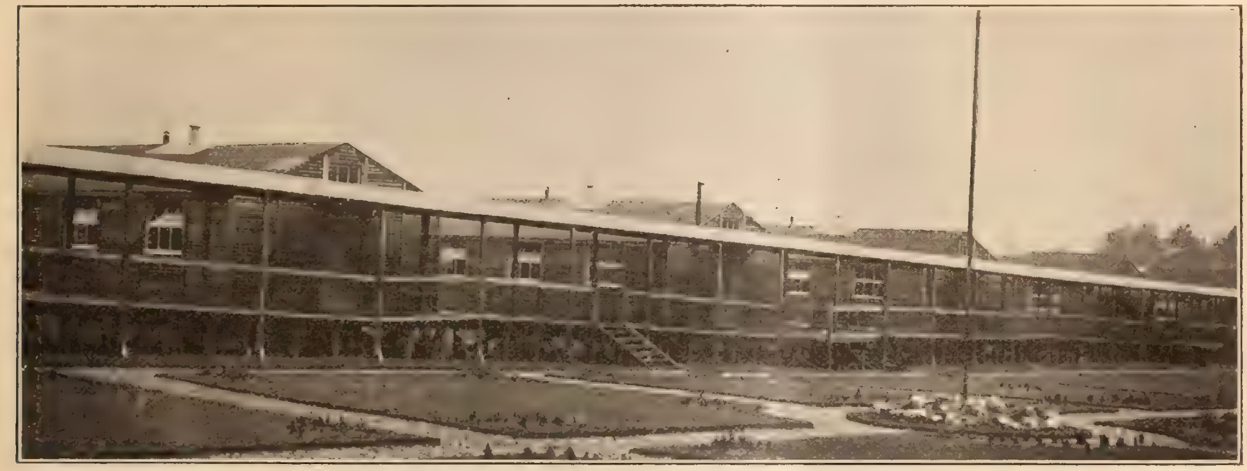

FIG. 17.—View of St. John's Ambulance Brigade Hospital.

Seven Operations an Hour.—Colonel T. H. Goodwin, of the British Army, states (*Military Surgeon,* September, 1917) that "we reckon that a medical officer of average ability can attend to seven or eight patients in an hour, and when you consider that this number includes fracture and head cases, you will realize that if an officer maintains that average, he has every reason to be satisfied."

MEDICAL NEWS FROM WASHINGTON.

Orders to Prevent Entrainment of Men Awaiting Discharge for Physical Disability.—Special Physical Requirements for Aviation Students.—Inspection of Section of Surgery of the Head at Camp Base Hospitals.—Medical Officers Commanding Additional Red Cross Base Hospitals.—Good Sanitary Conditions at Shore Stations.

WASHINGTON, *September 25, 1917.*

It has been found that troops entraining for the port of embarkation for France have brought with them men awaiting discharge on surgeon's certificate of disability or known to be permanently incapacitated for the service. In order to prevent this, orders have been issued from the War Department that all commanders of troops under orders for foreign service give the medical officers of their commands as much notice of proposed departures as consideration of secrecy permit and that the medical officers exercise special diligence to keep themselves informed as to the exact physical condition of the sick. This has been ordered so that on the one hand those unfitted for the service shall not accompany their commands, and on the other that no one shall be left behind who is but temporarily disabled. Early recommendations hereafter are to be made for discharge of men believed to be permanently incapacitated for active service, or in appropriate cases for their transfer to the army and navy general hospital at Hot Springs, Ark., or to the army general hospital at Fort Bayard, N. Mex. When an order for entrainment for the port of embarkation is received, all sick believed to be permanently incapacitated, whether they have been recommended for discharge or not, will be reported by the surgeon to the commanding officer, who will issue the necessary instructions for their retention and disposition.

* * * * *

The utmost care is being exercised in selecting men for the air service of the army. Those merely meeting the physical requirements for the military service generally are not suitable for actual flying. In addition they must possess special mental, physical and psychological characteristics that produce qualities of orientation that are essential in operating airplanes. For these reasons, the boards for the examination of candidates for the aviation section of the Signal Corps are made up of specially selected members of the medical personnel; and, after entrance to the corps and during the period of their instruction student flyers are carefully observed by the medical officers at the flying schools.

Lieutenant Colonel Theodore C. Lyster, of the army Medical Corps, in addition to his other duties in the office of the surgeon general of the army, has been appointed chief surgeon of the aviation section, and among his other duties is supervision of the work of the examiners. He has as his assistant Lieutenant Colonel George H. Crabtree, retired, formerly of the Medical Corps, now on duty in the surgeon general's office, who also acts as sanitary inspector of the aviation section.

* * * * *

The army medical authorities are giving special attention to the subject of surgery of the head at the base hospitals that have been established at all camps and cantonments, in view of the fact that the experience of foreign medical services has demonstrated that this feature of the work is of the utmost importance in the saving of the lives of the wounded, because of the prevalence of head injuries. So important is this work of the hospitals considered that Majors Nelson M. Black and Harris P. Mosher, of the Medical Reserve Corps, are inspecting the camp base hospitals, in order that the surgeon general of the army may be kept informed as to the efficiency of the personnel and equipment. Major Black is visiting the camps at Chillicothe, Ohio; Louisville, Ky.; Battle Creek, Mich.; Rockford, Ill.; Des Moines, Iowa; Fort Riley, Kan.; American Lake, Wash.; Linda Vista, Cal.; Deming, N. M.; Fort Sill, Okla.; Fort Worth, Tex.; Waco, Tex.; San Antonio, Tex.; Houston, Tex.; Alexandria, La.; Little Rock, Ark.; Hattiesburg, Miss.; Montgomery, Ala.; Anniston, Ala.; Atlanta, Ga.; Macon, Ga.; Augusta, Ga.; Spartanburg, S. C.; Greenville, S. C.; Charlotte, N. C., and Petersburg, Va. Major Mosher is making inspections at the northern camps at Ayer, Mass.; Yaphank, Long Island; Wrightstown, N. J., and Annapolis Junction, Md.

LIEUTENANT WILLIAM T. FITZSIMMONS, M. O. R. C., U. S. A.,

Killed at the age of twenty-eight years by a German bomb dropped on Base Hospital No. 5 (Harvard), near the coast of France on September 5, 1917. The first American officer killed by the Germans since the declaration of war by the United States.

Additional officers of the regular army Medical Corps have been assigned to duty as commanding officers of Red Cross base hospitals as follows: Major Thomas H. Johnson, No. 20, University of Pennsylvania Hospital, Philadelphia; Major Alleyne von Schrader, No. 33, Albany (N. Y.) Hospital and Medical College; Major John S. Lambie, Jr., No. 38, Jefferson Hospital, Philadelphia; Major Walter D. Webb, retired, No. 1, Bellevue Hospital, New York.

* * * * *

Little sickness now prevails in the naval establishment, and health conditions in the navy, afloat and ashore, on the whole, are very good. Some cases of measles and mumps continue to be reported from the Atlantic fleet. Measles is less prevalent than mumps, averaging only ten cases a week for the entire force afloat. Conditions are excellent at all shore stations, except at the naval training station at San Francisco, where there are a number of cases of mumps and measles. Sanitary measures that are being put into effect at all shore stations are having good influence in many nearby cities and towns. Sanitary surveys of practically all the ports in which section bases are located have been made by sanitary officers attached to the various naval districts. In many instances where unsatisfactory conditions have been found, the local authorities have responded promptly to suggestions, and they are showing a spirit of coöperation that is very gratifying, leading as it does to cleaner food, improvement of milk and water supplies, better methods of garbage and sewage disposal, and to campaigns against the fly and mosquito. In many cases the sanitary work that is being done by the navy amounts to an educational process that will lead to permanent improvement in the sanitation of those civil communities that have felt the influence of the navy. Much of the sanitary inspection is being done by officers of the Public Health Service, who have been assigned to the various naval districts. They send in periodical reports of the conditions prevailing at the naval stations and in neighboring communities.

Editorial Notes and Comments

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A Weekly Review of Medicine

EDITORS
CHARLES E. DE M. SAJOUS, M.D., LL.D., Sc.D.,
Philadelphia,
SMITH ELY JELLIFFE, A.M., M.D., Ph.D.,
New York.

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THE VALUE OF MEDICINE TO THE ARMY.

In days of old, the civil population cared for the wounded after a battle in such wise as they were able to. In modern warfare, there is practically no civil population in the fighting area. The houses are usually destroyed and the wounded are so numerous that no ordinary civilian population could possibly care for them. Ambroise Paré, in discussing the care of the wounded in the sixteenth century, gives instructions to "sweetly cut the throats of such as are seriously wounded, so as to end their sufferings." Even if the dictates of humanity at the present time permitted the practice advocated by Paré, it would not be good policy from a strictly military point of view, for a very large proportion of the wounded can be restored to duty. In the German army it is said that ninety-two per cent. of the wounded recover, and where twenty thousand casualties occur in a comparatively small area within a few hours' time, as has happened frequently in the present war, the restoration to duty of this ninety-two per cent. becomes a serious element in preserving the organization at the front. Moreover, as pointed out by Colonel T. H. Goodwin, of the British medical service, the removal of the wounded from the field is a very important factor in preserving the morale of the surviving troops. Fresh troops would undoubtedly be affected most disastrously by the sight of the ground cumbered with the number of wounded which collect in a battle lasting several days. The value of the medical service to the army in the relation to the wounded is, therefore, clearly apparent.

The most valuable service rendered by medicine, however, is the prevention of disease; the present war has been unique in this respect. In the British war in South Africa, 57,000 cases of enteric fever occurred with 8,000 deaths. In that campaign, sickness was responsible for the loss of 86,000 men by death and invaliding. In 1802, 50,000 troops were lost by yellow fever out of the 58,000 in the San Domingan expedition. In 1812, typhus fever killed 25,000 out of 28,000 troops, and in the war with Turkey, one army which left Russia 100,000 strong, left 85,000 dead from disease in Turkey. The German army in 1870-1871 had 73,000 cases of enteric fever with nearly 7,000 deaths. Under the influence of vaccination, typhoid and paratyphoid inoculation, and improved sanitary arrangements, the medical service has been able to reduce the deaths from smallpox, typhoid, and paratyphoid fever to an almost negligible number, and so far no serious epidemic of any sort has made its appearance in the western field, though there has been trouble in Serbia and Rumania with typhus fever. A comparison of the conditions existing in the army now with those cited above, demonstrates clearly the immense value which medicine has rendered to the armies, and furnishes ample justification for the most liberal expenditures, both of men and money, in the organization of the Medical Department.

THE UNKNOWN.

From the smallest electromagnetic disturbance, the gamma rays emitted by radium, to the longest wireless waves, there is a range of vibration covering about forty-eight octaves. The gamma rays are but one ten-millionth of a millimetre in length, the greatest waves may span a distance of ten thousand metres or more. Yet, save for the octave of vibrations which makes up the visible spectrum and the eight octaves which we appreciate to some extent as degrees of heat, we seemingly have no means of detecting by sense organs the presence of the other forms of electromagnetic disturbance. Twelve of the octaves in this scale of energy are, indeed, not as yet detected even by instrumental means, though doubtless these vibrations will ere long be known and perhaps utilized for our benefit. We know the possible influence on the body of x rays when concentrated artificially, and we are all aware of the disastrous effects which the ultraviolet rays may produce; between these two wave lengths there is an undiscovered country of some nine octaves. What the influence upon the body may be of the undiscovered rays beyond the violet side of the spectrum and of the wireless and other waves on the red side of the spectrum we can as yet but wonder. The effects, very marked in some people, of atmospheric changes lead us to infer that we are influenced more by these unknown or only indirectly known forms of force than we can even guess.

Apparently we have no sense organs, no receiving structures, for detecting a great many physical and chemical changes that affect our welfare, but as we have invented machines like the spectroscope, microscope, and telescope for supplementing our senses, it is probable that we will add greatly to this small list of artificial receptors. It is also not impossible that we have natural means of adjusting ourselves unconsciously to these manifold forms of force, and these means have not yet been made out in our anatomy.

Some of the lower animals seem to have sense organs of which we have no analogue. The brilliant French naturalist, Fabre, in *The Life of the Caterpillar,* says that while insects are evidently attracted from long distances by odors wafted to them, in breeding times the males are attracted from afar by a something too subtle to affect our own sense of smell at short range, and that, on account of the distance, the mere presence of wafted molecules is inconceivable as an explanation. Moreover, "when my study is saturated beforehand with pungent odors which ought to overcome and destroy the most delicate effluvia, the male moths arrive without the least sign of embarrassment. . . . The experiment with the lavender oil, naphthaline, and the rest would therefore seem to prove that odor proceeds from two sources. For emission substitute undulation; and the problem . . . is explained. Without losing any of its substance, a luminous point shakes the ether with its vibrations and fills a circle of indefinite width with light. This must almost express the working of the mother Bornbyx's telltale discharge. It does not emit molecules: it vibrates; it sets in motion waves capable of spreading to distances incompatible with a real diffusion of matter. In its entirety, smell would thus seem to have two domains: that of the particles dissolved in the air and that of the ethereal waves. The first alone is known to us . . . the second escapes us altogether. Like light, odor has its x rays. Should science one day, instructed by the insect, endow us with a radiograph of smells, this artificial nose will open out to us a world of marvels."

We have but touched the fringe of knowledge, physiological as well as other. Along many lines we are, as yet, groping in darkness, and must make the best of many things without knowing their explanation. The influence of atmospheric changes including "bad air" of rooms and the conditions which produce epidemics of disease, are still in the realm of the unknown. Science is in its infancy. Fields of investigation are before us, into which we of this generation may only look longingly.

MEDICAL WOMEN IN THE WAR.

Many limiting traditions will find themselves consigned irrevocably to the past when the final tale of the war is told. General opinion will accept without question many things which have hitherto received but scant appreciation and recognition. Women's work is one factor which is emerging from its former less secure basis into a larger and surer evaluation as a normal part of the general advance of practical, scientific accomplishment.

The *British Medical Journal* for August 18, 1917, contains a report of some of the work which British women have undertaken in the medical service of the war. [Mary H. Frances Ivens, M. B., M. S.: The Part Played by British Medical Women in the War.] Their attention was directed chiefly at first to the care of the Allied forces. Since they were not at the time needed at home, Belgium became the first scene of their labors and then France, while units were formed very early for hospital work in Serbia. Last year work was undertaken in Russia. Beside this activity within the warring countries work was carried on in Corsica at the retreat for Serbian refugees established there. Early in 1915 work had been found for them among their own wounded soldiers in England and it was among these soldiers that they likewise found opportunity to gain valuable experience in the treatment of septic wounds, the results of which have been published. An important work which is at present in their hands is the treatment of soldiers suffering from injuries to joints or nerves, for whom great improvement or cure can be expected with proper treatment. This work is being carried on with great success in London and at other centres, two of which are in Ireland.

This outline of their work is a brief and simple résumé. The history of the service of these women in Serbia is vibrant with the things that are left unsaid. Behind it doubtless lies one of those stirring chapters of heroism, endurance, and downright practical making the best of things, in which the annals of this war, when written, will abound. "Thousands of sick and wounded. Typhus of a virulent type," so runs the account of conditions which they encountered. The mere statements that water heating apparatus, bathing, and other sanitary facilities were difficult to secure but were somehow obtained, the mention of the fight with vermin, are pregnant with suggestions of the courage and efficiency with which inconceivable conditions were met and mastered.

The completeness of the organization and execution of the work of these units is better understood when it is remembered that they are composed entirely of women. Physicians, nurses, and orderlies are supplemented by their own ambulance service. "The wounded are brought in from the military evacuating station by motor ambulances under the charge of women drivers, and during a rush the chauffeuses must work many hours a day without a break." The efficiency of these units, their original investigations, and the special ability shown in meeting the great emergencies which have everywhere marked their service, prove that this women's medical force is ready and capable to take its part among the workers and promoters of science in its present great world service.

DIAGNOSIS OF MALIGNANT DISEASES OF THE PROSTATE GLAND.

The diagnosis of malignant disease of the prostate is sometimes difficult to make, particularly when the process is circumscribed. Confusion frequently arises between a malignant growth still limited in extent and an hypertrophy of the gland. The functional symptoms arising in cancer are not characteristic and are consequently insufficient for making a diagnosis between it and prostatic hypertrophy. Rigid emaciation may lead to suspicion of cancer, but this also occurs in old infected prostatics. Metastases, especially in the skeleton, may give a clue but they are not constant and are often difficult to detect.

Rectal exploration may give some precise data but only at a relatively advanced stage of the process. In difficult cases a slow evolution is in favor of hypertrophy and the gland is usually very large. In epithelioma the prostate is hard with a lumpy surface and two posterior prolongations, while in hypertrophy it is soft and the surface is smooth and the growth is more apt to develop toward the bladder and urethra. In hypertrophy there is no involvement of the lymphatics and no pain, spontaneous or otherwise. When an epithelioma develops in an hypertrophied gland the diagnosis becomes more difficult. There are a change in the consistency, a rapid increase in size, the appearance of nodules on its surface, and hemorrhage. An hypertrophy complication of an hypertrophy by prostatitis or posterior pericystitis with adenitis of the illiac lymph nodes adds to the confusion, but in these cases there is always urethral suppuration, and pressure on the prostate is painful and causes the appearance of a purulent fluid from the gland.

Tuberculosis of the prostate is rarely limited to the gland and involves the epididymis, vas deferens, and seminal vesicles. The nodules of tuberculosis are smaller, less hard, sometimes softened, and are always surrounded by areas of supple gland. The patient is usually young, and experimental inoculations in the guineapig will reveal the specific bacillus. A pericystitis may cause much diagnostic difficulty. If the case is one of vesical growth, cystoscopy will settle the question of diagnosis, but beside these cases in which the diagnosis is relatively easy there are instances of prostatovesical neoplasms in which the tumor mass projects more into the bladder, the starting point of the growth remaining an open question. When the vesical growth coexists with prostatic hypertrophy, a diagnosis of a prostatic tumor extending to the bladder may easily be made. This may be avoided by making a differential diagnosis between cancer and hypertrophy because in the latter case the tumor must evidently be vesical.

Prostatic calculi can hardly be mistaken for malignant disease of the gland. Large endoprostatic calculi, which might be the cause of error, are uncommon and when they do exist there is always a chronic prostatitis. A growth on the anterior wall of the rectum might be mistaken for an extension of a prostatic growth to the gut because in both there is difficulty in defecation and the rectal mucosa is adherent to the wall. The vesical phenomena present, however, exploration of the urethra, and the relative integrity of the rectal mucosa in the face of so large a tumor will facilitate the diagnosis, particularly when this infrequency of rectal invasion by a cancer of the prostate is recalled. The diagnosis between sarcoma and epithelioma of the prostate is made from the age of the subject, the former being more prone to occur in children and young adults. A sarcoma is also larger than an epitheliomatous growth, is softer, and is sometimes fluctuating, while its surface is smooth, and lymphatic involvement is often absent.

CLIMATE AND TUBERCULOSIS.

There is now fortunately a growing tendency to discourage the heretofore overemphasized notion that the exile of the tuberculous into distant, often unknown, climes was the surest means of curing them. Aside from the objections of the communities on which they became burdens it is now realized that this form of treatment may be highly pernicious and causative of much misery and hardship. Not only are cures not effected but many patients are positively made worse who were otherwise perhaps on the road to recovery. Moreover, even if a cure is accomplished by these means, it is so costly to the individual and his dependents that it is not worth the price. On the other hand, except for these material disadvantages, climate or rather climatic conditions are very important factors in the cure of tuberculosis. In any event it is necessary to understand definitely what constitutes climatic advantages, so that they can be simulated and utilized as much as is possible when for any reason removal to ideal climates is not feasible.

In general it can be said that it is not the climatic conditions that are of chief importance, but rather the outdoor living that one can comfortably enjoy in suitable climates. It is living away from artificially heated, humid, and close quarters, away from smoky and dusty atmospheric conditions, and away from unfavorable wind conditions that is of so much benefit in the so called ideal climate. The most favorable climate is the comfortably cool one. Even daily changes in temperature, if moderate, are beneficial because they are physically stimulating. Warm weather, especially moist conditions, is undesirable because moist air interferes with evaporation from the skin. In cool weather, on the other hand, moist air robs the body of heat by the good medium of conduction that the moisture offers. Cold dry air is not nearly so uncomfortable as is much warmer moist air. Of course, very dry hot air is undesirable.

Very few places have ideal climatic conditions all the year round. This fact alone constitutes the best reason against sending individuals of limited means and especially of limited time to health resorts where not every part of the time will be advantageously spent. Those who can afford it change from place to place according to climatic advantages. Unfortunately only a very few of the afflicted can do this. Yet there are, to a great extent, ideal weather conditions everywhere. In all probability there would not be a larger proportion of it at health resorts than at home, and adding the home advantages, there is little left to favor the resort. The secret of the climatic treatment of tuberculosis lies in taking full advantages of favorable weather conditions to press outdoor living to its fullest degree. In cities the day camp might be reinforced by the establishment of night camps during favorable seasons. High altitude in the treatment of tuberculosis has been much overestimated. Low humidity and freedom from dust are advantages that are offset to a great extent by the increased amount of work put on a heart that can little afford it.

REEDUCATION OF THE WOUNDED.

One of the many grave problems which confront a nation at war is the reëducation of the men disabled in the service, so that they may not drift into the category of paupers. Great Britain and France are busy on this problem and the Surgeon General of the United States Army is already at work in compiling data which will serve as a guide for our own surgeons. A letter has been sent by the Surgeon General to the secretaries of all the county medical societies, asking for detailed information as to cases which may have come under the observation of the members of these societies regarding men who have been disabled and who have been reeducated, so as to be of service in some useful occupation. We direct the attention of our readers to this letter, which, at the request of the Surgeon General, we publish in another column, and urge all who have knowledge of such cases to make a full report to the Surgeon General's office. The name of the patient need not be given, consequently there need be no hesitancy in giving the fullest details regarding the character of the disability, and the financial history of the patient, both before and after the injury. The Surgeon General is to be congratulated upon this wise prevision thus early in the war, so as to have all available material compiled and ready for distribution in booklet form when the occasion arises.

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News Items

Change of Address.—Dr. I. Seth Hirsch, to 11 East Sixty-eighth Street, New York.

A Flying Ambulance.—Press dispatches from Paris report a trial flight of an airplane ambulance with two stretchers. The results reported were highly satisfactory.

Pharmacists for the Army.—Mr. Harrison, of Virginia, has introduced a bill authorizing the appointment of registered pharmacists as first and second lieutenants in the Medical Corps of the Army and the Medical Officers' Reserve Corps.

Dental Students Ask Exemption.—A movement has been begun looking toward obtaining exemption for dental students in the same way that it has been granted to medical students, with the understanding that they shall become members of the reserve and subject to call.

Meningitis Carriers at Camp Mills.—It is reported that several carriers of cerebrospinal meningitis have been discovered in Company G of the 167th Regiment, formerly the Fourth Alabama Infantry. There has been one death from the disease, and specialists from the Surgeon General's office and from the Rockefeller Institute are investigating. The carriers have been isolated and the entire regiment quarantined. There is no fear of an epidemic.

College of Physicians of Philadelphia.—At a meeting of this college to be held on Wednesday, October 3d, the evening will be devoted to a consideration of the subject of venereal prophylaxis. Several prominent men will take part in the discussion, among them being Colonel Goodwin, of the Royal Army Medical Corps.

Women in Medicine.—After over a century of teaching the College of Physicians and Surgeons, the medical department of Columbia University, has opened its doors to women, eight students being enrolled in the entering class. Harvard University has also opened its classes in the medical school to students at Radcliffe College, though the number who have entered this school have been disappointingly small so far.

Conservation of Medicines.—The Committee of Public Safety of Pennsylvania has issued an appeal to the physicians, dentists, and pharmacists of the State, asking that they conserve the supply of medicines to the greatest possible extent by prescribing only such quantities as were required and by ordering only sufficient quantities from wholesale dealers to last for a short time, so as to avoid exhausting the general stock.

Meetings of Medical Societies to Be Held in Philadelphia During the Coming Week.—Monday, October 1st, Academy of Surgery, Clinical Association, and the Blockley Medical Society; Tuesday, October 2d, Aid Association of the County Medical Society (directors), Laryngological Society, Wills Hospital Ophthalmic Society; Wednesday, October 3d, College of Physicians; Thursday, October 4th, Obstetrical Society, Southeast Branch of the County Medical Society; Friday, October 5th, Physicians' Motor Club (directors), Kensington Branch of the County Medical Society.

New York Children's Hospital and School.—The cornerstone of the new school and hospital for children on Randall's Island was laid on September 24th, with suitable ceremonies. This building will be one of the principal structures to be built with the $1,600,000 fund appropriated by the city to house properly the city's wards. Contracts have been awarded for eleven of the buildings. Other contracts for three more will be let soon. There are now about 2,000 feebleminded and epileptic patients on the island, most of them children.

Broad Street Hospital Opened.—The Broad Street Hospital, at South and Broad streets, New York, was opened for the reception of patients on Monday, September 17th. The building is seven stories high and is one of the best equipped institutions in the city. The hospital was established to meet the needs of about 20,000 residents of the south end of the city, extending from the East to the North rivers and as far north as Canal Street. Dr. A. J. B. Savage is superintendent and with him are associated thirty-three physicians who will devote much of their time to the institution. Four interns and a corps of trained nurses complete the medical staff.

The Third American Chemical Exposition.—More than three hundred and fifty exhibitors took part in the third American Chemical Exposition, which filled three floors of the Grand Central Palace, in New York, during the week beginning September 24th. Every phase of chemical industry was represented. Addresses were delivered by leading men in various fields of applied chemistry and numerous motion pictures were shown of chemical industries in operation. Among the exhibits which were, either directly or indirectly, of interest to medical men, probably the most interesting were the various synthetic drugs, the majority of which were formerly made in Germany exclusively.

Yale Professors in War Work.—More than thirty members of the Yale faculty have been given leave of absence or have resigned from the university to render some form of direct government service in connection with the war. Among these are the following from the medical department: Dr. Joseph Marshall Flint, who is major in charge of Base Hospital No. 39; Dr. Charles Edward Amory Winslow, who is a member of the Sanitary Commission to Russia; Dr. Josiah Morris Slemons, a member of the Red Cross Commission on Infant Mortality in France; Dr. Yandell Henderson, head of the bureau for the investigation of gases used in warfare, and Dr. James Cowan Greenway, who is a major in the Reserve Medical Corps in charge of the medical department of a large cantonment hospital.

Liability of Physician for Disclosing Confidential Information.—A physician is held not liable in the Washington case of Smith v. Driscoll, L. R. A. 1917C, 1128, in damages for disclosing on the witness stand information gained while in professional attendance on a patient if the testimony was admissible in the case in which it was given and was relevant and pertinent to the issues or was admitted by the court over objections made to its admissibility.

Women Doctors to Serve in France.—A mobile hospital unit of the New York Infirmary for Women and Children, composed entirely of women, has been accepted for work in France by the French Government. Dr. Caroline Finley is director of the unit. The unit, which will be composed of a hospital with 100 beds and small flying auxiliary units, will work primarily among the French women and children who have suffered from lack of medical attendance, but it will also accept calls for care of wounded soldiers when needed. It will be located in the regions devastated by the enemy and as near the firing line as possible.

The Red Cross to Erect Permanent Base Hospitals in France.—Permanent buildings of a modern type to supplant the tents and temporary structures now occupied by Red Cross base hospitals in France are urgently needed before winter sets in, according to cables received from Major Grayson M. P. Murphy, Red Cross commissioner to France, who has cabled the Red Cross War Council to ship quantities of building materials at once. There are already a number of expert engineers with the Red Cross Commission to France, who will superintend the erection of the new hospital buildings. The American Red Cross now has more than a dozen base hospitals in France, each equipped with at least 500 beds, and each in charge of twenty-two physicians, two dentists, sixty-five Red Cross nurses, and 150 enlisted men of the Medical Corps. Additional doctors and nurses have been sent to a number of the hospitals.

The Medical Association of the Greater City of New York.—A stated meeting of the association will be held at the New York City Children's Hospitals and Schools, Randall's Island, Monday afternoon, October 15, 1917, at three o'clock. The afternoon will be devoted to a discussion of the problem of the feebleminded and epileptics. Dr. William Burgess Cornell, medical director, New York City Children's Hospitals and Schools, will give a practical talk upon the Differentiation and Care of the Feebleminded, including the Moron, with a demonstration of types, which will be discussed by Dr. Walter E. Fernald, of the Massachusetts School for Feebleminded, Waverley, Mass. Dr. L. Pierce Clark, consulting neurologist to the New York City Children's Hospitals and Schools, the Manhattan State Hospital, Craig Colony for Epileptics, and Letchworth Village, will read a paper on The Care, Management, and Treatment of Epileptics, which will be discussed by Dr. Charles L. Dana, Dr. George H. Kirby, and Dr. Clarence O. Cheney.

Personal.—Dr. Ernest P. Bicknell, formerly director general of civilian relief of the American Red Cross, and now deputy commissioner to Europe, has been placed in charge of all Red Cross activities in Belgium.

Dr. Bertram H. Waters, formerly director of the Bureau of Preventable Diseases of the Department of Health of the City of New York, has been appointed physician in chief of Loomis Sanatorium, Liberty, N. Y., succeeding Dr. H. M. King, who died recently.

Colonel G. E. Bushnell, Medical Corps, U. S. Army, has been retired from active service, having reached the age of sixty-four years, but will continue to serve on the staff of the surgeon general in Washington.

Major E. G. Bingham, Medical Corps, U. S. Army, has been detailed to duty as commanding officer of the base hospital and as commandant of the medical officers' training camp at Fort Des Moines, Iowa.

Dr. S. MacCuen Smith, of Philadelphia, Major, Medical Officers' Reserve Corps, has been ordered to Camp Meade, Annapolis Junction, Md., to take charge of the division of otolaryngology, section in surgery. Major E. C. Ellett will take charge of the ophthalmological section at the camp.

Dr. Casey A. Wood, of Chicago, Major, Medical Officers' Reserve Corps, has been ordered to Camp Sherman, Chillicothe, Ohio, to take charge of the division of ophthalmology, section in surgery.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

THE TREATMENT OF PERNICIOUS ANEMIA.

By Louis T. de M. Sajous, B. S., M. D.,
Philadelphia.

(*Continued from page* 568.)

While it is generally assumed that arsenobenzol, in improving the condition of the blood in pernicious anemia, acts by stimulating the bone marrow to an increased production of red blood cells, Hill's experiments on the antihemolytic effect of arsenic, already described in relation to Fowler's solution, suggest that the organic drug may, in common with the inorganic, be capable of directly preventing erythrocytic destruction. The results obtained in tests conducted *in vitro* to ascertain the effect of salvarsan in preventing hemolysis by hypotonic salt solution were by no means as convincing as those already mentioned as regards Fowler's solution, yet Hill emphasizes that in each pair of corresponding test tubes hemolysis was always much less in the tube containing salvarsan than in the other, the hemolysis evidently taking place more slowly in the salvarsan tubes. In four cases of syphilis in which the blood was tested before and after intravenous administration of 0.3 gram of salvarsan, no change in the cell resistance to hemolysis was observed, but in two out of three cases of pernicious anemia in which four to seven doses of salvarsan were given an improved cell resistance was noted following the course of treatment. In these two cases the general condition was improved and the red cell count and hemoglobin raised by the treatment, whereas in the third case, such results were not observed.

In spite of the undoubted antihemolytic action of Fowler's solution *in vitro,* and the less convincing similar effect of salvarsan, the possibility cannot be overlooked that clinically these arsenicals may act as antihemolytics, not directly in the blood stream, but by exciting the bone marrow to the production of fresh, more resistant erythrocytes, better able to withstand hemolytic stress imposed upon them in the circulation. This would agree with the assertion of Snapper, 1912, that young red blood cells resist hypotonic saline hemolysis more strongly than older ones; the same observer noted that erythrocytes tested after a severe hemorrhage are more resistant than cells collected previously. Light could be thrown on this question, it would seem, by a careful study of the relations of young cell production to cellular resistance to hemolysis in cases of pernicious anemia.

One of the reasons advanced by Bramwell for preferring salvarsan treatment to the use of inorganic arsenic by mouth is that, in his experience, the organic remedy has never induced peripheral neuritis, whereas large doses of inorganic preparations have often brought on not only severe, intractable neuritis but such other toxic symptoms as dryness of the throat, conjunctival irritation, ceratitis, pigmentation of the skin, diarrhea, and vomiting. Boggs, 1913, injecting salvarsan intravenously, makes particular note of a sharp febrile reaction occurring as a rule six to twelve hours after each injection, in contrast to a very mild or absent reaction in syphilitics.

As for neosalvarsan, trial in a number of cases has led Bramwell to doubt whether it is as effective as salvarsan. The local aftereffects of the intramuscular injections were less severe than with the older drug, pain, inflammation, hardness, and swelling being much less marked, doubtless because of more rapid dispersal and elimination of the intramuscular depot. The inflammation following salvarsan, however, could usually be relieved by an ice bag; while in the neosalvarsan cases, preliminary use of novocaine, morphine, or diacetyl morphine was resorted to with repetition two hours later where necessary. No other author, apparently, has as yet made a comparative study of the old and the new arsenobenzol in this disease.

Attention is at present being widely directed to measures other than the administration of arsenic, calculated to reduce or prevent hemolysis in pernicious anemia. Various procedures are also availed of, in the treatment of the disease, to stimulate the bone marrow, either directly in a manner similar to that in which arsenic has been supposed to act, or indirectly, through improvement of the working pabulum supplied to the marrow. Measures intended to spare the marrow unnecessary work, not only through prevention of hemolysis but in other ways, are not to be overlooked. Complementary to these, furthermore, are measures calculated to prevent the existing marrow deficiency, with the resulting subnormal capacity of the blood as regards tissue oxygenation, from reacting unfavorably on various other functions; e. g., the insufficiency of secretion from glandular organs hampered in their function by blood impoverishment can be compensated for by artificial introduction of the glandular products from the exterior. Finally, in the event of insufficiency of the various other therapeutic procedures, or better, in conjunction with them at an earlier stage, steps may be taken to make good directly in the blood stream the deficiency in erythrocytes by supplying blood from another individual.

Among the measures employed to reduce hemolytic blood destruction, splenectomy has of late been the most earnestly studied. This procedure is based on a strong presumption that the spleen in some way contributes to the blood destruction in this disease and the fact that marked improvement or recovery has been observed to follow the operation in splenic anemia, Banti's disease, and hemolytic jaundice, affections in which a morbid increase over the normal hemolytic action of the spleen is known to occur. Many observers affirm, moreover, that splenectomy exerts a pronounced stimulating action on the bone marrow or, at least, in some way facilitates its blood forming function.

(*To be concluded.*)

Gunshot Injuries of the Mandible.—J. F. Colyer (*British Medical Journal*, July 7, 1917) says that the three essential lines of treatment are the control of the sepsis, the approximation of the fractured ends, and the fixation of the parts, all of which are of equal importance. The removal and control of sepsis must include the extraction of all the teeth in the neighborhood of the fractured area to avoid infection by pockets in the tooth sockets and by the tooth pulps, which always soon become infected. In addition any other carious teeth in the mouth should be extracted. The sinuses and mouth should be constantly irrigated and bone sequestra should be allowed to form before the removal of dead bone is attempted. The effort should be made in every case to approximate the bony ends of the fragments in order to obtain bony union instead of fibrous. This can usually be accomplished where the gap is less than one inch. The resulting deformity can be corrected as far as the bite is concerned by the adjustment of proper artificial dentures. The fixation of the fragments is best accomplished by the use of the metal Gunning splint which should be fixed in place by oxyphosphate of copper cement. The measures outlined have given the best results so far secured.

Skin Grafting.—S. R. Douglas, L. Colebrook, and A. Fleming (*Lancet*, July 7, 1917) discuss the several methods of skin grafting that have been employed and point out the reasons for the lack of its more general adoption. There are several, among which the most important are the difficulties encountered in making the grafts take, the dangers of infection occurring in the wound from which the grafts were removed, and the dangers of the grafts being absorbed from improper care of the surface. They have perfected a technic which gives a very large majority of perfect or satisfactory results and which avoids these and other difficulties. The skin is preferably obtained from the person to be grafted and is best taken from the outer aspect of the thigh. Local anesthesia is induced by blocking of the external cutaneous or anterior crural nerves or both by an injection of a two per cent. solution or novocaine containing a small amount of epinephrin. The grafts are cut by lifting a small conical section of the skin with a pair of sharp pointed towel forceps and cutting horizontally through the base of the cone with a sharp scalpel. The resulting grafts are from 6 to 12 millimetres in diameter and contain the entire thickness of the true skin at their centres, except the areolar and fatty tissue. The graft is then placed upon the wound and flattened out with some blunt instrument. The grafts are so placed as to lie within a few millimetres of each other and thus to cover the entire wound. In very large wounds it is often best to make the first grafting one merely about the circumference. Over the grafted wound there is placed a sterile piece of perforated, oiled fabric to cover the whole wound and extend beyond its margins for some distance. Over this sterile dressings are placed and kept moist with sterile Locke's solution. The dressings, except the perforated material, should be changed daily and the wound washed with the Locke's solution. Over the dressings is placed some impervious material to hold the moisture and in some cases a modified Carrel tube may be inserted between the dressings to permit of their frequent moistening. The perforated dressing material should not be removed until ten days or more after the grafting, when epithelial growth may be stimulated by change from Locke's to a solution of brilliant green of 0.1 per cent. strength. The site from which the grafts were taken is treated by immediate suture of each small wound and the whole area covered with gauze and collodion.

Nature and Treatment of Bronchial Asthma.—Robert H. Babcock (*Medical Herald*, July, 1917) cites several cases to illustrate his conception of bronchial asthma as being due to sensitization of the individual to some protein not natural to his economy. Thus one of the cases seemed to be due to gallbladder infection and another to infection of the tonsil and teeth. The treatment should be the detection and complete eradication of the underlying source of protein absorption, whether from an infection in some portion of the body or from some form of food. For this a most painstaking examination is necessary, including the entire nasal, pharyngeal, and buccal regions with their communicating sinuses. If the asthma still persists when all sources of infection have been removed the sputum should be cultured and a vaccine prepared from it for administration to produce immunity. The successful use of autogenous vaccines often requires repeated cultures in order to secure the true causative organism and is, therefore, often long and wearisome, but relief can be secured in a fair proportion of the cases.

Indications for Primary and Secondary Suture of Wounds.—Gross and Tissier (*Presse médicale*, July 19, 1917) assert that before closing a wound one should have knowledge not only of the quantity of microorganisms in it, as advised by Carrel, but more especially the kinds of bacteria present. When anaerobic organisms and streptococci are both present, severe infection of the wound, in particular a gangrenous or gaseous infection, can be predicted, and the wound should be left freely open. In all other cases, closure of the wound will probably be soon possible or even mandatory. Primary suture is indicated where the surgeon has been able to excise completely contused and infected tissues and to extract the missile; secondary suture, where these conditions have not been fulfilled or primary suture has been impracticable because of an excessive number of wounded to be taken care of or for any other reason preventing operation within twenty-four hours after reception of the injury. A sutured wound should, at first, be subjected to repeated bacteriological examination. If only the common saprophytes are found, the sutures need not be touched again. If staphylococci are found, the wound should be watched for putrid fermentation; such a process appears only slowly, is easily eradicated, and does not occur where the initial tissue excisions have been properly performed. If streptococci are found, the sutures must be cut at once and an attempt made to check putrid fermentation by freely opening up the wound and practising copious irrigations.

Use of Diuretics in Nephritis.—Henry A. Christian (*Canadian Practitioner and Review,* July, 1917) discusses the use of diuretics in the several forms of nephritis from the results of both clinical and experimental observations, and concludes that in uncomplicated nephritis, irrespective of its form, diuretics are either not indicated, because there is no need for increasing the urinary flow, or where there is such need for the purposes of detoxification or the removal or edema, they are useless because they do not accomplish the desired result. They should therefore not be used in nephritis as such. The edema is best removed by diminished fluid intake, salt free diet, diaphoresis, and purging, and the toxins by the same methods plus bleeding. In cases with relatively slight organic renal disease, but having cardiac insufficiency, diuretics prove extremely useful for the removal of edema. Here they prove most efficacious when given intermittently. This is due to their tendency to cause nausea and to the fact that following a marked stimulation the kidneys are prone to develop temporary depression of function. Their efficiency can be further enhanced by giving them after a short period of digitalis therapy. Probably the most active and satisfactory of the diuretics is theocin, which should be given in doses of 0.2 gram at intervals of about three hours for three doses. The only disadvantage of this drug is that it is very likely to cause nausea which seems to be partly central in origin, for it is not avoided by giving the drug intravenously.

A Germicidal Mouth Wash.—F. M. Wells (*British Medical Journal,* July 7, 1917) examined a large number of the substances used as antiseptics, washes, lozenges, pastilles, etc., with reference to their antiseptic, irritant, and other properties, including their destructive power for phagocytes. The bile salts have a solvent power toward pneumococci, leucocytes, amebæ and spirochetes. Sodium desoxycholate is ten times more powerful that sodium cholate or taurocholate. If the desoxycholate be combined with quinine the bactericidal effect of the mixture is greater than the sum of the effects of each of the ingredients. The following formulas were found to give very satisfactory disinfection of the mouth and to be devoid of all evidences of irritant action:

A solution containing:

Quinine hydrochloride,	5.0 gm.;
Sodium desoxycholate,	40.0 gm.;
Glycerin,	250.0 mils;
Water to make,	1000.0 mils.

Tablets containing:

Sodium desoxycholate,	0.065 gm.;
Quinine ethylcarbamate,	0.008 gm.;
Oil of peppermint,	0.002 mils;
Ammoniated glycyrrhizin,	0.130 gm.

To this flavine may be added in the proportion of 1:1000.

A solution containing:

Sodium desoxycholate,	2.0 gm.;
Quinine hydrochloride,	0.25 gm.;
Flavine (1:2000) to make,	100.0 mils.

The last of these combinations proved the most efficient, though the tablet was very promising for the treatment of inflamed throats, as the slow solution of it in the mouth prolongs the action of the antiseptics over a considerable time.

Treatment of Abortion. — Hiram Vineberg (*Medical Record,* August 4, 1917) advises waiting in cases of spontaneous abortion without fever to see what nature will do. If bleeding is profuse the cervix can be tamponed with gauze and the uterus allowed to expel its contents, or a dilatation can be done and the tissues removed with the placental forceps, followed by a gentle curetting to make sure that all has been removed. In infected abortions with fever we must first decide whether the uterus is empty or not, and when in doubt we should refrain from curetting as this procedure in such cases causes the most severe of postabortive septic infection. If there is undoubted retention of septic material it is best carefully removed and the uterus irrigated with tincture of iodine solution. Care should be taken to shave and scrub up the vulva before curettage. In inevitable abortion after the tenth week Vineberg resorts to anterior colpotomy or vaginal Cæsarean section, which is the procedure of choice in all cases of hydatid mole at any stage of pregnancy.

Resection of Lobes of the Lung.—Samuel Robinson (*Journal A. M. A.,* August 4, 1917) says that this operation is one of great difficulty and danger and that its indications are few but specific. They are the presence of chronic, nontuberculous abscess or bronchiectasis in persons having one absolutely sound lung. There must also be absence of all active tuberculosis, a sound heart, and no systemic or organic disease. The patient should also be under thirty-five years of age or not over forty-five years old at the oldest. In addition all nonoperative methods must have failed or one must be certain that they will fail. The dangers of the operation must be explained to the patient, as well as the fact that the chances for surgical cure are only about sixty to seventy per cent. The operation itself gives the best results with the least danger to life if done in two or three stages in order to permit the normal lung and the vascular mechanism to accommodate themselves to the altered mechanical conditions. The operation is described.

Acriflavine Paste as a Wound Dressing.—C. J. Bond (*British Medical Journal,* July 7, 1917) strongly recommends the use of a paste made by neutralizing one part of sodium carbonate with one and three quarter parts of stearic acid, with the addition of 0.1 per cent. of acriflavine. The paste is strongly antiseptic and bactericidal and should be applied directly to the infected surface after it has been thoroughly cleansed by approved surgical methods, including the removal of dead or severely contused tissues, foreign bodies, and the opening of all pockets. The edges of the wound should then be closed by suture, or at least partly closed to reduce the area left for granulation. The paste has the advantage over other preparations of not destroying the phagocytic activity of the leucocytes, although it does destroy a large proportion of the infecting organisms. Acriflavine can also be used in watery or alcoholic solution in strengths of 1:1000 to 1:2000 for cleansing the wounds before the application of the paste if they are badly infected. The paste can be used in cavities in bone as well as in the soft tissues.

Tuberculosis of the Lymph Nodes.—Harbitz (*Journal of Infectious Diseases,* August, 1917) bases his article upon the findings in 2,906 autopsies done in the Christiania. He points out the marked affinity that the tubercle bacillus has for the lymph nodes, particularly in childhood. The bacilli lodge in these tissues, proliferate greatly, and although frequently extending, nevertheless may remain latent, though virulent, for many years. Eventually they may escape and affect other structures usually through the lymphatic channels but probably not infrequently through the blood channels. In many of the cases of tuberculosis of the lymph nodes, death ultimately occurs from pulmonary involvement. The important question that comes up is whether the pulmonary tuberculosis is secondary to the infection of the lymph nodes or to a new and direct involvement of the lung. Harbitz is of the opinion that most of the cases of pulmonary tuberculosis are derived from the diseased lymph nodes by direct perforation into the lungs, as commonly seen in children, or by a hematogenic dissemination. That the tubercle bacilli in lymph nodes may remain virulent for many years has been demonstrated repeatedly. The author concludes that in about one fifth of all the cases of pulmonary tuberculosis in adults one can demonstrate anatomical changes which originated early, probably most often in childhood and which may have later been the source of infection, eventually of the process in the lungs.

Antiseptic Properties of Acriflavine and Other Dyes.—C. H. Browning, R. Gulbransen, and L. H. D. Thornton (*British Medical Journal,* July 21, 1917) say that the properties which it is desirable for an antiseptic to possess depend on the uses to which it is to be put. Thus for the disinfection of fluids, excreta, utensils, etc., a rapidly acting substance is desirable and its irritant properties are not necessarily disadvantages. For use in infected wounds or in prevention of infection, rapidity of action is not essential and the absence of irritant or destructive action on the tissues or leucocytes is most important. All of the acridine group of compounds are relatively free from such irritant or destructive properties and acriflavine and proflavine especially are devoid of such actions. These two substances, along with brilliant green, are relatively slow in developing their antiseptic actions. The two flavines, unlike all other antiseptics so far tested, are not only not reduced in antiseptic activity by the presence of serum, but are actually decidedly enhanced. When used in wounds both acriflavine and proflavine at first inhibit the growth of bacteria and then later destroy the organisms and do not to any appreciable extent interfere with phagocytosis or act on the wound tissues. For these reasons, combined with their marked degree of antiseptic activity, they are specially suited for use in the disinfection of wounds. For this purpose they should be applied in such way as to permit of their action being continued over periods of many hours; hence should be used on compresses or to saturate wound packing, rather than by one of the methods designed to renew the antiseptic frequently. This is especially true inasmuch as their activity is enhanced by the presence of serum. Brilliant green, on the other hand, is reduced in activity by serum and must be renewed frequently. It is therefore best applied by the approved method of Carrel in 1:2000 solution in water. All three of these antiseptics are little known and their value is not yet appreciated, but their advantages over the substances in common use are so great that their use should be adopted, bearing in mind the most suitable methods of application. It must be remembered, that no antiseptic, however potent, is capable of producing satisfactory therapeutic antisepsis in the presence of heavily infected dead or badly damaged tissues, and for successful results each must be brought into immediate contact with the tissues to be sterilized. Therefore in every case preliminary surgical cleansing of the wound, including the complete removal of foreign bodies and dead or badly contused tissues, is an essential phase in the treatment.

Relation of Apical Tuberculosis of Adults to the Focal Tuberculosis of Children.—Opie (*Journal of Experimental Medicine,* August, 1917) carefully reviews the autopsy findings in cases of tuberculosis in ninety-three patients under the age of eighteen and in fifty over eighteen years. He holds that in most instances the focal tuberculous lesions of the lungs have originated during childhood. The apical lesions make their appearance in later childhood and occur with increasing frequency from adolescence to old age. After the second year of life focal tuberculous lesions occurring in areas other than the apices of the lungs tend to heal and after the tenth year such lesions are almost invariably encapsulated and latent or healed. After the tenth year fatal tuberculosis is with few exceptions apical in origin. The conclusion drawn is that the apical infection is not secondary to the older focal lesions of childhood but is primary in origin, particularly since there is little evidence that the apical involvement may result from extension along the lymphatics.

Transverse Colostomy.—P. Lockhart-Mummery (*Practitioner,* August, 1917) gives the following indications for colostomy: 1, as a preliminary to excision of the rectum for cancer; 2, to prolong life and prevent obstruction in cases of inoperable cancer of the lower bowel; 3, in all cases of pericolitis of the lower part of the pelvic colon where resection or short circuiting is impossible; 4, in some cases of intractable ulceration of the rectum; 5, in cases of intractable fibrous stricture of the rectum; 6, as a temporary measure in severe wounds of the rectum. He is of the opinion that while transverse offers certain advantages over sigmoid colostomy, it should not be a routine operation, but that each case should be decided on its merits. It appears to afford better control over the stools than sigmoid colostomy, and prolapse is much less common after the transverse than after the sigmoid operation. In performing transverse colostomy the colon should not be opened at the most dependent part, but as near the splenic flexure as is possible without causing tension. When the transverse colon is short, sigmoid colostomy is to be preferred. The colon should subsequently be cut completely in half to arrest the peristaltic wave at the opening.

Treatment of Blackwater Fever.—Thomas E. Wright (*New Orleans Medical and Surgical Journal,* September, 1917) says that very good results can be obtained by the following method: Murphy drip of glucose and bicarbonate of soda solution, repeated every three to five hours. Bicarbonate of soda in rather strong solution is administered by mouth; it becomes the patient's drinking water, acids are withheld, and sweets encouraged. Small enemas of soda and glucose solution with efforts to have them retained may be used in place of the Murphy drip in patients not in a hospital. In very severe and prostrated cases glucose and soda, two per cent. of each, may be administered intravenously; the results will be more prompt and entirely satisfactory.

Plan for Prevention of Shell Shock.—Morton Prince (*Journal A. M. A.,* September 1, 1917) regards this condition as purely psychical and due to anticipatory fear. The plan of prevention aims at the proper education of the men exposed in order to remove the mental element of anticipation of harm. It should begin with clinics for the proper instruction of the medical personnel of the regiments and these men should then hold classes for the enlisted force to teach them the nature of the condition and to prepare their minds so that the fear of harm from shell explosions shall be reduced to a minimum. It is believed that this educational plan will yield good results in a large proportion of the troops, but its author also states his conviction that the plan will not be adopted because of the general ignorance of the medical profession on the importance of the psychical element in disease.

Conservative Treatment of Penetrating Wounds of the Eyeball.—Albert E. Bulson, Jr. (*Journal of the Indiana State Medical Association,* August 15, 1917) says that an effort should be made to save every recently injured eyeball, unless so much of the intraocular contents have been lost as to render the case hopeless. Such wounds are of two classes: those in which a foreign body is lodged within the eye, and those in which it is not. An attempt must be made as soon as possible to remove a lodged foreign body, and if the attempt fails the eye should be enucleated. The prognosis of a simple penetrating wound depends greatly on the site of the injury, the damage done, and the presence or absence of infection. Wounds behind the ciliary region are comparatively inoffensive if small and unaccompanied by infection. When the ciliary body is wounded the danger of sympathetic inflammation is such that an attempt to save the eye should be governed by an experienced ophthalmic surgeon. In other cases it is well to try to save the eye by conservative treatment. The writer recommends for this purpose an application of tincture of iodine to the edges of all wounds after they have been cleansed with sterile normal salt solution; the closure of gaping wounds by sutures and covering with conjunctival flaps; the use of bichloride salve in the cul de sac; the use of iced compresses and the internal administration of calomel followed by large doses of sodium salicylate as a preventive of inflammation; and the use of subconjunctival injections of cyanide of mercury to abort infection

Bacteriology of Poliomyelitis.—Greely (*Journal of Laboratory and Clinical Medicine,* July, 1917), by the use of special culture media obtained well marked growths of organisms recovered from the cord and brain of eight fatal cases of poliomyelitis. These showed under varying conditions marked variations in shape from the fully formed sporulating, bipolar bacillus to the coccoid form. From experiments made upon cats, dogs, rabbits, and guineapigs, he believes that this pleomorphic bacillus belongs to the distemper group. It forms spores, is able to pass through filters, grows well in milk, and resists pasteurization. For these reasons the author believes it probable that the great mass of cases which comprise epidemics are milk borne, although he admits that contact cases of poliomyelitis may occur.

Gunshot Wounds of the Chest.—Edgar L. Gilcreest (*Southern Medical Journal,* June, 1917) says that the first essential of treatment is rest as quickly and completely as possible; the patient should be put to bed in position to favor expectoration. Morphine should be administered at once and afterward with a free hand. The affected side should be immobilized, preferably with adhesive straps. Great care should be exercised in the transportation of these patients. The general treatment of hemothorax should be expectant; puncture should be done only when the volume of the effusion threatens serious complications or when it shows signs of becoming purulent. For the first week it is dangerous to puncture for fear of causing renewed hemorrhage, but after this time puncture may be done. If there is marked dyspnea it should be done without fear, for the fluid at this time is generally found to be more serous than sanguineous. Great caution should be observed in the amount removed. Closed pneumothorax should be left alone, or the air removed by suction. Septic hemothorax indicates immediate energetic measures.

Infant Feeding.—Mark S. Reuben (*Medical Record,* August 4, 1917) states that the first thing to be ascertained is that the case is a simple one of feeding and there is no causative or incidental constitutional disease. Careful history taking is of prime importance; this applies both to the mother and the child. Maternal nursing should be encouraged in every case in which the milk agrees with the infant, and in cases where the breast milk is insufficient we should make use of mixed feeding rather than wean the child entirely. Important factors are the child's appetite; the presence or absence of vomiting and its relation to feeding; the character of the stools and the number in twenty-four hours; the temperature; the hours of sleep; crying and its relation to feeding time; infections and dermatitis; and the general physical development of the child. The formula should not be only correct as to proportions but great attention should be paid to the quantity in twenty-four hours; the quantity at each feeding; the interval between feedings; the temperature of the food; the rate at which the child gets the nourishment from the bottle; and the source and quality of the milk. General hygienic measures as to fresh air, temperature of the room, bathing, clothing, and care are of great importance.

Miscellany from Home and Foreign Journals

Ocular Signs of Death.—A. Terson (*Bulletin de l'Académie de médecine,* July 31, 1917) calls attention to the unreliability of various signs and reactions held by some to be indicative of death, viz.: cupuliform depression of the eyeball, plications and relative opacity of the cornea, hypotonicity of the globe, gray scleroconjunctival discoloration, altered expression of the eye, absence of reaction to pain and light, closure or wide opening of the palpebral fissure, the findings in diaphanoscopy, and lack of response of the pupil to mydriatics, myotics, and electricity. The pupil remains mobile under the influence of various reagents for some time after death. Injections of fluorescin are not as reliable in man as in animals. Loss of color of the fundus oculi and arrest of the internal ocular circulation are useful signs, but may be unavailable if changes have taken place in the cornea or the observer has no experience in the required procedure of examination. Marked reduction in the intraocular tension assumes real significance only three or four hours after death. Direct and readily induced ophthalmic reactions as signs of death are, however, not lacking. Application of the actual cautery, scraping of the conjunctiva, contact with copper sulphate, and subconjunctival saline injections and instillations induce no irritation two hours after death in the still warm cadaver. Attention is called to the use of dionin in powder form or thirty-three per cent. solution in glycerin, the well known redness and chemosis appearing where life is not yet extinct.

Standardization of Serums and Vaccines.—G. W. McCoy, (*Journal A. M. A.,* August 4, 1917) discusses this important subject at some length and points out that only a very small number of these preparations are capable of standardization in the light of our present knowledge. These are diphtheria and tetanus antitoxins and antityphoid vaccine, for the last of which only a tentative standard has been possible. The difficulties in the way of establishing standards for the other serums and vaccines are many. The three chief are: 1. None of the factors to be taken into consideration are constant. 2. Animals must be used for comparing the different samples and these vary in their susceptibilities. 3. The lack of suitable laboratory animals which are susceptible to many of the agents to be tested. In addition it would be a mistake to try to fix a standard for such preparations as are yet in the experimental stage, for if a standard were possible its statement would seem to be an endorsement of the value of the preparation. Finally, the establishment of a fixed standard for many preparations would be a potent factor in deterring further efforts to improve the quality of the preparations. In the case of most bacterial vaccines potency standardization is both impracticable and undesirable for the evidence is meager as to their value and practically none of them can be satisfactorily tested on animals. The counting of their contained organisms is notoriously inaccurate, since no two workers will obtain even approximately similar results with a given sample. Purely serological tests can often be used, but there is no evidence that they are in any way indicative of the potency of the preparation to accomplish that which is desired of it. Last, the rate of the deterioration of most serums and vaccines is unknown and the fixation of a standard, if possible, would in no way insure their potency at the time when they reached the physician.

Systolic Pressure in the Brachial and Tibial Arteries in Aortic Insufficiency.—J. Heitz (*Paris médical,* August 4, 1917) reports a careful study of the peculiar condition noticed in 1908 by Hill and Flack in aortic insufficiency, viz., a systolic blood pressure higher in the tibial artery than in the brachial. Of fifty-one cases of aortic insufficiency, of varying origin, under observation, all but seven showed this peculiarity, the tibial systolic pressure averaging forty millimetres of mercury higher than the brachial. The diastolic pressure, however, did not exhibit this difference. The peculiar relationship of tibial to brachial systolic pressure is sometimes temporarily in abeyance in the presence of fever or heart weakness, or may be completely absent where there is obliterating arteritis in the lower limbs. The sign is present in abdominal aortitis and in some cases of arterial hypertension, generally associated with aortic lesions. It is therefore not of absolute diagnostic value.

Iontophoresis of Heavy Metals.—H. Koller (*Correspondenz-Blatt für Schweizer Aerzte,* April 21 and 28, 1917) says that when a salt is dissolved in water the solution consists not only of an attenuated distribution of the salt molecules in the water, but also of a splitting of a certain part of the molecules, according to the degree of concentration, into their two components, a basic and an acid part. These parts may consist of one or of several atoms and are electrically opposite. It is assumed that the chemical valence is saturated through union with an electric ether particle, an electron. The electric particles are called ions, and have peculiar properties. The basic parts seek the negative pole in a galvanic current, and are consequently called kations, while the acid parts seek the positive and are called anions. Ions are not formed on, but are discharged from, the electrodes in a nascent state with the chemical affinity free and particularly strong. He has been conducting experiments with the ions of various heavy metals with a view to discovering whether they may be of therapeutic value, and his findings seem to show that they can penetrate into the body, where they become enveloped in a colloid. He warns against the use of zinc and copper salts over large surfaces, as in the vagina, but thinks silver is well suited for this method of treatment. The chlorides which silver form within the body are insoluble and therefore not toxic. Metals which form soluble chlorides become redissolved and dissociated into ions whereby a new discharge is caused with the continually new formation of colloids, the result of which is a breaking down of albumin and a toxic albuminuria.

Unusual Idiosyncrasy to Quinine.—R. W. Stearns (*Northwest Medicine,* July, 1917) reports the case of a woman thirty-three years old whose history is unimportant with the exception that she has one sister who is somewhat idiosyncratic toward quinine. The other members of her family are not. The patient's idiosyncrasy was first noticed when she was five years old, but the worst attack of poisoning occurred several years ago after a total of 0.25 gram of quinine sulphate, given in two doses in a period of two hours. Within an hour after the second dose she became delirious and remained so for four hours. On recovery from her delirium she was totally deaf and blind for forty-eight hours and had a severe rash followed by desquamation of the skin after the sixth day. This desquamation lasted for three weeks and included the whole body and half of her hair. She was confined to her bed for a total of three weeks. Recently she had another similar, but milder attack brought on by taking a tonic containing less than thirty mgm. of quinine sulphate. The attack began four hours later with chilliness, nausea, vomiting, and itching of the palms and soles. Fever and a rash developed in a few hours more and the nausea and vomiting continued for a day. Moderate desquamation and slight loss of hair followed. There was no marked disturbance of sight or hearing.

Diagnosis and Prognosis in Fractures of the Base of the Skull.—F. E. Bunts (*Archives of Diagnosis,* April, 1917) believes that, next to hemorrhages and the discharge of cerebrospinal fluid from the ears, nose, or pharynx, the most important sign of basal fracture is evidence of nerve involvement, especially of the facial nerve, but also of the olfactory and oculomotor nerves. Where peripheral injuries and in some cases cortical brain lesions are ruled out, such nerve injuries become strong presumptive evidence of basal fracture. As regards x ray diagnosis, Bunts warns that one must be prepared for many failures, not only because of the normal bony irregularities at the base or the fact that the fracture is often a mere fissure, but also because of the difficulties in taking the negative, which are often increased by restlessness, delirium, or heavy breathing. Fractures in the posterior fossa show with considerable constancy; next comes the anterior fossa, while of fractures through the middle of the base probably not more than fifty per cent. will show. As regards prognosis, simple basal fractures without severe brain laceration may be practically all expected to recover; the greatest danger is septic meningitis, and operation cannot prevent, but rather favors, this. In bad cases, with bursting fracture and much laceration, practically all the patients die; it is in these cases that removal of spicules, crushed brain, etc., is oftenest resorted to, but usually without avail. Distinct compression symptoms coming on immediately, without obvious evidence of extensive brain laceration, probably deserve a decompression operation; likewise late symptoms of compression with beginning choked disc, which may be due either to hemorrhage or edema. Statistics are, however, as yet insufficient to show that decompression hastens recovery after basal fracture.

Hematuria.—H. W. E. Walther (*New Orleans Medical and Surgical Journal,* September, 1917) found in a study of seventy-four cases of hematuria a marked prevalence of tumor of the genitourinary tract, and that seventy-two per cent. of these tumors were cancerous. He urges that the frequent occurrence of symptomless hematuria, associated with urogenital malignancy, should impress upon all the importance of an early cystoscopic examination, while the seriousness of hematuria as a symptom, with the necessity of determining its cause, should be impressed upon each patient suffering from urinary hemorrhage, as in a high percentage of cases it is the first and only symptom of malignancy.

Pyopneumothorax and Asphyxiating Gases.—Lyon-Caen and Kuss (*Bulletin de l'Académie de médecine,* July 31, 1917) point out that both pneumothorax and pyopneumothorax may be caused by the asphyxiating gases recently used as a military weapon. In a soldier subjected to a gas attack on January 31, 1917, violent paroxysms of cough and marked dyspnea appeared on the next day, followed by fever dyspnea and purulent expectoration for several weeks. Examination revealed a pyopneumothorax on the right side, and two litres of pus were removed at four successive punctures. The pneumothorax had become established two days after the exposure to gas, and the purulent expectoration only three days later. This patient had a history of tuberculosis and pleurisy, but had not been in any way troubled since the beginning of the war. The pneumothorax is believed to have resulted both from the effects of coughing on the already diseased pleura and from the action of the toxic gas on the pulmonary tissues. Such complications should be watched for in gassed subjects with a history of pleural disturbance.

Tumors of the Carotid Body.—F. B. Lund (*Journal A. M. A.,* August 4, 1917) reviews the literature of these growths and points out their relative rarity and prolonged nonmalignancy. The clinical signs of these tumors include the history of their presence and slow growth for many years without the production of any symptoms. The tumor is found at the level of the top of the thyroid cartilage, is moveable laterally but not vertically, and gives the sensation of being pulsating, but is not expansile. In its growth it extends up and down and may ultimately involve the internal jugular and neighboring veins, the recurrent laryngeal nerve, and even the vagus and other nerves of the neck. If the diagnosis is made at an early stage of its growth it may be possible to dissect the tumor off from the carotid artery and remove it without causing serious damage to its nearby structures. Later it usually is found to be so intimately connected with the carotid that this has to be ligated at times along with the vagus or other nerves. This renders the operation one of considerable severity and relatively high mortality, in contrast to the low mortality of the operation when done while the tumor is small. Removal of the tumor at an early stage is not usually followed by recurrence as the growth is benign, being apparently a hypertrophy of the normal organ.

Industrial Benzol Poisoning in Massachusetts.—Thomas F. Harrington (*Boston Medical and Surgical Journal,* August 16, 1917) reports a number of cases of acute and chronic poisoning with benzol, or benzene, a derivative of coal tar distillation which is much more poisonous than benzine, a petroleum derivative with which it is frequently confounded in literature. It contains many poisonous substances, such as hydrogen sulphide, toluene, and bisulphide of carbon. Poisoning by it depends upon individual susceptibility and natural or acquired immunity, as well as upon the quantity and proportion of impurities in the fumes inhaled. It has a specific affinity for the central nervous system and a general action on the protoplasm of the organic cell, and it reduces the number of leucocytes in the blood.

Fibroid Disease of the Bursæ.—Manfred Morris (*British Medical Journal,* June 30, 1917) reports the case of a man, fifty three years old, who was unable to sit down on account of two painful tumors of his buttocks. On examination it was found that he had a solid mass, about the size of a fetal head, over the tuberosity of each ischium and similar smaller solid masses over both tibial tubercles, both olecranon processes, the third piece of the sacrum, and the ulnar aspect at the base of the left thumb. Except for hemorrhoids the physical examination was negative. Both ischial masses were removed by morcellement, the one over the sacrum was shelled out. The ischial masses were dense fibromas, firmly attached to the periosteum, and apparently these and all the others, except the one on the thumb, had arisen from the bursæ normally present. The etiology of the condition could not be determined and the growths were regarded as primary nonmalignant fibromas.

Study of the Urine of Picric Acid Workers.—F. O. West (*Boston Medical and Surgical Journal,* August 9, 1917) undertook to determine the truth of the popular belief that the kidneys are seriously affected in persons constantly exposed to picric acid. If this belief is correct his findings demonstrate what results may be obtained by a large manufacturing concern in preventing occupational disease. He describes the working conditions of the men, the conditions under which the tests were made, and the tests themselves. Of eighty-six specimens of urine examined for albumin only, three gave the slightest possible trace at the end of employment, but not before, and two showed albumin before they went to work in the picric acid department. One of the latter had picric acid also in his urine, and picric acid was present in the urine of two others who had no albumin. In regard to the presence of picric acid there was a chance of error from the presence of picric acid on the hands of the men, as it was noted in many instances that it was on the outside of the glasses after the men had set them down, and there was a possibility of its being carried to the genitals and thus contaminating the urine as it was voided. In no case was the amount stronger than a solution of 1:80,000. Medical records of seventeen men who had had attacks of fume poisoning ranging from one to nine, showed no albumin present at the end of their terms of service.

Flies and Bacillary Enteritis.—William Nicoll (*British Medical Journal,* June 30, 1917) points out that the house fly is not known to be the intermediate host of any organism pathogenic for man or the exclusive specific carrier of any human disease. Nevertheless, a large number of very carefully conducted experiments have shown that the fly is capable of spreading certain pathogenic organisms, especially those producing the various types of bacillary enteritis. These organisms are also not infrequently found in the intestines of flies under natural conditions, but they do not in all probability remain in the fly for more than one or two days at the longest. Practically any other human disease may be spread by flies if it is productive of discharges which carry the infectious organisms. The two most important organisms which may be carried, however, are the Bacillus typhosus and Bacillus paratyphosus, both of which in virulent form may be found in the fly in his natural state.

Significance of Heredity and Infection in Diabetes Mellitus.—John R. Williams (*American Journal of the Medical Sciences,* September, 1917) admits that his data are insufficient for the deduction of positive conclusions, but they are very suggestive and lead him to believe that: 1. The liability to arteriosclerosis and diabetes is transmissible from parent to offspring. 2. Infection, both acute and chronic, may precipitate a metabolic collapse, or sufficiently lower the function of food metabolism in an individual with either general or local arteriosclerosis as to produce the clinical phenomena which we call diabetes. 3. Individuals with a family history of arteriosclerosis, diabetes, and obesity should be safeguarded against all latent and concealed or focal infections. Special attention should be directed to the head, so that dead teeth, apical abscesses, incompletely filled root canals, inflamed, gums, infected and diseased tonsils, and sinus and middle ear disease should not exist. 4. Such individuals should be safeguarded in every way against those conditions which induce or hasten the arteriosclerotic process.

Classification of Chronic High Blood Pressure.—Louis M. Warfield (*American Journal of the Medical Sciences,* September, 1917) maintains that in a blood pressure reading the whole record should be taken, systolic, diastolic, pulse pressure, and pulse rate. The pressure picture is the term suggested for the figures representing the component parts of the blood pressure reading. The diastolic and pulse pressure give more information than the systolic pressure. There are three groups of high pressure cases: 1, chronic interstitial nephritis; 2, hereditary or cerebral type; 3, arteriosclerotic or cardiac type. Causes of death are usually anemia in the first, cerebral hemorrhage in the second, and cardiac decompensation in the third. The term cardiorenal disease should be reserved for the cases of the first group which suffer from cardiac decompensation; the term hypertensive cardiovascular disease for cases of the second group, and myocardial insufficiency covers most of the cases in the third group. Prognosis is thus given much more intelligently.

Proceedings of National and Local Societies

THE NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, Held May 2, 1917.

The President, Dr. Walter B. James, in the Chair.

The Challenge Which the Chronic Patient Represents.—Dr. Joel E. Goldthwait, of the Harvard Medical School, said that chronic disease, which today was the chief reproach of the medical profession, was more often than was realized quite as easily controllable as acute disease if the proper methods of study were used. The speaker's life was practically spent with the chronic patient and if he did not believe there were some better way out for this class than was evidenced by the results as they came to him, he would have given up medicine long ago. It looked as if the average practitioner had got in the habit, formed years ago before the advent of the methods of study in use today, of calling conditions diseases because of certain groups of symptoms, but if these groups of symptoms were recognized as such and one went back of them and discovered what caused them, chronic medicine would become more simple. What was behind the group of symptoms called Bright's disease? For a long time persons with chronic inflammation of the joints were treated locally; they got worse because the joint manifestation was only a symptom of systemic disturbance, and when the cause of the condition in the joints was found, the joints practically ceased to receive treatment because attention had been drawn to the primary cause. There was much visceral maladjustment; it was surprising to find to what an extent a patient, who had been ill for years, could be relieved if the same principle of study was followed that had been applied to joint disease. Find the cause, for instance, of the gallstones, the blocking up of the colon, and the thousand and one different symptoms.

In trying to find what was really wrong with many of these patients it was necessary to make individual study as well as group study, because viewing many patients in bed side by side, with somewhat similar manifestations, as far as the peripheries were concerned, in people with different structures, one began to classify them and that led after a time to going back to anatomical rules and to study different from before. In the schools medical men learned anatomy early because it was said they must know the structure of man if they were to understand the inner physiology and interpret the symptoms that came with disease. But certainly the kind of cases seen, as far as chronic medicine was concerned, seem to have very little resemblance to textbook anatomy to which so much time and study had been devoted. All gasoline motors were gas engines, but a Ford engine was different from a Pierce-Arrow and it would not be reasonable to expect a man expert in handling the one to be expert in handling the other. All people were human beings but were made on absolutely different lines, and this consideration was what had helped most in the understanding of symptoms associated with what was called chronic medicine.

Among horses there were two or three general classes according to anatomical structure primarily: the race horse, the slender type with long lines and tapering legs and sensitively organized; the intermediate type, such as the carriage horse, and the big Percheron. The human family could analogously be divided. The slighter type of creature, similar to the race horse, was the individual with a light skeleton, ten to fifteen pounds lighter than was considered normal and with bones different in shape, especially the vertebræ. This extremely flexible type often excelled in athletic tests. As to the viscera, the stomach would be tuber shaped, never pear shaped, and the intestines ten to fifteen feet less than normal in length. This was one reason for the difficulty in fattening them up as they did not assimilate enough of their food. The liver was small and mobile and low down, as was the stomach. There was a limited amount of retroperitoneal fat; the mobile kidneys could easily be pressed upon or irritated by the organs above; and the adrenal bodies, which should be protected by the retroperitoneal fat, lay exposed. It was no wonder that there was frequent fluctuations in blood pressure. The ganglia in back of the abdomen, which should be protected by fat pads, gave rise to vasomotor disturbances.

The "normal" type of anatomy was much less common than it seemed to be and was really rarely seen. The types that had the chronic diseases were the two extremes, the racehorse type on one side and the Percheron on the other. On the other side of the normal was the stocky, heavily built creature. He had a thick body with a short spine, frequently with only four lumbar vertebræ; the skeleton was different, weighing from ten to fifteen pounds more than normal. The neck was short. This individual could not droop; he was not of the flexible type; the joints had less mobility and the amount of motion was restricted. He had coarse fibred muscles, a different shaped chest with greater lung capacity and a heavier heart; abdominal viscera were heavy with a large liver, pear shaped stomach, and larger than normal intestines from twenty-five to thirty-nine feet long. The reason that such individuals got fat was because every bit of food value was extracted. They should receive food that hurried through, while persons of the slight type should have food slow to pass along the alimentary tract. These persons showed hammock shaped colons in radiographs. So much for the general structure.

It was obvious that not only was there a difference in structure, but the physiology of the chronic cases made certain types of diseases peculiar to them. The slighter type had hyperglandular secretions, such as hyperthyroidism. The hypoglandular conditions were found among the stocky types who were liable to become fat and soft and have what was called a lack of thyroid secretion with blood pressure averaging twenty points above normal. The slighter type was more apt to suffer from bacterial invasion, autoinfections, or any infections.

Some of these cases were found in the other types, but specialists working in this field had found that most of the tuberculosis found in the stocky type was of the glandular type, probably bovine, and usually dating from childhood. The slender ones had the family type of tuberculosis. The slender type was sensitively organized nervously, neurasthenics being found here, and they contributed largely to the hospitals for the insane. The heavy type carried chiefly the disturbances on the chemical side, arteriosclerosis, gouty rheumatism, hypertrophic arthritis, osteitis deformans, gallstones, and many other conditions in which calculi form. On the other hand similar symptoms in the slender type indicated cholecystitis, a large quantity of bile but very few stones.

The next prominent point in the study of these types was the great variations in the way the body was used. If anything like normal physiology was to be expected, the body must be so used that all the organs could work. Unless guided properly through childhood, the slender type developed a stooping, drooping, narrow chested figure. The lungs were used imperfectly and the breathing was incorrect. When the individual stood improperly the ribs and the diaphragm were lowered, preventing correct contraction and expansion. There was no way for the venous blood to get out of the abdominal organs since there was nothing to push it up to the heart except the constant rise and fall of the diaphragm. If the individual stood so that the diaphragm did not move, all that important part of the physiology was lost. The result was in some cases indigestion on eating the simplest kind of food. The cure was standing upright or lying flat on the back and breathing correctly. In other words, the position should be "mechanically reasonable."

In correct position, all of the abdominal organs—the liver, kidneys, pancreas, spleen, stomach, and the adrenals—except the lower part of the intestines, the colon and the sigmoid should be above the umbilicus. The slender type had the more mobile organs, and if the figure slumped they got further out of place. The displacement, however, did not altogether determine the disturbances. The most important thing, in the expectation of securing reasonably good physiology in the abdominal organs, was the way the diaphragm worked. In many people the diaphragm was so pulled down that instead of having a dome shape, it was concave from above downward and, instead of being at the level of the ninth or tenth rib, was frequently down below. The stout type, having the difficulties on the chemical side, was apt to be particularly upset by large quantities of protein food. Since this was a fact, it became important to recognize that they needed less food as chemical disturbances came from food combinations which should be studied and modified, testing them until the food giving the right proportion of chemical output was decided upon.

With the slender type, commonly with hyperacidity, the chief difficulty was also in the food, though it was not the food given, but the way the individual handled the food. The cause of diabetes and Bright's disease had not been discovered, but it had been shown that albumin would appear in the urine of certain persons by putting them in certain positions in which there was positive congestion of the organs and some of the blood serum leaked through. Thus albumin in the urine simply meant that there was mechanical interference somewhere and if this condition was continued long with the kidneys under such tension there would be damage. The same was true of sugar; with many this was not a symptom of real disease. The speaker had cured a woman who had had sugar in the urine for three years by a properly fitted corset.

Many cases of chronic disease, diagnosed under different names, could be traced to their true cause and cured, but it was necessary to make a thorough, patient, and painstaking study of the individual to find out why the machine was inefficient. The patient should be impressed with the physician's unfailing attitude of hope, no matter how bad the case appeared. In most of the advances in medicine, science followed empiricism, and the condition should be studied until thoroughly understood. In this era of preventive medicine one could look forward to a future with less of these chronic patients; the proper posture should be inculcated in the children who should learn early that an improper one was as deplorable as bad grammar.

THE MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

Stated Meeting, Held February 19, 1917.

The President, Dr. Thomas S. Southworth, in the Chair.

The Trend of Statistics Concerning Old Age and Their Significance.—This paper, by Dr. Louis I. Dublin, was published in the May 19th issue of the Journal.

The Effect of Fatigue upon the Aged with High Blood Pressure.—This paper, by Dr. Arthur Lyman Fisk, was published in the June 30th issue of the Journal.

The Urine in Middle and Advanced Life.—This paper was read by Dr. J. Bergen Ogden.

Sustaining the Heart in the Aged.—This paper was read by Dr. Harlow Brooks.

Diet of the Aged.—An abstract of this paper by Dr. Ignatz L. Nascher, was published in the April 28th issue of the Journal.

Dr. Eugene Lyman Fisk said that he did not in any important particulars dissent from the views expressed in the foregoing papers, but they had, however, treated more of the phenomena of old age than the causation of old age. In his conception of the subject, disease, old age, and death are provoked phenomena. There is something more behind disease, old age, and death than the mere passage of time. Doctor Brooks in his striking description of the changes of the senile heart had stated that these conditions were natural and inevitable, but Doctor Fisk dissented from this view. We did not know of any fixed law of mortality, and while these conditions and changes of the senile heart might in a sense be inevitable, in that they were the result of incidental forces to which most people were exposed, they were in a philosophical sense inevitable. There was no fixed life cycle for the human organism any more than for other organisms. The life cycle of the unfertilized eggs of the starfish and that of the sea urchin could be profoundly altered by chemical means. It was conceivable that the life cycle of the human organism could be greatly changed by changing the conditions of life, and it would help in the study of these conditions if we kept clearly before our minds the conception that disease, old age, and death really were the result of definite physical causes and not of hypothetic "laws."

He had tried to group the causation of these conditions as follows: 1, infection; 2, poison; 3, chemical deficiency, the opposite of poison, that might be termed "starvation" in one sense—food deficiency, hormone deficiency; 4, injury or physical strain; 5, emotional strain; 6, organic strain due to overfeeding; 7, muscular inactivity. He could conceive of no other causes for disease, old age, and death, except some biological or hereditary factor itself subject to the same influences. We should get rid of the term "disease" as applied to the human organism and apply ourselves more to the consideration of impaired functions and cellular injury the result of definite causes. Rules to combat them could be formulated. The first rule was by physical examination to seek evidence of these changes as early as possible. Metchnikoff was on the right track when he postulated microorganisms as the cause of old age. We might not agree with the details of his theory. For example, Metchnikoff was not alive to the tremendous importance of focal infection in causing organic changes; there were other forms of organisms which might cause old age and death. We should pay more attention than we have done to preventing the premature decay and death of the human organism.

Dr. Louis Faugères Bishop, of New York, said that it was impossible to lay down absolute rules for diet at any age that applied to all individuals. Every pediatrist has had the experience that certain children recovered from serious diseases on most unexpected diets, while some old people were able to continue with impunity the great variety and quantity of food that was ordinarily associated with the adolescent period. On the other hand in the vast majority of instances certain modifications of diet were gradually adopted as people grew older. Children needed and assimilated sugar very well. Many older people did not need so much and assimilated it badly, but there were some old people that were very much benefited when sugar is added to their diet. The time of eating was very important. Young people could sleep off the heaviest meal. Old people did not sleep well on full stomachs. They often developed nocturnal blood pressure and insomnia, which was relieved when the evening meal was given up and some simple food substituted. Proper food for an individual was not so much a matter of rules of general application as of the discovery and application of the rules applicable to the individual. This led to the important and much neglected study of food idiosyncrasy. Food idiosyncrasy might be of the acute pronounced variety that brought an intense reaction of the gastrointestinal canal, or it might be of an insidious nature, producing a slow irritation of the tissues without conscious symptoms. In the former variety the nervous system reacted violently and protected the individual from repetition of the experience by instituting a wholesome dread of the food. In the latter the offending food, like a chronic poison, might produce rather agreeable sensations and act as a stimulant. These food idiosyncrasies had seemed to be in the nature of sensitization and might be acquired at any time of life and pertain chiefly to the animal proteins. They could only be detected in their earlier stages by the careful study of the individual by the trained observer of such conditions. When they had been active for a long while and had resulted in a destruction of cells and the disease known as "arteriosclerosis," nearly all physicians were agreed on the objections to special articles of food.

In general it may be said that the attitude of the present time toward old age was apparently more favorable to the individual than it was some time ago. The old person in these days did not relinquish hold on the interests and activities of life, and was not to be distinguished from the others by any voluntarily adopted uniform or rule of life. The effect of fatigue on the aged with high blood pressure could only be stated when fatigue was defined. There was no more beneficial therapeutic agent in high blood pressure than fatigue up to the point where it still stimulated metabolism, abated nervous exaltation, and led to restful repose. If, however, fatigue was carried to the point of exhaustion, the benefit was defeated. Doctor Bishop said he would not care to be prevented from prescribing out of door exercise up to the point of fatigue in high blood pressure because it had proved of the greatest benefit, and no serious accident under reasonable supervision had been observed. The urine in middle and advanced life had in his experience shown remarkably little difference from that of earlier life, except such as pertain to changes in the urinary passages rather than in the kidney secretion. Of course the lapse of time rendered the probability of having acquired some kidney lesion greater, and he did not know of any real change in the kidney secretion apart from that due to restriction of food intake that had to do with old age.

In sustaining the heart of the aged, the continuous use of very small doses of digitalis over long periods of time had proved useful. In some persons it was well to observe the caloric value of the diet and there was something to be said of the value of the experimental use of cane sugar in certain instances, as providing fuel food that was quickly converted into cardiac energy.

Dr. Frederic E. Sondern said that he believed that the aim of the clinician should be, as far as possible, to prevent premature senility or premature old age. Arteriosclerosis seemed to produce premature senility in the majority of instances. The main cause seemed to be what years ago the clinicians called lithemia or the lithemic state. Excess of uric acid in the blood now seemed to be the first sign of a nitrogen retention and of a chronic interstitial nephritis, which was in many instances simply a phase of arteriosclerosis.

Dr. W. H. GUILFOY, of the Department of Health of the City of New York, said that Doctor Dublin's diagram with the opposite upward curve for deaths at sixty-five years and over might be modified somewhat, for they are much lower than here in the city; the death rate of seventy-eight out of 1,000 at sixty-five and over for the United States was more than counterbalanced by the death rate of ninety-two in the city. This was probably explainable by several facts, one being the large number of institutions for the aged in the city, some of which drew their population from outside the city, such as the Sailors' Snug Harbor. The high point representing the mortality under ten years of age showed a great improvement in the mortality of this group. The great gain in the last few years has been due to the reduction of infant mortality—while nothing has been done on the other hand for advancing age.

In 1912 Doctor Guilfoy had prepared a life table based on the experienced mortality of 1909, 1910, and 1911, and by comparison with a similar life table prepared by Doctor Billings in 1882 based on the mortality for 1879, 1880, and 1881, it was shown that the increase in the expectancy of life was confined entirely to persons under forty years of age. The decrease between forty and forty-five only averaged about three months, but it gradually rose until at the age of sixty-five it was 1.8 years, and at the age of seventy-five and over 3.2 years. This showed that steps toward conservation of the aged must begin at forty or thereabouts.

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Letters to the Editors

WAR DEPARTMENT, OFFICE OF THE SURGEON GENERAL,
WASHINGTON, D. C., *September 19, 1917.*

To the Editor:

The Surgeon General directs me to invite your attention to the enclosed copy of a letter which has been sent to secretaries of all County Medical Societies. He requests that the letter be published in the NEW YORK MEDICAL JOURNAL at an early date, with request to readers to send to the Surgeon General short life histories of any partially handicapped persons who have been successful. Names of the handicapped are not at all necessary. Any successful handicapped persons who desire to furnish autobiographies will be rendering great aid.

Very truly yours,
C. L. FURBUSH,
Major, M. R. C.

The Surgeon General directs me to invite your attention to the following: He is arranging for special treatment for wounded including special efforts for functional restoration of damaged parts and vocational reeducation for those who, from the nature of their illness or injury, are unable to follow their previous occupation. It will be a very great help if he can know just what those who are suffering from chronic illnesses or who are partially disabled as a result of injuries are now doing in the United States. As example, one having lost the right hand may still be a successful carpenter or a market gardener; one having lost both lower extremities may be successful in some line; one with chronic heart disease may have found a suitable occupation. The collection of this experience should be of remarkable assistance as showing what the various types can do.

The Surgeon General very earnestly requests that the medical societies aid in this matter by getting, through their members and the various local agencies, a list of the partially disabled in the county who are successfully following a trade or occupation. The information desired in reference to each case is as follows: 1. Character of disability, medical or surgical. 2. At what is the patient employed and how successful is he? 3. In what way did he learn or enter his occupation after his injury or illness? The names of the disabled are not necessary. If any man who has been successful after an injury or illness desires to write a short autobiography stating his experiences, the same might be exceedingly useful in this work in preparing a booklet to be distributed to the men at the proper time.

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Book Reviews.

[*We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.*]

Dream Psychology. By MAURICE NICOLL, B. A., M. B., B. C. (Camb.), Capt. (Temp.) R. A. M. C. London: Henry Frowde, Oxford University Press; Hodder & Stoughton, Warwick Square, E. C., 1917. Pp. vi-188. (Price $2.00.)

This volume deserves to take rank in the increasing literature of the psychology of the unconscious and its product, the dream, because of its literary as well as its psychological value. It presents some of the discoveries of the psychanalytic investigation of the dream with that stimulus which comes from a happy turn of expression into unexpected avenues of illustration and explanation. These illustrations belong in the sphere of the simple and familiar but reveal that nice discrimination which preserves also a dignified simplicity and clearness to the style and substance of the book Greatest emphasis is laid upon the teleological function of the dream in its service not only in solving the neuroses but also in the life of every individual. Interest, which is the name by which the author prefers here to call the libido, force of life, *élan vital*, is followed through its usefulness in control of thought and activity and in its turning aside from a directed goal and thus causing disturbance. Stress is laid upon the overcompensation and undercompensation which the unconscious undertakes to adjust the balance of interest for consciousness and the unconscious, as this manifests itself in the dream. The ability of a common nucleus in the mind to form a complex and the ways in which these complexes manifest themselves in the psychical life receive a brief but suggestive exposition, as do also the introverted and extroverted types of character. The latter term. as well as the former, the author uses in its pathological sense as a type which dissipates the interest so that it also misses its direction upon the practical, successful exercise of reality.

In all of this there is, however, strongly manifest a lack of depth of comprehension and interpretation of unconscious processes which makes the work misleading as a therapeutic guide. The suggestive representation of the unconscious forces welling up through the dream to overcompensate or undercompensate for the conscious attitude, according to its special form, carries some confusion with it, This is due to the lack of that "exhaustive analysis" which Freud has wisely asserted must precede all later constructive work built upon dream analysis. The analyses here given leave the reader with the realization that there is a deeper foundation to which this concept fails to penetrate, hence the confusion and lack of perfect clearness and thorough grounding. The book, calculated in its style to arouse interest in literary circles in this important psychological product, the dream, is yet curiously aloof from that fundamental interpretation which alone can reach into the sources of disturbance and its adjustment. It is an example of the result of the rejection of the Freudian principles in a zealous attempt to follow only those of the Zurich school. It leads to a separation of the two schools which to the thoroughly grounded psychoanalyst is appparent far more than real.

After Office Hours.

A new kind of "pill-boxes" is depicted in *Leslie's* for September 8th. This is the name given by the soldiers to the fortified shell craters which make attacks on entrenched infantry so difficult.

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Write down among our favorites, Beryl Mercer, whose picture appears in the *Green Book* for August. Looking at her youthful face, no one would think that she could be the lifelike old charwoman she is in The Old Lady Shows Her Medals.

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Melville Davisson Post, who can plead a case, write an entertaining mystery story, or discuss criminology equally well, has an article in the *Saturday Evening Post* for September 1st on The Old Rounder which is much more interesting than the usual fiction.

* * *

Next to the alcoholic, John Purroy Mitchel is the favorite topic for the ready magazine writer. On our library table we note an article on the War Mayor in *Vanity Fair* for September, a biographical sketch in the *Literary Digest* for September 8th, and Municipal Revolution Under Mayor Mitchel in the *American Review of Reviews* for September.

Meetings of Local Medical Societies

Monday, *October 1st*.—Clinical Society of New York Throat, Nose, and Lung Hospital; German Medical Society of the City of New York; Utica Medical Library Association (annual); Niagara Falls Academy of Medicine; Brooklyn Hospital Club; Hornell Medical and Surgical Association; Clinical Society of the New York Polyclinic Medical School and Hospital; West Side Physicians' Economic League.

Tuesday, *October 2nd*.—New York Academy of Medicine (Section in Dermatology); New York Neurological Society; Amsterdam City Medical Society; Lockport Academy of Medicine; Society of Alumni of Lebanon Hospital, New York; Syracuse Academy of Medicine; Buffalo Academy of Medicine; Ogdensburgh Medical Association; Oswego Academy of Medicine; Medical Association of Troy and Vicinity; Broome County Medical Society (annual).

Wednesday, *October 3rd*.—New York Urological Society; Brooklyn Society for Neurology; Society of Alumni of Bellevue Hospital; Harlem Medical Association; Bronx Medical Association; Elmira Academy of Medicine; Society of Alumni of St. John's Hospital, Brooklyn; Schenectady Academy of Medicine; Medical Society of the County of Genesee (annual).

Thursday, *October 4th*.—New York Academy of Medicine (stated meeting); Brooklyn Surgical Society; Practioners' Club, Buffalo; Geneva Medical Society; Glens Falls Medical and Surgical Society; Physicians' Economic Society of New York.

Friday, *October 5th*.—New York Academy of Medicine (Section in Surgery); New Utrecht Medical Society; New York Microscopical Society; Practitioners' Society of New York; Corning Medical Association; Society for Serology and Hematology, New York; Alumni Association of Roosevelt Hospital.

Saturday, *October 6th*.—Benjamin Rush Medical Society, New York.

Official News.

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending September 19, 1917:

Billings, W. C., Surgeon. Directed to proceed to various points in the State of California south of the northern boundary of Contra Costa County on plague eradicative duty.

Brown, B. W., Surgeon. Directed to proceed to Charlotte, N. C., on special temporary duty.

Cody, H. C., Assistant Surgeon. Directed to proceed to Spartanburg, S. C., on special temporary duty.

Currie, D. H., Surgeon. Granted three days' leave of absence from August 27, 1917, on account of illness.

Herring, R. A., Passed Assistant Surgeon. Assigned to special temporary duty at Louisville, Ky.

Holt, J. M., Surgeon. Directed to proceed to Little Rock, Ark., on special temporary duty.

Jones, W. M., Assistant Surgeon. Relieved from duty at Philadelphia, Pa., and directed to continue on duty at Reedy Island Quarantine Station.

Knight, C. P., Passed Assistant Surgeon. Directed to proceed to Chattanooga, Tenn., on special temporary duty.

LePrince, J. A. A., Sanitary Engineer. Directed to proceed to necessary places in New Jersey for special temporary duty.

Nydegger, J. A., Surgeon. Granted five days' leave of absence from September 17, 1917.

Oakley, J. H., Surgeon. Directed to proceed to Little Rock, Ark., on special temporary duty.

Parran, Thomas, Assistant Surgeon. Directed to proceed to Chattanooga, Tenn., on special temporary duty.

Phelps, Earle B., Professor. Director to proceed to Wrightstown, N. J., on special temporary duty.

Rhynus, C. P., Assistant Sanitary Engineer. Directed to proceed to Columbia, S. C., on special temporary duty.

Safford, M. V., Passed Assistant Surgeon. Sick leave amended to read twenty-two days, from August 11, 1917.

Sydenstricker, Edgar, Statistician. Directed to proceed to Washington, D. C., when directed, for duty in investigations of health insurance.

Teufel, W. C., Assistant Surgeon. Detailed as recorder of a board convened at Marine Hospital, New Orleans, La., September 17, 1917, *vice* Passed Assistant Surgeon C. P. Knight, relieved.

Wickes, H. W., Surgeon. Directed to proceed to Hot Springs, N. C., on special temporary duty.

Williams, C. L., Passed Assistant Surgeon. Directed to proceed to Macon, Ga., on special temporary duty.

Births, Marriages, and Deaths.

Married.

Buck-Moody.—In Brooklyn, N. Y., on Tuesday, September 18th, Dr. F. Dudley Buck, of New York, and Miss Clara B. Moody, of East Northfield, Mass.

Jones-Taylor.—In Manchester, N. H., on Saturday, September 15th, Dr. Ezra A. Jones and Miss Dean Taylor.

Dewees-Dakin.—In Natick, Mass., on Saturday, September 15th, Dr. A. Lovett Dewees, of Haverford, Pa., and Miss Margaret Dakin.

Sullivan-Mahar.—In Dalton, Mass., on Wednesday, September 12th, Dr. Patrick J. Sullivan and Miss Margaret Mahar.

West-Van Tassel.—In Woburn, Mass., on Saturday, September 15th, Dr. Frederic O. West and Miss Gretchen R. Van Tassel.

Died.

Arp.—In Moline, Ill., on Friday, September 14th, Dr. August H. Arp, aged fifty-six years.

Byrnes.—In Brooklyn, N. Y., on Saturday, September 15th, Dr. James C. Byrnes, medical director, U. S. Navy, retired, aged sixty-six years.

Christie.—In Quincy, Ill., on Saturday, September 8th, Dr. Robert J. Christie, aged fifty-three years.

Collier.—In Painted Post, N. Y., on Sunday, September 16th, Dr. Morey C. Collier, aged thirty-nine years.

O'Farrell.—In Shawnee, Ohio, on Saturday, September 15th, Dr. Michael O'Farrell, aged sixty-seven years.

Pinault.—In Pass Christian, Miss., on Saturday, September 8th, Dr. N. Jose Pinault, aged seventy-one years.

Sahler.—In Kingston, N. Y., on Monday, September 17th, Dr. Charles O. Sahler, aged sixty-three years.

Stewart.—In Harvick, Quebec, on Thursday, September 6th, Dr. Andrew Stewart, of Chicago, Ill.

Williford.—In Dawson, Ga., on Monday, September 10th, Dr. J. H. Williford, aged sixty-five years.

New York Medical Journal

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Original Communications

ASPIRATION OR VACUUM SUCTION APPARATUS.*

Its Use in Cases Where the Ability to Swallow or Cough Has Been Partially or Completely Lost and the Patient Is Being Practically Drowned in His Own Secretions.

By Robert Cunningham Myles, M. D.,
New York.

The use of some type of suction apparatus, during the past several years, especially in case of tonsillectomy where the secretions and blood accumulated in the hyoid fossæ and laryngeal region, naturally begot the habit of relying on the procedure for relief in all cases where suffocation was threatened. I do not feel that the use of aspiration was absolutely essential in the following case, but believe that it gave decided relief at critical times.

Case I.—During the summer of 1914, bronchopneumonia developed in a patient, a man about sixty-seven years old, whom I had treated for a chronic tracheobronchitis. He gradually grew worse and for weeks his condition was precarious. He was emaciated, his heart fluttered feebly, while his cough was not vigorous enough to eject the thick mucopurulent secretion much beyond the laryngeal region. A Wappler suction machine was placed beside his bed and used at intervals night and day to remove quantities of tough, tenacious secretion which clung to the dried orolaryngopharyngeal walls. This gave the patient periods of rest and quiet after the violent efforts of coughing and expectorating. He recovered and is well, as far as his respiratory tract is concerned.

Two cases came under my care within the past several months, when the employment of suction was one of the essential life saving factors.

Case II.—I was called to see a child about three years old as an urgent emergency case. I found the little patient *in extremis* with that peculiar noise in the throat that is usually heard in this class of cases just before the end. There was very limited respiratory space, and complete inability to get rid of a flood of thick mucopurulent secretion. All the recesses of the nose, rhinopharynx, mouth, and lower pharynx seemed to be filled to capacity with the tenacious mucus. The cervical lymph nodes were very large. The tonsils and the adjacent parts were extremely edematous, almost in juxtaposition, with the respiratory air churning through the narrow interspace and the volume of secretion extreme. The child presented a pitiable picture of emaciation and exhaustion and was struggling for air. He had been unable to swallow for several days. I tried to remove the secretions with gauze swabs. The quantity was so great, the space so narrow, the patient so weak that I discontinued the efforts and having secured a suction apparatus within ten minutes, I rapidly removed an unbelievable quantity of secretion from the mouth, pharynx, nose and the region of the larynx. Some improvement in the respiration was obtained. I forced my finger down the throat and detected a soft mass on the postpharyngeal wall near the esophagus. The child's respiration and heart stopped; apparently he had passed away, but artificial respiration and the reverse position, head downward, gradually restored him. I passed a long, narrow bistoury through the limited space between the tonsils and cut, guided by topographical knowledge and limited vision. A free flow of pus followed and it was necessary to hold the child in reverse position and use the aspiration apparatus to prevent the pus from flowing into the trachea. I inserted my forefinger through the incision, found a cavity about one and one half inches in diameter, and tore the wall freely with my finger.

Convalescence was gradual. When patient had become stronger, his tonsils and adenoids were removed, and he was approximately normal when I saw him last.

Case III.—A man, aged seventy-two years, had been suffering for a week from an influenzal tracheobronchitis. I had treated him at intervals for years for attacks of noninflammatory cough, and also for about an equal number of acute attacks of laryngotracheitis. He consulted me on March 10th. I found the larynx and trachea acutely inflamed with moderate edema of the mucosa. He was suddenly called on a trip to New England, but returned to my office on March 15th in a worse condition with the symptoms of an extension of the inflammation to the smaller bronchi. I warned him of the dangers of the disease and advised rest and careful attention to the local and general condition. Messages were sent for me to visit him on the afternoon of the 17th but they did not reach me for several hours. I visited him about 7 p. m. and found that Dr. Thomas J. Tobin had seen him and prescribed sparteine and a cough mixture. His temperature of 102° F., and a pulse of 98 of poor quality at 4 p. m. had improved, the temperature having dropped to 99.3°. He had a fair night, with some severe coughing up to about 4 a. m. when he vomited and became slightly cyanosed with a weak pulse.

Doctor Tobin and I arrived about 6 a. m. and found the patient in profound coma with every reflex and muscle in the body paralyzed except the heart and diaphragm. The respirations were very slow and irregular—two to twelve a minute, Cheyne-Stokes in character. The heart showed almost every weakness of which it is capable. The mouth, throat, trachea and bronchi were full of thick, mucopurulent secretion, and since he could not swallow, cough, or expectorate, it was evident that he would soon suffocate by drowning in his own secretions. A Sorensen suction machine was secured between 8 and 9 o'clock. Very indifferent relief had followed the swabbing of the secretion from the pharynx. A string was passed through the tongue, the mouth pried wide open and the tongue drawn well out. It was necessary to use aspiration every ten to thirty minutes. The metal tubes were used in the mouth and pharynx and the rubber ones were passed through the nose into the trachea and bronchi. The relief from the ominous rattling sounds was immediate and magical. Dr. Stuart Hart came about 9 o'clock. He and Doctor Tobin were most resourceful in making an extremely weak heart continue to beat and a faltering diaphragm to continue to contract. The eyes manifested no reflex when the conjunctiva was touched. The larynx was in the cadaveric position and showed no

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*Read before the American Laryngological, Rhinological, and Otological Society, May 31-June 1, 1917.

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symptom of irritation when the tubes were introduced. The sphincter ani was completely paralyzed. An enema of coffee flowed out immediately without evidence of bowel contraction. No voluntary muscle was seen to move until after 2 p. m. The first evidence of return of muscle and nerve power was a slight effort to close the mouth at about 2:30 p. m. The mouth had been wide open, without a gag, for more than five hours. Patient commenced to regain consciousness about 3:30 p. m.; then the reflexes returned and about 7 p. m. he talked rationally.

The patient was critically ill for several weeks—with irregular bronchopneumonia symptoms. On April 16th, 17th, and 18th he was sitting up in a chair and downstairs on the 18th, and seemed to be convalescing favorably. About 1:30 a. m. on April 20th he experienced severe and violent pain in the right side from an extension of the inflammatory process to the pleura. On April 27th a section of a rib was removed and the pleura opened and found full of pus. He failed gradually and expired the next day.

The vacuum suction apparatus in this case removed the otherwise fatally obstructive secretions from the respiratory tract and allowed time for making use of nearly every procedure that the science of medicine could supply for stimulating and sustaining the action of the heart and respiratory muscles and for causing the return of the circulation of the blood in the brain.

It seems to me that there is a broad field for the use of the suction apparatus in cases of coma, paralysis, and inability on the part of the patient to remove the secretions from the respiratory tract. Five to twelve inches of pressure were found to be the best. The tubes while in use should be kept in a rapid vibratory motion to prevent the indrawing of the mucosa. The tips of certain models of tubes should have several perforations in order that the air may aid in drawing the secretions through. A variety of terminal tubes is presented; those of the rubber catheter type can be used most effectively through the nose as well as the mouth. I have had an Einhorn duodenal tip placed on the end of a long malleable metal tube to be used in the lower pharynx and trachea, but would advocate a tip a very little larger than the diameter of the tube for use in the bronchi.

It would be difficult to believe that a patient could recover from the condition in which this last one was for over eight hours unless one had been a witness to the experience. It is not quite clear what was the exciting and actual cause of the profound temporary paralytic coma. It seemed to simulate the condition brought about by hypertensive action over the celiac axis.

11 East Forty-eighth Street.

Suprarenal Therapy in Nephritis.—Pietro Ercolani (*Gazzetta degli ospedali e delle cliniche,* March 22, 1917) asserts that suprarenal extract is an excellent therapeutical agent in acute nephritis of whatever nature, as it attacks the cause of the alteration in the renal cells as well as the toxicity of the blood and urine. Its marked vasomotor constrictive powers serve to modify the renal epithelium which has been altered by the blood toxins. Adrenalin has therefore the double action of a neutralizer of toxins and of a vasoconstrictor which conquers infection and corrects the deranged condition and function of the renal cells.

ETIOLOGY AND TREATMENT OF FREQUENCY OF URINATION IN WOMEN.*

By William E. Stevens, M. D.,

San Francisco.

Frequency of urination in women is one of the most common and distressing conditions which the urologist is called upon to relieve. Notwithstanding, many cases are carelessly and unscientifically investigated and treated, and the patient continues to suffer for years. While at times the etiological factor is difficult to ascertain and the prognosis uncertain, the great majority of failures are due to a hurried and incomplete examination, often without the use of the endoscope or cystoscope. As a consequence the symptoms are ascribed to cystitis, a diagnosis which, like that of neurasthenia, is used to cover a multitude of sins in genitourinary and other conditions; the bladder is irrigated with various solutions and urinary antiseptics are given internally, but the patient fails to improve. It should be unnecessary to state that regardless of symptoms, diagnosis or treatment is unjustifiable before a thorough examination of which uranalysis, endoscopy, and cystoscopy are essential parts.

It has been my practice, after taking a careful history, to subject the patient to a thorough general examination, including palpation of the kidney, ureteral, and bladder regions, inspection of the external genitals, Skene's ducts, and Bartholinian glands, and an examination of the vagina, cervix, pelvic organs, and rectum. Smears are obtained from the urethra, stained, and examined microscopically. The urine is then voided in two portions, some being retained, removed by catheter, and examined chemically and microscopically. The sediment after centrifugalization is stained and examined for bacteria, including tubercle bacilli. Culture tubes are also inoculated. The amount of residual urine, if any, is estimated and the bladder capacity is then ascertained. Following these procedures, the patient is subjected to a careful endoscopic and cystoscopic examination, particular attention being paid to the regions of the sphincter, trigone, and ureteral orifices. The ureters are then catheterized and urine is obtained for chemical and microscopical examination, cultures, smears, and guineapig inoculation. The capacity of the pelvis is estimated, and where indicated, comparative tests of renal function are made. Parenthetically, permit me to state that in a rather large series of cases I have found that phloridzin, especially if injected intravenously, is equal and in some respects superior to the phenolsulphonephthalein test of kidney function. I have not been able to discover in the literature any record of the former drug having been used in this manner. Finally, radiographs of the kidney and ureteral regions are taken, and often pyelographs and cystograms. If this technic is followed success is to be expected, but if one step is omitted failure may result.

ETIOLOGY.

The following conditions, classified according to the organs involved, have been found responsible for frequency of urination in women: Urethra: caruncles; skenitis; urethritis, specific and nonspecific; strictures; ulcers; erosions; granulations; polyps; foreign bodies; urethrovaginal fistulæ; prolapse of the urethral mucous membrane; prolapse of the posterior urethral wall. Notwithstanding the paucity of literature upon the latter subject, I have recently observed a number of cases where this was the sole etiological factor. Bladder: trigonitis; cystitis; cystocele; papilloma; polyps; carcinoma; lues; ulcers; foreign bodies; vesicovaginal fistulæ; cysts; relaxed sphincter; varicosities; diverticula; adhesions; pericystitis; sagging of the borders of the bladder seen in old age; contraction of the bladder. Ureter: kinks; strictures; calculi; ureteritis; prolapse; pressure upon the ureter; periureteritis; adhesions; appendicitis. Kidney: interstitial nephritis; pyelonephritis; pyonephrosis; tuberculosis; calculi; prolapse of the kidney; tumors; polycystic kidneys. Vagina: vaginitis; ulcerations. Uterus: pregnancy; displacements; metritis; perimetritis; tumors; lacerations; other pathological conditions of the cervix. A number of cases of intractable frequency have been reported following the interposition operation for uterine prolapse. This fact should be borne in mind when such operation is contemplated. Fallopian tubes: salpingitis; ectopic pregnancy; tuberculosis. Ovaries: ovaritis; tumors. Rectum: hemorrhoids; fistulæ; fissures; hypertrophied anal papillæ; proctitis; mucous colitis; atonic rectum; or sigmoid worms. Pelvis: pelvic congestion; cellulitis; adhesions. General conditions: diabetes mellitus; diabetes insipidus; highly acid or alkaline urine; ptosis of the abdominal organs; oxaluria; excitement; chilling of the extremities, especially the feet; bacteriemia; tabes dorsalis.

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*Read before the California State Medical Society, April 17-19, 1917.

TREATMENT.

As frequency of urination is a symptom rather than a disease, successful treatment is necessarily dependent upon the discovery and removal of the primary etiological factor as well as the secondary pathological conditions. It would be manifestly absurd, for instance, to attempt the cure of an ulcerative tuberculous cystitis while the primary focus in the kidney remained untouched. Brief mention will be made of the treatment of a few of the more common conditions responsible for the above symptom.

Trigonitis and urethritis associated with pyelonephritis.—The keynote in the treatment of pyelonephritis, as in infections elsewhere in the body, is drainage. This is accomplished by means of the ureter catheter, which at times should be permitted to remain in position for a period of from several hours to two days. The solution used for pelvic lavage and the strength of the same is of minor importance if the pelvis is thoroughly emptied before its introduction. Bimanual pressure upon the kidneys assists in accomplishing this result. Another factor of importance in the treatment of pyelonephritis is the determination of the range of acid production or hydrogen ion concentration exhibited by the various groups of colon bacilli, to infection with which pyelonephritis is usually due. We may thus ascertain in which direction the reaction of the urine must be adjusted and whether alkali producing drugs, as potassium citrate, or those rendering the urine acid, as sodium benzoate and acid sodium phosphate, are indicated in order to bring about conditions unfavorable to the growth of the organism. The paracolon bacillus, while less common, is of greater virulence than the colon bacillus and is frequently found in alkaline urine. Trigonitis, as a rule, disappears quickly under the use of bladder irrigations and topical applications of silver nitrate, while good results are also obtained in the treatment of urethritis with two to ten per cent. solutions of the same drug. Previous massage of the urethra, often over a sound, is helpful.

Prolapse of the posterior urethral wall is best treated by operative measures, a portion of the superior vaginal wall, beneath the urethra, being resected and the fascia brought together, following the technic used in operating for cystocele. Prolapse of the uterus, if present, should also be corrected. Gradual distention of the bladder with normal salt or boric acid solutions and the occasional passage of sounds have often resulted in improvement in those cases where no apparent cause for frequency has been detected.

The following selected cases are reported as they present features of special interest. Data of no significance are omitted.

CASE I.—Mrs. A., aged thirty-one years, the wife of a physician, complained of frequency of urination, pain in the left lumbar region, nausea, vomiting, and cloudy urine. These symptoms recurred every five to ten days and lasted from six to twelve hours. The first attack appeared thirteen years ago and at that time recurred at intervals of three months. Four years ago, shortly after conception, the patient had a severe attack of three months' duration, which improved under appropriate treatment. Repeated attempts at catheterization of the left ureter were futile, the catheter meeting an obstruction, due to stricture, 1.5 centimetres from the bladder. Chromoureteroscopy with indigo carmine injected intramuscularly showed the characteristic blue discoloration at the right ureteral orifice in six minutes. None appeared on the left side in one half hour. Microscopical and guineapig tests for tubercle bacilli were negative. Urine from the right kidney was also negative. The bladder urine contained numerous pus cells due to a colon bacillus infection.

Following an uneventful confinement three and a half years ago, the patient was free from symptoms for several months, but they again returned with increasing frequency until at the present time the attacks occurred at least once a week. She now also complained of occasional slight pains in the right lumbar region. An attempt to catheterize the left ureter with a fine pointed catheter proved successful, and comparative functional tests were instituted with the following results: Phloridzin—intravenous injection: Right kidney, appearance five and one half minutes; left kidney, none in one half hour. Phenolsulphonephthalein: Right kidney, appearance three minutes, amount fifteen per cent.; left kidney, faint trace in eleven minutes. Urea: Right kidney, 0.003; left kidney, none. Microscopical examination: Right kidney, a few epithelial cells; left kidney, large number of pus cells, single and in clumps. Culture: Right kidney, negative; left kidney, pure colon bacillus. Pyelography with thorium nitrate showed a large shadow in the left kidney region, which was considered due to a large pus sac replacing the kidney parenchyma, the diagnosis being apparently substantiated by the negative functional values. Exposure of the kidney revealed an enormously dilated pelvis and upper ureter but also a large amount of macroscopically healthy kidney tissue. A No. 5 catheter entered the bladder readily from above. In view of the findings an attempt to save the kidney was considered justifiable and a large drainage tube was inserted into the pelvis. Before closure of the wound the kidney was fixed in a position favorable to drainage by sutures through the capsule. The wound having healed, the patient left the hospital in three weeks much improved. It was possible to pass a No. 6 catheter, through which drainage and lavage of the pelvis was accomplished; the patient suffered very little discomfort.

Functional tests gave the following results: Phloridzin, intravenous injection: Right kidney, appearance five minutes, amount 1.0; left kidney, a trace in twenty minutes. Phenolsulphonephthalein: Right kidney, appearance three and one half minutes, amount 18 per cent; left kidney, twenty-five minutes, trace. Urea: Right kidney, .002; left kidney, .001. Indigo carmine: Right kidney, six minutes; left kidney, none in forty-five minutes. Microscopical examination: Right kidney, moderate number of small round epithelial cells; left kidney, moderate number of pus and small round epithelial cells. Culture: Right kidney, negative; left kidney, pure colon bacillus. The patient was free from subjective symptoms.

Case II.— Mrs. B., a well nourished woman forty-four years of age, complained of frequency of urination and pain in the right lumbar region radiating to the hypogastrium. The symptoms began one and a half years previously. Urine from the right kidney contained many pus cells, that from the left was negative. Functional tests showed equal values on both sides. Radiography and pyelography disclosed two shadows in the right kidney region and a moderate distention of the renal pelvis. A diagnosis of nephrolithiasis was made. At operation no stones were found but two circumscribed cavities were present in negative; left kidney, pure colon bacillus. The patient was chronic tuberculosis.

Case III.—Mrs. C., a married woman thirty years of age, complained of frequency of urination and pain in the right lumbar region radiating toward the groin and to the inner side of the right thigh as far as the knee. She had undergone two selfinduced miscarriages, one at eight months ten years previously, and another at three months one year later. Three years ago she was curetted because of a yellowish vaginal discharge accompanied by fever and headache. After her first miscarriage she suffered from pain in the back which was aggravated by work. She was also obliged to urinate three or four times during the night. These symptoms persisted intermittently, and two or three months before entering the urological service of the German Hospital a right sided pus tube was removed and a displacement of the uterus corrected. Following this operation the patient complained of frequency and severe pain on urination, chills, and fever. A catheterized specimen of urine contained many pus cells. Cystoscopy showed a subacute cystitis. The left ureter was catheterized and the phloridzin, phenolsulphonephthalein, indigo carmine, and urea tests gave normal values. An obstruction was encountered in the right ureter, fifteen centimetres from the bladder, beyond which the catheter would not penetrate. Radiography, using the shadow casting catheter, revealed two well defined shadows in the course of the ureter at the site of obstruction. A diagnosis of ureteral calculi was made and the ureter exposed extraperitoneally by means of a right inguinal incision. During an attempt to free the ureter from dense adhesions in which it was imbedded, the peritoneum was opened and a long tortuous appendix, adherent to the ureter, was discovered. The appendix was removed and, when opened, fecal concretions were found which were responsible without doubt for the shadows on the plate. Six weeks after operation a catheter was introduced past the site of obstruction. The urine from the corresponding kidney was cloudy and contained much pus. Functional tests gave very low values on this side. Upon examination a few weeks later it was again impossible to pass a catheter. The patient, being practically free from symptoms, refused further treatment.

Case IV.—Mrs. D., a married woman thirty years of age, complained of frequent urination, a sensation of fullness and occasionally tenderness in the hypogastrium, and soreness in the urethra at times after urination. A catheterized specimen of urine from the bladder contained many pus cells. Cultures from the urine and urethra both showed pure colon bacillus infection. Endoscopy disclosed a chronic urethritis. Cystourethroscopy showed a polyp at the bladder sphincter. Cystoscopy revealed a trigonitis and a sessile tumor the size of a small walnut, in the centre of which was the left ureteral orifice. The patient stated that several physicians had unsuccessfully attempted to catheterize this ureter. It was accomplished by means of a small catheter, and urine collected which contained a moderate number of pus cells. Urine from the right kidney contained no pus but both urines contained colon bacilli on culture. Functional kidney tests gave normal values on both sides. Radiography was negative. Pyelography showed an elongated left renal pelvis. Treatment consisted of destruction of the bladder tumor and polyp by fulguration, drainage and lavage of the kidney pelvis with silver nitrate solutions, application of two per cent. silver nitrate to the urethra, and urotropin and acid sodium phosphate internally. The patient, an extremely nervous individual, passed from observation improved, but not entirely relieved of her symptoms.

Case V.—Miss E., a single woman thirty-four years of age, entered the genitourinary service of Mount Zion Hospital giving a history of having fallen astride a board three days previously, since which time she has suffered from frequency of urination and occasional burning. She stated that a supravaginal hysterectomy had been performed on account of uterine fibroids nine years ago. Examination showed a vaginitis and cervicitis. The stump of the cervix was extremely sensitive. The cystoscope revealed an acute cystitis and trigonitis. The urine contained a few pus cells. Smears from the vagina showed a moderate number of pus cells, many Gram positive rod shaped bacilli, and a few Gram positive diplococci. Urethral smears were negative. The patient's urinary symptoms disappeared in about two weeks and she was not seen again until a year later, when she returned complaining of marked frequency following an operation which had been performed about three months before for exophthalmic goitre and an inflammatory condition of the uterine annexa. A catheterized specimen of bladder urine contained a few pus cells. Gram positive diplococci were found on culture. Cystoscopy revealed a trigonitis, bullous edema of the trigone, and a small ulcer just below the left ureteral orifice. These conditions cleared up under treatment, but she still complained of some frequency, also slight pain at the beginning of urination. Examination at this time showed a prolapse of the posterior wall, which was then elevated by means of tampons. Her symptoms began to improve immediately and the periods between urination were practically normal eleven days later.

Case VI.—Mrs. F., a married woman forty years of age, complained of frequency of urination which began eighteen years ago after an abortion at the eighth month of pregnancy. She was unable to empty the bladder completely at one attempt. Examination revealed intestinal stasis, an hypertrophied anal papilla, relaxed perineum, slight cystocele, torn cervix, prolapse of the posterior wall, somewhat thickened urethra, chronic urethritis and trigonitis, and a polyp at the bladder sphincter. The straight endoscope met an obstruction three centimetres from the external meatus, but a large curved sound entered the bladder readily when introduced with the tip against the upper urethral wall. No improvement followed from the removal of the polyp. Some improvement followed the passage of sounds, irrigation of the bladder with weak silver nitrate solutions, and the application of stronger solutions of the same drug to the urethra. Marked improvement followed elevation of the posterior urethral wall.

The above cases illustrate the necessity of a careful and complete examination of the patient before the question of treatment is considered. Too much emphasis cannot be laid upon the fact that frequency of urination is not always due to a cystitis, nor is it necessarily dependent upon a pathological condition of the bladder *per se*. As the experience of the urologist increases and his technic correspondingly improves, undiagnosed cases will be less often observed, and the terms irritable bladder, neurasthenia, and bladder neurosis will be relegated to the past.

Shreve Building.

VITAL STATISTICS,

1917 Progress Report of the Committee on Relation of 1920 Census to Vital Statistics to the Section in Vital Statistics, American Public Health Association.*

By William H. Guilfoy, M. D.,
New York,
Chairman, Committee on Relation of 1920 Census to Vital Statistics.

and Edwin W. Kopf,
New York,
Corresponding Secretary, Committee on Relation of 1920 Census to Vital Statistics.

The committee was appointed in 1916 to inquire into the chief aspects of and requisites for public and private vital statistics work in the next census year and to submit constructive recommendations on these points. Because of its scattered membership, the work of the committee has of necessity been conducted by correspondence. It is believed that it has been possible to bring together for presentation to the section the main agreements of the views of committee members on the chief items of inquiry. A summary of the consolidated results of the committee's initial inquiry was submitted to the October, 1916, meeting of the section at Cincinnati. This summary statement, with the request for continuance of the committee and for authority to represent the section in interassociation and other conferences on the vital statistics problems of the next census year, was approved by the meeting. The substance of this 1916 statement, together with much new material gathered from an inquiry in April, 1917, are offered to the section in the following review. Section members, and especially the members who have been invited to discuss this review, are urged to submit material criticisms. The committee also earnestly invites the comment of the members of the medical and statistical professions generally.

Since the last census year, the social sciences which depend upon vital statistics for indispensable supporting data have become more and more exacting in their minimum demands. Social organization has become more complex, social reactions have reached deeper strata, and wherever vital interests have been either favorably or unfavorably affected, requests for data hitherto unavailable have gone forth. A detailed account of these newer developments would be superfluous. The uses which have thus been made of vital statistical data all point to the necessity of liberalizing the definition and expanding the scope of vital statistics, thus providing for future demands upon our science in America. Instead of continuing to be limited to more or less summary descriptions of the phenomena of birth, marriage, divorce, sickness, death, and migration, the pressure of demand will probably broaden the field of vital statistics to include additional subjects such as, for instance, crimes, offenses, delinquencies, dependency, and other elements of moral and social statistics. The much neglected field of higher statistical analysis and the employment of mathematical and other criteria for testing the reliability of statistical conclusions hitherto based only upon crude data will also be extensively cultivated in the near future. American vital statistics must be prepared to welcome these additions to its subject matter and to its methods. One of the broader intellectual compensations for America to follow the present world war will be contact with and appreciation of French, Scandinavian, Swiss, and French achievements in vital statistics. From a number of reactions in the recent critical literature, it seems possible also that vital statistics will be called upon, in addition to treating of the movement of population, to comprehend the structure of population. In other words, we may find it feasible to consider our science as dynamic and static demology, and to accord it the same treatment in American texts on vital statistics still to be written, that we find in the works of our distinguished European confrères, Westergaard, Mayr, Newsholme, and Bertillon.

Statistics of births.—The statistics of births, especially in relation to problems of legitimacy, birth restriction, differential fecundity of race and nativity classes of the population, mortality in childbirth according to ages of parturient women, and infant mortality, deserve an important place in plans for vital statistics in the 1920 census year. The enforcement of legislation for the registration of births should be so undertaken in our leading commonwealths before 1920 as to warrant the publication of informing vital statistics based upon the births reported during the census year. A standardized campaign for betterment of birth registration adapted to the particular situation in urban, rural, and other special classes of communities separately is suggested. The formation of a minimum tabulation program to meet the needs of the problems dependent upon birth registration for practical solution is suggested. It is desired to commend the purposes of the Census Bureau in establishing a birth registration area and in publishing an initial report on birth statistics.

Marriages and divorces.—Some provision for marriage and divorce statistics should be made in the vital statistics of the census year. The proposed bill before Congress for marriage and divorce statistics is endorsed. The important bearings of marriage statistics in the study of the population problem, the influence of the "moral" or "prudence" check upon population increase, the mensurable effect of the marriage rates of the several civil, racial, and other classes upon the rate of material increase should be recognized.

Attention is directed to a possible inquiry into the fecundity of marriage for the period of completed fertility. In this connection, attention is directed to Dr. J. C. Dunlop's research (1) into Scottish statistics for 1911. The graduation of the data and the other mathematical work in this paper are noteworthy. The utility of statistics of remarriage at the several age classes of widows and widowers, in special relation to pension, and workmen's compensation insurance questions is emphasized. Minimum requirements of tabular standards in marriage statistics should be established. Divorce statistics are deemed necessary for a proper understanding of the entire divorce problem.

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*William H. Guilfoy, chairman; Cressy L. Wilbur; Frederick L. Hoffman; Wade H. Frost; James W. Glover; Franz Schneider, Jr.; John S. Fulton; William H. Davis; Walter F. Willcox; Edwin W. Kopf, corresponding secretary.

Sickness statistics.—The absence of sickness statistics in any recent census report on vital statistics is contrary to the best traditions in the history of our science. Observation on sickness and the preparation of more or less limited statistical discussion of the subject date practically from 1773 in England; yet no American statistics, in substance or in promise, have appeared in census reports since 1890. The following subordinate topics are tentatively advanced: 1. The practical working of the "Model Bill" for the reporting of communicable and other diseases should be ascertained. Recommendation for the improvement of registration under the bill and for the subsequent tabular development of statistics of reportable diseases (2) in areas with fairly satisfactory registration, is made.

2. Institutional sickness and mortality statistics should be compiled. A voluntary registrattion area for medical statistics of selected general hospitals in the United States is suggested. The statistics could be compiled as follows: by employing a uniform nomenclature and classification of diseases and conditions in the cooperating hospitals, similar to the one used by Bellevue and Allied Hospitals, New York City, or as will probably be proposed by the United States Public Health Service Board of Nomenclature (3); by having hospitals abstract the principal elements of their sickness experience either upon a set of uniform statistical tabular forms according to approved practice or, case for case, upon an abbreviated discharge certificate; and by forwarding the abstracts to the United States Public Health Service for comparative and combined tabulation and publication. Certain communities, where all general hospitals could be enlisted in the cooperative program, should be studied for hospital care of sickness in relation to population elements served (4). The same statistical and reporting practice should be extended to selected special hospitals. Hospitals for the care of mental diseases could be organized in State groups, into a voluntary "registration area for mental diseases." The nomenclature of mental diseases and conditions and the set of standard reporting schedules agreed upon by the American Medicopsychological Association Committee on Uniform Statistical Reports, February 28 and March 1, 1917, are suggested as a fundamental basis of procedure (5). The Committee on Statistics of the American Society for the Control of Cancer should be consulted with respect to hospital statistics of cancer. The American Sanatorium Association and the National Association for the Study and Prevention of Tuberculosis are invited to discuss the voluntary Federal registration of sanatorium statistics of tuberculosis, and to coöperate with the Committee of this Association in obtaining sickness statistics and putting them to practical uses. Public health nursing associations, too, may have facts on sickness which could be incorporated in a cooperative plan of sickness registration. The facts of sickness and mortality in correctional and penal institutions are of considerable significance in relation to the offence charged, to the mode and duration of confinement, and to the sanitary aspects of construction and operation of these institutions. Vital statistics would serve the interests of modern penology by providing a survey of the life stream flowing through these institutions. Consideration of the anthropometric and eugenic statistics of the delinquent and prison population is urged. The sickness statistics of homes or other institutions for the aged and infirm may be expected to contribute to the science of geriatrics and possibly to the collection of facts on industrial superannuation, on old age dependency and some of its causes and the remedies therefor.

3. Adequate provision for army and navy medical statistics in vital statistics plans for the census year is urged. Anthropometric statistics of recruits in relation to race and occupational and other social characteristics should be given a wider circulation as part of the special vital statistics of a census year. Attention is directed to the uses made of such statistics in European ethnology (6). The important demologic data gathered in the registration of males twenty-one to thirty-one years of age for military service in June, 1917, and the results of the medical examinations of these men should be made available to the American statistical public. Attention is directed to the possibility of establishing norms of physical measurements from observations of candidates finally selected for service.

4. Enumeration of serious sickness among selected populations on census day should be considered. The community survey method has been established over half a century in English speaking countries. The value of the collected data, however limited, strongly demonstrates the practicability of and use for an enumeration of serious sickness. The blind, deaf, dumb, crippled, and otherwise infirm will, of course, be enumerated in wider areas than in those for which an enumeration of serious sickness in general is conducted.

Special studies of public health progress in the decade 1910-1919.—The population count of 1920 will provide the basis for a revised estimate of the population in each of the years of the decade 1910-1919. A series of inquiries by qualified statistical specialists into the progress of the public health movement in the control of the communicable acute diseases—typhoid fever, the communicable diseases of childhood, etc.—of tuberculosis, cancer, heart diseases, diseases of women in childbirth, suicide, homicide, accidents—especially industrial accidents—and other preventable causes of death should be instituted. The recently published monographs on *Mortality from Cancer and Other Malignant Tumors* (7), *Mortality from Cancer Throughout the World* (8), and *Maternal Mortality* (9) are illustrations of serious statistical reviews such as should be undertaken in connection with the vital statistics of the next census year, either by the departments of the Federal Government or by private societies and individuals.

Vital statistics in the service of social reform.—The committee suggests conference among insurance, statistical, actuarial, labor legislation, and sociological societies and associations on the utility of vital statistics in the service of social reform (10). Cooperation with this committee should be urged.

The American Economic Association, American Statistical Association, American Association for Labor Legislation and Casualty Actuarial and Statistical Society have appointed committees with power to consider 1920 statistical problems and prospects.

Vital statistics of insurance societies.—The statistical study of insurance mortality, sickness, and accident experience has made such satisfactory progress since 1910 that a contribution from these societies, associations, and companies to the vital statistics of the next census year should not be overlooked. The life insurance companies have published an analysis of their medical experience, representing forty-three companies for the period 1885 to 1908. Public health literature already contains numerous discussions based upon these data. Attention is directed to the wealth of data on the results of medical examination of insurance applicants in the records of the insurance companies. The recently proposed cooperative study of cancer statistics of life insurance companies, in association with the American Society for the Control of Cancer, points to the service which these companies may render the public health movement. The industrial insurance companies have an unusual opportunity to present mortality statistics of the insured wage earning group of the population. Such statistics would be available for the holders of upwards of 35,000,000 policies. The companies and societies transacting a sickness and accident insurance business might be invited to publish a cooperative study of their experience. In this connection, the industrial accident statistics, available for States which have workmen's compensation laws, deserve special mention. The recent report of the Committee on Statistics and Compensation Insurance Cost of the International Association of Industrial Accident Boards and Commissions (11) provides a uniform classification of industries, of the causes and nature of injuries, and of the extent of disability due to injury. Under this proposed system of uniform classifications, informing and comparable vital statistics of the industrial accident problem can be compiled.

Vital statistics of industries.—The movement for the physical examination of employees has made available a body of data on the health of workmen. A summary of this material, together with the medical statistics of benefit and pension funds for workmen, should be made available for the census year. Workmen's compensation industrial accident statistics have been referred to in the preceding section. The occupational mortality experience of the general population, derived from census and registration results, should also receive the attention of the Census Bureau.

Vitality of constitutent races in the population.—With a few notable exceptions (12), there are no available statistics of mortality among the several race stocks of the population for the last census year. The tabulation of deaths in 1919, 1920, and 1921 by country of origin of foreign born persons or perhaps by mother nativity, with respect to sex, age, and causes of death and a corresponding tabulation of population data for the census year in principal cities, and for some States, thus furnishing the foundations upon which to construct life tables according to race and nativity, will facilitate the study of mortality among the constituent foreign race stocks of the American population. Certain tendencies of the total population mortality rate, for instance at the ages after middle life, will probably be explained by an extended consideration of the race or nationality characteristics of the population. The vital statistics of the American negro, especially a record of the recent migratory movement from the South to the North, and of the effects of this movement upon the physical wellbeing of the negro, should be thoroughly presented. Attention is directed also to possible vital statistics of the American Indian and of Asiatics in the United States.

Statistics of population in "sanitary areas" of cities.—Careful consideration of the needs of intensive public health administration in large cities indicates the urgency of tabulating the population statistics of such cities by "sanitary areas" of convenient size and of homogenous composition. The facts of nativity, nationality, occupation, color, age, and sex are apparently in great demand for these areas (13).

Miscellaneous social statistics somewhat related to vital statistics.—The close relation between the vital statistics of violent causes of death so far published and the statistics of crimes and offenses and of highway accidents and fatalities in cities, suggests the preparation of statistics of crimes and offenses and of highway accidents and fatalities as part of the vital statistics program of the 1920 census year. Statistics of crimes and offenses and of highway accidents and fatalities are almost entirely absent from our American vital statistics. The Department of Police of the City of New York and the coroner's tistics on one or both of these subjects, but except office of Cook County, Illinois, have published sta- for these, no reliable data on American conditions are available. A uniform classification of crimes and offenses and of highway accidents and fatalities should be made by police departments of American cities and the publication of statistics on these subjects should take place annually. The vital statistics of poverty and pauperism, housing of the population, anthropometric statistics of school children, immigration, statistics of public health surveys, and of mental hygiene surveys should receive further attention.

Revision of nomenclature and classification of diseases and of accidents and injuries, especially industrial accidents and injuries.—Attention is directed to the necessity for revising the International List of Causes of Death in the light of the experience of the last decade. Such revision should be made in sufficient time to become applicable to the classification of causes of death reported in the census year 1920. The forthcoming revised report of the American Public Health Association Committee on the Accuracy of Certified Causes of Death has an important bearing on this problem of satisfactory disease nomenclature and classification.

Revision of nomenclature and classification of occupations and industries.—The classification in the published report on occupations, Volume IV, Thirteenth Census, has not been favorably received by vital statisticians. A return should probably be made to the general principles of the Bertillon-Vannacque system, or to some suitable means of arranging occupations by industry in one series and "repeating" occupations without distinction of industry in another series (14). A closer examination of the problem of standardized classification of occupations and industries is urged.

Life tables for the triennium, 1919 to 1921.—The excellent series of life tables for the triennium 1909-1911 derived from the records of the original registration states justifies the compilation and extension along similar lines of tables for the triennium 1919-1921. A critical examination of the 1909-1911 tables and the publication of the results of such an examination is urged.

Progress of birth, death, marriage, divorce, and sickness legislation and registration; prospects for the decade 1920-1929.—A review of legislation and the enforcement of legislation for the registration of birth, deaths, marriages, divorces, and sickness during the decade 1910-1919 is deemed advisable. The lessons of the decade under review could be applied to strengthening the prospects of vital statistics during the period 1920-1929.

State or interdecennial censuses.—It is believed that an enumeration of the population at a time midway between Federal decennial censuses, according to the chief elements of sex, age, color, and nativity composition, conforming in every respect to standard practice, would add materially to the supply of information required for modern intensive public health and social work. The advisability is being further considered of recommending to the Census Committees of the House and Senate that the Federal Government cooperate with the State governments in 1925 in taking enumerations of the population according to accepted census practice.

Members of the Association and of the medical and statistical professions generally are earnestly invited to submit criticism and suggestions which will be of service to the Committee in its deliberations.

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Angioneurotic Edema Treated with Adrenal.—J. Alfred Codd (*British Medical Journal*, June 16, 1917) reports a case of severe angioneurotic edema of long duration cured now for four years by subcutaneous injections of adrenalin or epinine, followed by the oral administration of suprarenal tablets.

THE MODERN CHILDREN'S CLINIC OF THE OUT PATIENT DEPARTMENT.

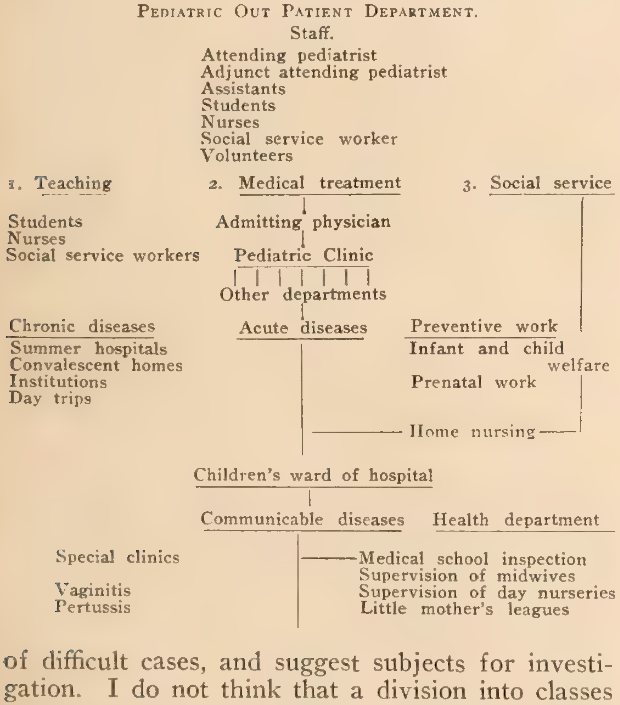
By Charles Herrman, M. D.
New York,
Attending Pediatrist, Lebanon Hospital.

Although I shall discuss principally the children's clinic, much of what I shall say applies equally to the other departments of the out patient service, and to the out patient department as a whole. The subject is particularly important at this time, because as many physicians are entering the service of the army and navy, it will become increasingly difficult to obtain desirable men for the out patient service, Following the lead of Brannan, I prefer to speak of the out patient, rather than the dispensary, service, in order to emphasize the fact that it is a part, and an important part, of the hospital. I have always felt that the board of managers and the attending staff of the hospitals did not fully appreciate the importance of this branch of the service, and have treated it in a rather stepmotherly fashion. The number of patients treated in the out patient department is about ten times that in the hospital. At the Lebanon Hospital, in 1916, 325 children were treated in the medical ward, and 4,500 new patients were treated in the pediatric service of the out patient department, or about fifteen times as many. Comparing the relative space, equipment, and personnel of these two branches of the service, the contrast is even more striking. Brown's figures for Bellevue Hospital in 1913 are convincing. About an equal number, 40,000, were treated in both branches. In the hospital there were 168 physicians including interns; in the out patient department sixty-six; in the hospital 282 nurses, in the out patient department five; in the hospital 715 employees, in the out patient department four; making a total of 1,165 persons in the hospital as against seventy-five in the out patient department for the care of an equal number of patients.

Many of the physicians who work in the out patient department look upon their position simply as a stepping stone to their appointment to a hospital service, so that many resign from their chiefship in the outdoor service as soon as they become adjuncts. This is a great mistake. Some of the most brilliant English clinicians, Gowers, Bramwell, Still, to mention only three, made a reputation in the out patient service before they received hospital appointments.

There can be no doubt that a proper districting of the city for the purpose of outdoor treatment would make for efficiency. In the borough of Manhattan the problem is a difficult one, both because of the location of the hospitals and because of their conflicting interests. Glancing at the map, in which each dot represents a hospital with outdoor service, one wonders what principal guided the founders in the selection of the site. In districts not densely populated and with ample provision for the care of patients in the neighborhood, new hospitals and clinics have been established. I presume that the authorities do not like to discourage any philanthropic enterprise and charters are granted. The teaching institutions need interesting and unusual patients and would not have a sufficient number if restricted to one district. The districting for the care and treatment of tuberculous patients is an entirely different problem. Such patients are numerous and in most clinics large numbers are not desired as there is a great similarity in symptomatolgy. It is very different with rare conditions. To cite a concrete example. As chief of clinic at the Vanderbilt Clinic, it was my duty to prepare patients for Doctor Holt's weekly clinic in the amphitheatre. One clinic was devoted to cretinism and achondroplasia. Had we been restricted to patients living in the district, a demonstration of such patients would have been impossible, as most of them did not even live in the borough of Manhattan, some coming from neighboring towns in New Jersey. In the other boroughs of New York the problem is much simpler. In the Bronx there are only four out patient services, and as they are widely separated, we have succeeded in districting the territory in a manner satisfactory to all. The advantages are apparent. The investigation of social conditions by the social service departments and the home nursing are done with the least waste of time, and there is no useless overlapping.

Organization of children's clinic.—There should be one head. The job is big enough for the biggest man connected with the department, namely the attending pediatrist. He should be the executive head, supervise the work, give his opinion in the diagnosis of difficult cases, and suggest subjects for investigation. I do not think that a division into classes is advisable, neither do I think it a good plan to have two sets of days. The department should be a unit, for the assistants then have an opportunity to see all unusual patients and there is a uniform system of history taking, examination, and filing of histories. Many patients must be seen on the following day, as those who are seriously ill or those in whom a von Pirquet or Schick test has been made. The visiting physicians should be the adjunct attending pediatrists to the hospital service. They then serve as the connecting link between the outdoor and the indoor service. The regularly appointed assistants should be men, preferably exinterns of the hospital, who intend to make pediatrics their life work, not men who simply desire a superficial knowledge of the subject. These men are thus trained for the position of chief and adjunct in the hospital service. As additional helpers, students and possibly some of the members of the house staff could be used. Many of the teaching institutions which have no adequate hospital and out patient service of their own will gladly give their third and fourth year students the benefit of the instruction and experience to be obtained in the outdoor clinics. It is a very great advantage to have the social service worker in the clinic itself during the hours of service. The physicians are usually too busy to write notes, and important matters connected with the investigation of home conditions and treatment to be carried out may be forgotten. The social service worker has then an opportunity of reporting each day to the physician in charge. The physicians should do medical work only. The taking of histories and temperatures and the weighing and measuring of infants and children should be done by students, nurses, or social service workers, so that the physicians may devote their entire time to work for which they have been specially trained.



The chief medical and social service workers should be salaried, for only then is it possible to obtain the punctuality and regularity in attendance which is absolutely necessary.

It is not to be expected that a young physician will refuse a private call just at the time that he is leaving his office to go to the clinic, unless he can afford to. It is too much to expect that the volunteer social service worker will refuse every invitation to an afternoon tea. In an excellent paper recently published, McLean asks, "How many physicians would enjoy the presence of their so called best private patient or the dispensary philanthropist in the examining room of the out patient department when in a hurried hour they are clearing up the cases?" I, for one, would enjoy it very much. If such a gentleman were a successful business man he would immediately realize that it was absurd to expect efficient service and the best results with a staff made up exclusively of volunteer unpaid workers; he would realize that in order to obtain regularity and punctuality in attendance and the proper expenditure of time a certain number must be salaried; and if he was a philanthropist in the best sense of the word, perhaps he could be induced to persuade the members of the board of managers to grant such salaries or he might himself establish an endowment fund for the purpose. A member of the board of managers would hardly expect efficient service in his own office from a staff of volunteer unpaid workers. McLean in the same paper speaks of the desirabliity of "longer clinic hours with a shift of physicians." Shift is the correct word; as at present arranged they are shifts, or "makeshifts." If they are to be treated as laborers, let us at least pay them as we do other laborers. In the *Weekly Bulletin* of the Health Department of the City of New York for March 31, 1917, the following statement is made: "No other profession, we venture to assert, gives so freely of its services to the community as does the medical profession. The exasperating feature is the matter of course way in which such service has come to be expected of physicians. . . . Three fourths of the work done in the hospitals of this city is a donation of professional services. . . . How much longer can the medical profession afford to make so large a contribution, from its slender and constantly diminishing resources? How much longer can the community continue to accept such a donation, without losing its selfrespect."

The work in the children's clinics at present is far from perfect. How can it be improved? First, by limiting the number of patients, excluding those who can afford to pay a private physician. A few years ago a special committee of the Medical Society of the County of New York found that about ten per cent. of the patients applying for treatment were undeserving. If these were excluded the remaining ninety per cent. could be given more attention. I do not wish to discuss the question of dispensary abuse, but I can see no reason why the suggestion that all patients, except emergency cases, should first apply to a central bureau, cannot be carried out. The Social Service Exchange of the Charity Organization Society has already signified its willingness to cooperate. Most of the chiefs of pediatric clinics know what should be done, but they have not been given the materials with which to build a proper structure. How can the service be made more attractive to physicians? The training in the medical schools and hospitals has improved so decidedly in the last ten or fifteen years that the young physicians no longer feel the urgent need for the experience gained in the out patient clinics. A conscientious assistant is eagerly sought, waiting lists are exceptional. In some institutions certain classes had to be discontinued because there was no one to treat the patients. The question of salaries has already been briefly discussed. It is true that some physicians do not wish to be bound to absolute regularity and punctuality in attendance, but experience has shown that a sufficient number of good men are willing to accept such positions. The assistants should have the privilege of treating their patients in the private rooms of the hospital under the supervision and with the approval of the medical board. They should have the right to follow up their patients referred to the hospital from the out patient department. They should be advanced from the position of assistant to that of chief and adjunct in the hospital service, whenever a vacancy makes this possible. The hospitals should try to train their own men.

A word in conclusion: Many marked improvements in out patient service have originated in Boston, but I think it would be a mistake to suppose that all good things in pediatrics come from that city. I recently received from the publishers an advertisement of a new work on pediatrics by a Boston specialist. Among other things it was stated that "the foundation of pediatrics in America was laid at the Harvard Medical School over a quarter of a century ago." I had always been under the impression that Abraham Jacobi, of New York, had something to do with the laying of the cornerstone, and Jacobi can speak, not of over a quarter, but of over a half a century ago.

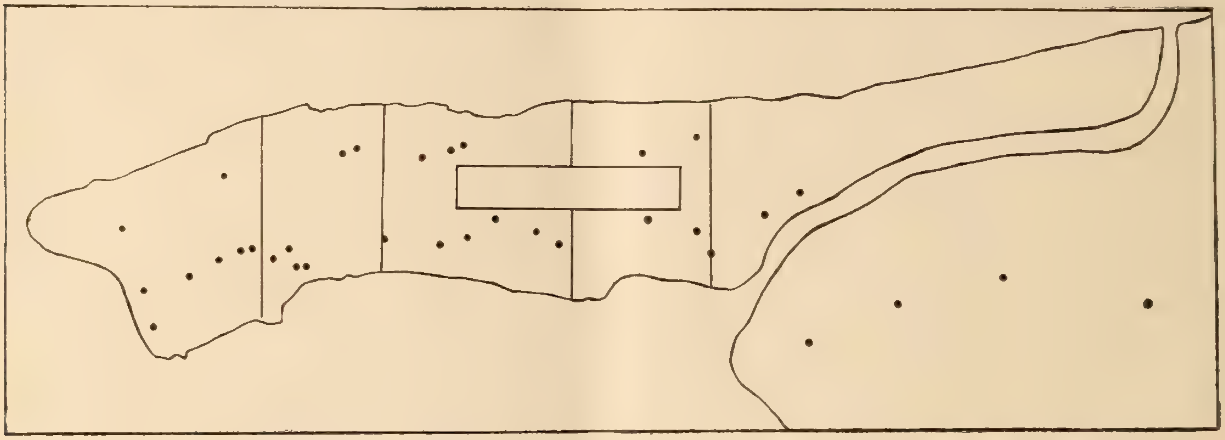


FIG.--Map of Boroughs of Manhattan and Bronx, New York City, each dot representing a hospital with out patient service.

250 WEST EIGHTY-EIGHTH STREET.

TYPHOID APPENDICITIS.*

By EUGENE W. SKELTON, A. B., M. D.,
New York,
Associate Surgeon, Norwegian Hospital, Brooklyn.

Either one subject of the compound title of this paper would not offer a special reason for discussion, but the combined pathology presents an important study. The subject has been written upon by a few beginning as far back as Jadelot in 1808, when he described a case of appendicitis occurring in a boy suffering from adynamic fever. The literature is scant in recording the total number of cases and in the reports of the institution with which I am associated I fail to find the combination under discussion. I had one such case two years ago and one of our attending medical men recalled a case during his internship. I was led by the pronounced symptoms in this case to look up the cases and to my mind the recognition of the condition is more important than failure in treating the complication.

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*Read before the Medical Society of the Greater City of New York, February 5, 1917.

Typhoid fever is an enteric disease and has a great many complications. Musser (1) speaks of no less than sixteen, but does not mention appendicitis except in the differential diagnosis, and Butler (2) covers the same ground and also passes over it. The surgical appendix is too often missed under the mistaken diagnosis of perforation with general peritonitis. No criticism of the internist is intended, for it is not always possible for the surgeon to diagnose the condition. Most of the literature dwells upon the complication occurring late in the second or early in the third week of typhoid and discuss the treatment in that stage. I shall consider such cases in this paper, but I have been most impressed by those presenting the complication in the very early stage of typhoid fever long before the patient is prostrated. It is quite conceivable that the lymphoid tissue of the appendix should undergo the same pathological changes that are taking place a few inches on either side of the ileocecal valve. It is important in defining the scope of this paper to distinguish between concurrent appendicitis with typhoid fever and typhoid with appendicitis as a complication. The former combination occurs by chance, as in a combined malaria and typhoid, but the latter is a dependent sequence, and my discussion has to do with that alone.

Kelly (3) says: "In the chain of organs on the right side extending from the gallbladder above to the pelvis below, the appendix alone may give trouble acutely in typhoid fever. It assumes greatest importance at the very beginning and later on at the height of the disease." Douglass (4) says that the acute stage of appendicitis, meaning in early typhoid, can be recognized, but not the later. Forty years after Jadelot's report, Carlo de Vecchi gives the history of a boy dying on the seventh day who had a typhoid appendicitis. Six years lated Buehl records three cases of typhoid fever with ulceration of the appendix. In America I fail to find any cases on record previous to the one reported by Sand in 1857 of a young man twenty-two years of age who died on the fourth day with every sign of appendicitis and typhoid fever; this was verified by autopsy. In the report of this case before the New York Pathological Society it was stated that the solitary and agminated glands of the small intestines had "the appearance which they often present in typhoid fever." Murchison in 1865 reported a case in which he states that in addition to extensive lesions in the ileum and cecum that there were four typical ulcerated areas in the appendix. In 1898 Rolleston reported a series of sixty patients dying with typhoid fever. In this series the appendix was swollen in five, ulcerated in seven, and perforated in two (5). In the same year Astley P. E. Ashhurst reports a series of eighty-six laparotomies on typhoid patients with fifteen recoveries and seventy-one deaths, a mortality of 82.5 per cent. In this series there were three cases in which no lesions were found, two of the patients recovering and one dying. Three had peritonitis, but no causative lesion was found at operation; all died, one having a perforation of the ileum, another of the gallbladder, and in the third there was no autopsy. Of four patients in whom peritonitis was present without perforation, three died and one recovered. In five cases the appendix was affected alone; four by incidental appendicitis with one recovery and three deaths. There was one case that appeared clinically to be a perforation of a typhoid ulcer in the appendix, although histological examination showed evidence of diffuse appendicitis; this patient recovered. In addition to these four cases of isolated appendicitis the appendix was perforated in one case and highly inflamed in another, in both of which there was also a perforation of the ileum; both patients recovered. Herbert Fitz (6) in his compilation of typhoid fever in the Massachusetts General Hospital covering a period of seventy years reports no case with the combined diagnosis having been made; this period was up to the middle '90's, as far as I could infer. S. H. Ridway (7) reports two cases. G. H. Williams (8) reported a case. The patient first showing signs of illness with appendicular symptoms and was operated on and discharged after a normal typhoid course. Dr. Herbert Swift Carter (9) says: "Occasionally one hears the statement that typhoid fever may have abdominal pain as its initial symptom, but the author has never seen any amplified discussion of this interesting and important fact nor any definite statement as to the causation of the pain." He then states the causes as: 1, acute cholecystitis, which Kelly denies and which I have always believed to be a later manifestation or sequel to typhoid fever; 2, typhoid appendicitis; 3, intestinal perforation; and 4, simple colic from gases, which condition can be ignored. In a series of 1,815 cases of typhoid reviewed by Doctor Carter and covering a period from 1897 to 1911 there were twenty-four complicating cases of acute cholecystitis and three cases of typhoid appendicitis, of which number in one case alone was pain the initial symptom in the abdomen; he then adds two cases given to him by F. P. Solley, of St. Luke's Hospital. In three cases the inflammation of the appendix was the initial symptom, two of them being operated in and then completing a normal course of typhoid; the third case was milder in type. In the other two one manifested acute symptoms on the thirtieth day and the other on the forty-first day, showing that it is an early and a late possibility. In a combined report by Doctor Heschl, Doctor Morin, Doctor Church, Doctor Fitz, and Doctor Cushing covering the years 1853 to 1900 there were 328 cases of typhoid with perforation, out of which number thirty were of the appendix proper, making a little more than nine per cent. Hopfenhausen reports thirty autopsies in cases of typhoid and found in every appendix a condition varying from a simple inflammation to an ulceration. Kelly gives his findings in thirty cases either operated or autopsied in which appendicitis was a prominent condition during the course of the disease. Five of these showed evidence of previous ulceration of the appendix; one showed an active ulceration without perforation; ten had perforated; one appendix had an abscess; four had simple congestion, and the other seven showed adhesions, flexions, obliterative changes, etc. Christian performed 119 autopsies in typhoid fever cases, in which nineteen, or sixteen per cent., showed appendicular changes. Mc-

Kenzie, of Portland, and Dean Lewis each report a case with recovery.

Etiology.—The etiology of simple appendicitis includes mechanical and obstructive factors. Among the mechanical causes are Lane's kinks and Jackson's membrane; obstructions are blocking of the terminal circulation in the appendix proper, the presence of infarcts, enteroliths with pressure necrosis and sloughing, necrosis, and abscess formation. Various bacteria cause many acute fulminating varieties of infection, associated sometimes with abscesses and local or general peritonitis. The relationship between typhoid fever and cholecystitis has long been recognized, and, while I have not found one definite statement as to the finding of the typhoid bacilli in the typhoid appendix save that reported by Stokes and Amick (10), strong suspicion and logical deductions lead me to infer that such cases must exist. Unfortunately surgical histories almost invariably fail to record previous infectious diseases, placing greater emphasis on cancer and tuberculosis, both of which are very important, but do not tell the whole story. Thus we cannot trace appendicitis cases to previous typhoids. My recollection of such cases associated in typhoid fever that have been mentioned to me is so vague that I cannot state any percentages. Hopfenhausen reports a series of 748 cases of appendicitis operated in for that lesion alone, in which series thirty cases were found in which typhoid fever had occurred from seven months to forty years previously. This, however, concerns appendicitis after an interval rather than the associated lesion under consideration.

Whenever a well defined case of typhoid fever with the diagnosis confirmed by the Diazo and Widal reaction abdominal symptoms suddenly arise which change the typical course of the disease, have we then a surgical condition or is it only a more violent manifestation of typhoidal ulceration? This situation is not empirical at all and if the case is studied with reference to ileocecal complications, perforations and peritonitis may be treated for the truer lesions of appendicitis. According to my earliest teachings an important clinical and theoretical diagnostic point in typhoid was the gurgling in the right iliac fossa present in many cases, which confirms the inferences that the area of the ileocecal valve bears the heavy onslaught of the bacterial invasion and that the appendix, by reason of its crippled and limited power of resistance, due to the lack of peristalsis and to its being anatomically a blind sac, naturally falls a victim to the invasion.

I shall not go into the pathology or symptomatology of the condition, but shall mention only a few details to show the probable association. Both diseases occur in the earlier half of life, from fifteen to thirty-five years generally. Typhoid bacilli are found in the lymphoid tissue, mesenteric glands, bone marrow, liver, and bile. Both are intestinal conditions, i. e., diseases of the same system. The specific changes in typhoid fever are more characteristic in the lymphoid tissue, more specifically in the lower ileum. The bowel content in the typhoid may be either constipated or of pea soup consistency. This has a significant effect on the patent, relaxed, or partially patent appendicular os. The appendix, situated at the most dependent portion of the ascending colon just below the opening from the lower portion of the small intestines, has to contend against the weight of the infected feces in the ascending colon. In addition the mechanical force of the contractions of the longitudinal and circular fibres of the colon required to carry this weight around the two curvatures at the hepatic and splenic flexures must be considered. These factors combine to render it highly probable that the contents will be forced downward as well as upward. Such being the case, the effect of the typhoid bacilli on the lymphoid tissue of the appendix itself can readily be appreciated.

Let us now study the changes which take place in the lymphoid tissue under such conditions, which will account for appendicular lesions. These lesions are distinct complications and, irrespective of the type of infection or source, become surgical lesions whether operated on or treated by the ice bag method. "The first change noted will be a hyperplasia of Peyer's patches in the ileum, particularly, and also some in the jejunum; this condition will also be present in the colon beyond the valve. The follicles become lighter in color; some are dusky and are highly congested and swollen. The solitary glands sink down into the submucosa. Nature now tries to stop the extension and lymph cells are thrown out within the lymph tissue proper; these may extend down into the submucosa and muscularis beyond the border of the patch. The cells are ordinary lymph cells and red corpuscles. Ulceration then follows as under similar conditions elsewhere. Local necrosis of the lymphoid tissue and sloughing follows the ulcerative stage; this is directly due to the fact that resolution cannot follow the stage of hyperplasia, inasmuch as the circulation is blocked, the bloodvessels being filled and obliterated. The circulation being shut off or obstructed localized anemia ensues, which is followed quickly by a slough. The last stage is the deeper ulceration which follows the superficial sloughing. The last six or eight inches of the mucous membrane of the ileum forms at times a large single ulcer which is often irregular and punched out, extending up to the valve. The stage of healing follows." I have carefully reviewed the formation of an ulcer as seen on the iliac side of the valve; the same type of tissue is seen on the colonic side in a slightly modified form. Histologically the appendix is only a rudimentary cecum, its structure is almost identical with that of the cecum, and it is particularly rich in lymphoid tissue. I find that Eugene Hodenpyl demonstrated Bacilli coli communis in the appendix. If we could follow up our patients I believe we would also find typhoid bacilli either at operation or at autopsy and possibly later on in the posttyphoidal history. As pointed out before, the appendix is only an undeveloped or rudimentary cecum. The character of its blood supply and the fact of its being a blind sac with a function not yet determined makes it an admirable nidus for bacterial growth, and the chances of the typhoid bacilli proliferating in it are excellent. Although typhoid causes an active enteritis, bacteriologists say that it can cause peritonitis only secondarily to ulceration and mixed infection, which is probably present in many cases of ulceration. This may explain why all cases of perforation do not cause a peritonitis, and the explanation of the freedom of the intestinal tract from sepsis producing organisms is that in the treatment of the disease antiseptic medication may have been used and so in a measure may have sterilized the bowel. I may mention in passing that perforation of the appendix occurs infrequently, but the lack of accurate data makes one feel uncertain in handling a case with such marked end results as are found in neglected appendicitis. Kelly speaks of but ten cases with perforating appendix earlier than the eighth day; when perforation occurs, it is usually in the latter part of the second week or in the third. Osler (11) reports four cases and Fitz in a special series of 107 cases had five. John Deaver (12), of Philadelphia, states: "In all cases of typhoid fever in which there occur morbid processes and alteration in the large intestines it is very probable that an examination of the appendix would show similar changes, and it is likely also that in some cases in which the lesion in the large intestine is inconspicuous those of the appendix may be quite marked. Catarrhal alterations are usually well developed and during the acme of the disease, lesions of the lymphoid tissues are prone to be conspicuous. At times they assume such prominence as to give rise to concurrent appendicitis, or typhoid appendicitis. Rarely perforation may occur and there may result a circumscribed or diffused peritonitis. The sequel of such typhoid ulceration in such a structure is often of considerable moment in the subsequent production of an attack of appendicitis." This statement has a bearing on further treatment of the lesion.

Diagnosis.—Appendicitis is more often mistaken for typhoid than the converse. I do not propose to differentiate between the two diseases as distinct entities, but to point out some details by means of which the complication can be recognized. It is axiomatic that in all infectious diseases the virulence of the infection tends to diminish as the disease progresses and at the same time the system prepares for itself an antitoxin to combat the invading bacteria. In other words most infectious diseases become selflimited under ordinary circumstances. I admit that the diagnosis late in the second or early in the third week may be difficult, for the virulence of the infection now approaches its high point, perhaps has even passed it, and the patient suffers more from toxemia than from the bacteriemia. The appendix, normal up to that time, suddenly becomes involved. I believe, however, that the active infection of the appendix occurring in the middle or late in the course of typhoid is generally of a less severe type than that occurring under other conditions. In this stage the temperature does not rise suddenly, for the fever is already present; nausea and vomiting may be present but not constantly; there may be general abdominal tenderness becoming localized and rigidity of the right rectus. These symptoms may be modified or veiled by other symptoms of typhoid proper and the internist might be pardoned for failing to recognize them. The picture in the early acute attacks where the appendix has shared in the primary infection should be borne in mind particularly. The leucocyte count repeated every three to four hours should guide the management of the case. Marked rigidity of the right rectus, the drawing up of the right lower extremity to relieve the pressure on the inflamed organ, and in my own case and in another the retention of urine are important symptoms. Fever is present as a result of both lesions, but the pulse rate of typhoid has become accelerated. Nausea and vomiting are present and at the same time the facies of typhoid has probably developed. The gurgling has disappeared to a great extent and in its place is tumefaction with dullness on the right side as a sign of Nature's effort at limitation. The bowel condition does not help diagnosis, as it varies so widely. If coal tar products have not been given, the diazo test helps in fixing the typhoid diagnosis, but it may be too early to depend on the Widal reaction. The typical coated tongue and the odor of the breath together with the eruption would lead one to recognize typhoid. In the acute stage sudden pain on the right side over McBurney's point, rigidity of the right rectus, increased pulse rate associated with a history of headache, bronchial cough, gradual rise of temperature, sense of malaise make for a diagnosis of typhoid fever with typhoidal appendicitis as a complication. Care should be exercised in connection with tumefaction on the right side, for glandular involvement in the pericecal area may also cause some of the soreness and reactionary rigidity. I would most strongly urge the necessity of the leucocyte count as being the main guide. Homer Gage (13) says: "The difficulties in diagnosis have, however, been made much greater by the discovery that the appendix does share to a great extent in the intestinal lesions of typhoid."

Treatment.—The teachings of some of the most eminent men may be open to question in the light of present day surgical achievement. The statement that ulcers in the ileum heal and if they do perforate they do not necessarily mean danger does not hold true in appendicitis. In ulcers in the intestinal tract the products of ulceration have free exit and antiseptic medication may come in contact with them. But in appendicitis the secretions are more or less locked up and the circulation interfered with by the product of inflammation. The two conditions are entirely different and it is highly dangerous in the early stages of typhoid to temporize. Later, when the patient has already been weakened by the disease and cannot stand the shock of the enucleation of the organ, it may be well to wait. At this time, particularly in the third week of the disease, the patient is suffering from the absorption of the toxins, the loss of sustaining and reserved vitality, and more or less a myocardial embarrassment. Here waiting may be justified, but in the early cases none of these conditions is present. Some of the best surgeons now advise leaving the appendix alone until it is absolutely necessary to operate. I quote no less an authority than the late Doctor Murphy, who says: "It is my opinion that typhoid appendicitis should not be operated in unless there is a perforation. All my patients get well whether operated on or not. Operation should not be performed except in special cases. Usually the swollen appendix will not go to ulceration, gangrene, or perforation." The last statement is a confession of uncertainty as to just how the appendix will be affected. The language of Doctor Deaver quoted earlier is in marked contrast to this. In speaking of the treatment of typical cases of appendicitis uncomplicated by the condition under consideration, Doctor McBurney (14) says: "What we wish to accomplish in the treatment of appendicitis is not to save half of our patients, nor four out of five, but all of them." A. Worcester (15) says: "There is only one logical treatment of the disease, namely, the excision of the diseased organ as soon as the diagnosis is made." These last two quotations are made without any reference to the treatment of appendicitis in typhoid fever, but are expressions as to the treatment of the diseased organ in general. Every operator has been surprised at some period of his work on opening an abdomen and expecting to find an acute catarrhal appendix to be confronted with an abscess condition. In reviewing my work during August and September, 1916, I find that I was called upon to operate in eighteen cases of appendicitis, out of which number there were just six in a condition that warranted closing the wound at the time of operation. Twelve cases, or twice as many, required drainage and prolonged treatment. Were these peculiar cases or neglected ones? I feel very strongly that it was not mistaken diagnosis in these twelve cases, but a hope that by delay improvement might take place. Of all organs I believe the appendix to be most deceiving and in every acute case I advise operation, because I do not feel able to forecast with any degree of certainty the probable course of the disease. The following case illustrates this point:

Case.—A young man called at my office some two years ago with a pain in the abdomen which clearly indicated appendicitis. I advised his going to the hospital; instead he returned to his work on the following day and to my office in the evening. The same advice was given with the result that he returned to work on the following day and to my office in the evening. His temperature and pulse had had been normal at each visit, and on the third visit I refused to be responsible for the condition without his consent to be operated on. This time he consented, and on the following day I opened a large abscess cavity with a broken down suppurating appendix. This all took place under observation in three days, with only pain as the leading symptom for diagnosis, and yet a severe lesion was found.

I might cite the case of a patient on another service who was purposely held over with a normal pulse and temperature for a clinic with a diagnosis of recurrent catarrhal appendicitis, and when the surgeon opened the abdomen two days later he found a circumscribed abscess with a perforated appendix. Now if these unexpected and severe conditions arise in uncomplicated cases, how are we going to know what may happen in the typhoidal state? Many cases of acute catarrhal appendicitis clear up without operation; some recur due to the primary attack; practically all such patients would recover promptly if operated on as soon as the diagnosis is made. A few die while we wait for the unexpected to happen. Is this not also analogous in the typhoid appendix? Some patients get well without further trouble. In some lesions develop later due to the primary attack, Some die while waiting for the perforation of the appendix. I ask if it would not be better surgery to perforate the abdominal wall early and remove the appendix quickly and safely than to wait for the danger flag of "appendix perforated" as the warning signal for us to get busy. Some gentlemen who have removed the appendix in this stage have later written up the case with the apology that, had they known that the appendix was involved to such a small extent, they would have spared the patient the operation. Possibly both the surgeon and the patient are to be congratulated that the organ was removed in due season to avoid a more severe operation a week later.

No diagnostic technic has been devised up to the present time to gauge the severity of the lesion, and so I am beginning to feel that in acute attacks, as with a complication, other things being equal, the organ should be removed despite the dictum. No harm is done if a skillful surgeon removes an appendix in a stage in which subsequent examination shows that it might have been left longer or altogether. In the first place, the removal of a simple appendix before it has passed to the stage of complications, such as abscess, gangrene, etc., or is bound down by inflammatory adhesions due to prolonged irritation, is, in the hands of a skilled surgeon, a matter of a few moments only and if necessary may be done under local anesthesia. In the second place, the patient has been relieved of the uncertainty as to the immediate future behavior of the organ. Third, our patient has probably been saved a future operation at perhaps an inopportune time, either one week hence, one month, or years, for I look with grave suspicion, in the light of a statement made earlier in this paper, upon the future state of an appendix left under such conditions after the typhoid has passed. Kelly advises waiting until ten days after the initial symptom and then operating in the acute cases if necessary. He also advises the operation in the presence of a perforation. In another place he intimates that in well established cases it might be well to operate immediately. The physician can take his choice in his procedure. Abbe queries as to the delay in attacking such a condition inasmuch as it is customary to go after much more advanced uncomplicated cases of the lesion in the right iliac fossa. Why should we hesitate on the acute typhoid ones? The late Morris Richardson, of Boston, says: "Operation during the course of typhoid fever, even those operations which are comparatively slight, have a high mortality. The surgeon must always be on his guard lest he fail to recognize typhoid fever not only in ordinary forms, but also in its unusual atypical aspects and subject his patient to an operation which, even if apparently made necessary by clinical findings, is entirely unjustified by the pathological examination." In a later brochure, if I remember correctly, he states that operation should be performed in the presence of pain, rigidity, tenderness, and fever. He adds that if we do operate and the patient dies the friends forget the typhoid but recall the bad judgment and lack of skill on the part of the surgeon. There is a saying: "There is nothing so uncertain as a sure thing," to which I am going to add, "and cases of appendicitis." The surgeon has little to fear if he will only be kind to the adjacent viscera and not meddle too much. It is surprising how much the peritoneum will stand under proper antisepsis, and if the organ is removed quickly and safely and new lesions are not created by traumatism I believe that it is perfectly safe and advisable.

As to the late cases, the situation is entirely different. The patient in this stage is weakened and has less resistance and the chances of shock are greater. Vitality is not only lessened, but the tissues of adjacent organs are also affected by the prolonged fever and bacterial action. The cecum would hardly stand much handling and a hernia through the gut might be produced by traumatism at the place of ulceration. The invagination of the stump or the amputation of the appendix itself might present impossible technic on surgical lines. In the late cases it is probable that the bacteria are of a lower virulence and the type of the lymphoid invasion modified. This statement is made on the basis that various patches are involved at different periods and that the later ones are less extensive and recover more promptly than those involved in the earlier stage of the disease. A secondary attack of typhoid fever is invariably shorter, lighter, and less severe in its manifestations, due, I believe, to the lessened virulence of the bacteria and to the antitoxin formed by the patient. Therefore, in typhoid appendicitis developing late in the second or early in the third week of the disease or even later, I believe an acute inflammation or other manifestation is less likely to ensue than in the earlier infection. If the late case has to be operated in and the patient's condition does not warrant too long exposure to shock it may be well to follow the suggestion made by Bland Sutton and accepted by Kelly and Goodall to leave the wound open for drainage and irrigation if necessary, and do a secondary operation after convalescence for the artificial fistula and hernia.

In closing I want to ask for the cooperation of the general practitioner in securing more accurate data both in history and bedside notes in order to determine whether the condition of the appendix does not account in some degree for the variations in the typical disease. Further, let us not only observe our cases, but, what is equally important to the science of medicine, report accurately and faithfully, for upon such data alone do the advances of our chosen profession depend.

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294 SIXTH AVENUE, BROOKLYN.

INTUBATION IN DIPHTHERIA.

By ALFRED J. M. TREACY, A. B., M. D.,
Philadelphia,
Superintendent, Pennsylvania Orthopedic Institute and School of Mechanotherapy, and the Bushhill Sanatorium.

A part of the treatment of diphtheria, especially in the laryngeal cases, is the operation of intubation or tubing. This is an operation resorted to in most of the severe cases of the laryngeal types where the patient is in extreme danger of suffocation or cardiac failure, because of the great difficulty and extreme labor of the patient to get his breath, and where the breathing is so labored as to cause cyanosis of the lips, marked restlessness, and the so called "pulling" or gasping for breath, with a rapid, weak, running pulse.

It is most often done on younger children from one to ten years of age even up to fifteen years, though it is occasionally performed on adults; and its good results are best seen in younger children. Its purpose is to keep open the laryngeal orifice which has become constricted or blocked up by the diphtheritic membrane growing over it; and it consists in introducing into the throat a black hard rubber tube on a steel L shaped handle called the obturator. The tube varies in size and thickness from about one and a half inches to three inches in length, depending on the age of the patient. After inserting the tube into the larynx, it is released from the obturator; it is prevented from being swallowed and kept in place by a thin wire which is attached to the end of the tube and then extends out of the mouth and is fastened to the cheek by adhesive plaster.

The technic of introduction of a tube is as difficult and spectacular as it is easy yet lengthy of description. The nurse places the child on his back on a low table and quickly envelops his body tightly in a sheet so he cannot squirm. A sand bag or hard pillow is placed under his neck and his head and neck hang down below the edge of the table. One nurse, who stands on the right side of the table, holds the child firmly on the table, while a second nurse, sitting at the end of the table, inserts a mouth gag into left side of child's mouth and holds his head firmly. The physician stands on the opposite side to nurse; i. e., on the right side of the patient, and holds the obturator in his right hand. Around his little finger is wrapped the wire which is attached to the end of the tube, and with his index finger he later guides the handle of the introducer into the child's mouth. As soon as the nurse has the mouth gag placed, he inserts his left hand into the child's throat, locates with the tip of his left index finger the epiglottis, which he raises up and keeps raised with the ball of his index finger. He then follows the posterior wall of the pharynx and larynx with the tip of the index finger, then slips it over the opening of the trachea, which he recognizes by the hard circular cartilaginous ring, and places his finger tip over the esophageal opening, but does not wholly occlude it for fear of stopping the breathing of the child. He has now located the epiglottis, raised it up, slipped his finger over the trachea, and holds it partly over the esophagus. Now he introduces the obturator, and using the index finger of his left hand already in the mouth as his guide, he follows it, with the introducer in front of the finger, not to side of it, and inserts the tube into the tracheal opening. The wire or thread on his little finger is quickly released, a quick quiver of the handle releases the tube, and then he slips his left index finger off the esophageal opening and pushes the tube fully into the trachea. He knows it is fully inserted when he can feel the collar of the tube just encircled by the cartilaginous ring of the tracheal opening or slightly beneath it; as well as by the easy breathing of the child. The inexperienced or careless operator will invariably slip the tube into the esophagus instead of into the trachea. Care, speed, and experience are necessary; the operator should have a thorough knowledge of the structures and anatomy of the throat, a cool head, a steady hand, and a keen sense of touch and he should be quick and certain of what he is doing.

The great benefit and value of intubation in the treatment of laryngeal cases of diphtheria cannot be measured. Were it not for this simple, yet difficult, operation, a very great percentage of patients with the laryngeal type would unquestionably die. It is the one and only measure that in ninety-five per cent. of cases saves the child's life; it is the most positive means of reviving the child; it is the quickest measure that can be applied, and without doubt it is the one thing that must be done and done quickly in advanced cases where the patient is slowly suffocating because of the membrane quickly growing over and occluding the laryngeal orifice.

While it is a simple operation, it is a difficult one and requires careful, capable, and experienced technic; for by its clumsy and unskillful performance much harm can be done to the child, possibly complete suffocation of the child, injury to the laryngeal orifices and surrounding tissue from rough or unskillful manipulation, or later it may cause the child to become a chronic "tuber" requiring the use of the tube for many months, possibly for life, or even necessitating a tracheotomy being performed later.

While the period for wearing a tube in acute cases varies, depending on the age of the patient and severity of the case, experience has shown that wearing it for four days from the date of intubation is best both for safety as to recovery from the acute attack, as well as to prevent the patient from becoming a chronic tube case. Occasionally, especially in nervous types of children, it is necessary to reintubate immediately after extubation on the fourth day; but frequent intubation is not favored or done, as it tends to cause the child to become a chronic "tuber." In case of chronic "tubers," extubation of the old tube is usually done every third week; and this extubation is followed immediately by the introduction of the same size new tube.

The usual indications for prompt, immediate, and efficient intubation are those resulting from impaired breathing, caused by the membrane covering the larynx. They are tight breathing; inability to get enough air; gasping for breath; marked playing of alæ nasi; circumoral pallor; pale face; anxious expression; staring of the eyes; cyanosis of lips; pallid cheeks; sweating on forehead, lips, and sides of nose; marked restlessness; tossing of hands and feet; throwing of body around bed, and sudden sitting up in bed and gasping for breath. These symptoms call for quick, immediate, and efficient intubation if the child's life is to be saved for temporary or permanent recovery. One has only to see the quick relief and great comfort and satisfaction that the patient shows after intubation to realize the great value and imperative need of this measure. Easy breathing, good color, strong pulse, bright expression, a sense of comfort and ease, relief and quiet are the immediate results.

Intubation need not be performed in every case of laryngeal diphtheria; often continuous applications of hot turpentine stupes will aid breathing sufficiently until the antitoxin has had time to be effective, usually twenty-four hours. In all cases, however, in which the symptoms are such as have been enumerated, intubation is imperative, and the physician is not loyal to his profession, fair to his patient, or just to the community if he fails to give the child this only chance of life.

4829 North Fifth Street.

SERUM DISEASE, ANAPHYLAXIS, AND ALLERGIE.

By F. E. Stewart, Ph. G., M. D., Phar. D.,
Philadelphia.

In some patients the injection of horse serum preparations, such as diphtheria antitoxin, antistreptococcic serum, mercurialized serum, etc., is followed by urticarial eruptions, joint pains, fever, swelling of the lymphatics, edema, and albuminuria. This group of symptoms appears after an incubation period of from eight to thirteen days and is known as serum sickness of von Pirquet and Schick.

While Ehrlich was visiting this country in 1903 his attention was called to a phenomenon observed by Theobald Smith in guineapigs used in testing toxin antitoxin mixtures. These animals were exceedingly susceptible to subsequent injections of horse serum, the second injection often proving fatal. Returning to Frankfort, Ehrlich gave the indicated problem to his pupil, Otto, who published a paper on the subject, verifying the conclusions of Smith and speaking of the reaction as the "Theobald Smith phenomenon." Subsequent studies by Rosenau and Anderson in 1906-1907 were published by the Bureau of Hygiene, United States Public Health Service. These authors found that guineapigs which had been injected with a small dose of horse serum succumbed with great regularity to a second dose administered after a proper incubation period had elapsed. The necessary interval between the injections was found to be not less than from ten to twelve days.

Anaphylaxis.—The word "anaphylaxis" was introduced by Richet to express a condition which he observed as the result of the action of the poison of the sea anemone or other toxic substances when introduced into the animal body. He found that when dogs were injected with the poison of the sea anemone, a change was produced in the organism of the animal of such a nature that a second and much smaller dose sometimes proved rapidly fatal. Deaths occurred, however, only when a certain period of time had been allowed to elapse between the two injections, i. e., the first dose sensitized the animal, thus rendering the second dose highly toxic. To this condition of diminished resistance to the action of toxic substances he gave the name "anaphylaxis"—a word derived from the Greek *ana,* without, and *phylaxis,* protection. He considered the condition as opposed to prophylaxis. He also used the word to describe lowered activity against bacterial infection.

Gay and Southard, who also investigated the phenomenon, attempted to account for it by assuming the presence of a poisonous substance in horse serum which acts as an irritant to the body cells, to which they gave the name "anaphylactin." As a result of this irritation after some days the cells are in such condition that a second injection of horse serum may readily prove fatal. The studies of Rosenau and Anderson demonstrated that animals could be sensitized by feeding them with various protein substances. Guineapigs were fed with raw beef and thus sensitized to subsequent injections of ox serum.

Vaughan's researches.—The researches of Victor C. Vaughan threw further light upon the subject. He demonstrated that the protein molecule is very complex, consisting of a central poisonous group of atoms, to which he gave the name "archon," and secondary and perhaps tertiary groups. The archon or poisonous group of the protein molecule is similar in all proteins. It is a poison but not a toxin, i. e., its injection into the animal body is not followed by the production of antitoxin. The breaking down of the protein molecule by parenteral digestion—a name used by Vaughan to distinguish between the digestion carried on in the alimentary canal or enteral digestion and that carried on by the body cells outside of the alimentary canal—may set free sufficient of this archon to poison the individual and thus produce the symptoms of serum sickness or anaphylaxis. The secondary group of atoms composing the protein molecule stimulates the body cells to produce a specific enzyme or digestive ferment which digests the protein injected.

This specific enzyme or ferment consists of amboceptor and complement. The stimulation of the body cells by the antigen (protein) causes the production of that part of the digestive ferment known as the amboceptor. The amboceptor being thus produced unites with the protein substance and sensitizes it, or, in other words, prepares it for the action of the other part of the ferment, known as the complement, which already exists, preformed in the serum of the animal. Each kind of protein when injected into the animal body stimulates the body cells to form a specific amboceptor capable of sensitizing the protein which caused its development. The complement is nonspecific. It is a normal constituent of the serum and is the same in the blood serum of all animals.

Recovery from an infectious disease is the result of a development in the body during the course of the infection of this specific ferment which destroys the infecting bacteria. Immunity established by vaccination is similar to that produced by an attack of the disease. The vaccine is the same protein that causes the disease, but it has been so modified that it will not produce the disease, yet so little altered that it will stimulate the body cells to form a specific ferment which will promptly and quickly destroy the infecting agent on exposure. When parenteral digestion is carried on in the normal manner thus described, the digestion is complete, a large part of the poisonous group of the protein molecule is destroyed, and the animal is immunized by the nonpoisonous constituent of the protein molecule. When for any reason the mechanism of immunity is not acting in a proper manner, the period is longer, the digestion is less complete, more of the poison is set free, less of the poison is destroyed by the process of digestion, and the phenomena of serum sickness or anaphylaxis are developed, the two names being descriptive of degrees of poisonous action.

Antitoxins and antibacterial serums are the serums of animals which have undergone the immunizing process and contain immunizing substances, so that when the serums are injected into the body they produce a passive immunity. But the protein substances of the serums must be disposed of by parenteral digestion, the same as any other alien protein substance.

It is thus seen that the anaphylactic phenomena are merely the phenomena of the immunizing process constantly going on in the animal body which protects the animal from attacks of invading microorganisms of all kinds. The body cells, having learned to produce an enzyme for the destruction of the specific protein, are able to do so promptly when the individual is reexposed to the same infection as that caused by the microorganism. This parenteral digestion is carried on without any noticeable phenomena when the mechanism for carrying it on is acting normally. But when for reasons not thoroughly understood the process of parenteral digestion is not acting in the normal manner, the protein substance is split up in such a way as to set free a large amount of the archon or poisonous group, which causes the phenomena known as serum sickness or anaphylaxis.

Allergie.—As already stated, this process seems to require a certain period of incubation necessary to establish the sensitized condition of the body cells. When this condition is established, the body cells are in a sensitized state, ready to act promptly when brought into contact with the same protein substance. Von Pirquet states that children injected with the second dose of horse serum reacted promptly only when the dose was given within four months; if after four months, the reaction period was six, seven, or eight days. The first reaction he called "the immediate reaction" and the second "accelerated reaction." The accelerated reaction is between the normal and immediate reaction. It is believed by von Pirquet and others that anaphylaxis is not the proper word to employ for the description of this condition. He prefers the word "allergie," altered energy, and this term is now common in Germany. Allergie is merely a quickened response on the part of the body cells. As pointed out by the NEW YORK MEDICAL JOURNAL (1), allergie is well illustrated by what takes place in vaccination. When an individual is vaccinated the first time, the well known vesicle surrounded by the inflammatory areole appears after a distinct period of incubation. When he is revaccinated there appears to be no response, but careful observation will show that this is not the case. There is a response, but the changes occur so rapidly after the revaccination that they usually pass unnoticed. One of the most valuable contributions to the subject is that of Ludwig Hektoen (2).

Sensitization versus hypersensitization.—It logically follows from the above that we have been dealing with two conditions which may be differentiated by the terms sensitization and hypersensitization, although our knowledge of these phenomena is insufficient to claim any exactitude for these definitions. The condition of immunity following the attack of an infectious disease or produced by vaccination, is as already stated due to the sensitization of the body cells by the protein substance of the infective agent, which in the case of the infectious disease is a living organism and in case of vaccination is the same organism so modified that it is no longer capable of growing and multiplying in the animal body, but yet not so altered as to prevent it from stimulating the body cells to produce the specific ferment to which the immunity is due. The condition of sensitization of the body cells necessary to carrying on this process of immunity may be called "normal sensitization." The condition so readily produced in the guineapigs by injecting an alien protein and then repeating the dose after a definite period of incubation, to be followed by the death of the animal within five minutes from so called "anaphylaxis" attended by failure of respiration, etc., illustrates the condition of hypersensitization.

Fortunately, this condition of hypersensitization against alien proteins which can be produced so readily in guineapigs is not so easily produced in man. Millions of doses of diphtheria antitoxin, tetanus antitoxin, antibacterial serums, bacterial vaccines, etc., have been administered without any untoward phenomena whatever, and it is reasonable to suppose that in at least a considerable number the necessary incubation period for the production of sensitization or hypersensitization must have elapsed between the doses. In regard to the production of sensitization as to normal or hypersensitiveness of the body cells, Richard Weil, whose researches in this field are attracting much interest, has shown that hypersensitiveness or anaphylaxis varies in intensity, depending upon the amount of the sensitizing dose. The question as to the amount of protein substance injected into the animal body and its relation to serum sickness and anaphylactic phenomena is illustrated by the lessened number of cases of serum sickness since the advent of concentrated diphtheria antitoxin. Before the process of concentration, now employed in the preparation of antitoxin, was known about twenty per cent. of the patients injected manifested symptoms of serum sickness, but this number has been reduced to less than ten per cent. by the use of the concentrated product.

Sudden deaths following injection of diphtheria antitoxin.—About twenty cases of sudden death following the injection of diphtheria antitoxin have been reported. The cause of death in some of these cases was evidently due to status lymphaticus and other causes and not due to the serum. A few of the cases appear to have been caused by anaphylaxis. These patients, so far as known, were not previously sensitized by an injection of the antitoxin. On the contrary, the sudden deaths followed the initial dose. Most of these cases appear to have occurred in persons who were subject to bronchial asthma and especially susceptible to emanations from the horse. When exposed to such emanations by driving behind a horse on a hot day or when handling horse blankets, etc., attacks of bronchial asthma resulted. It has therefore been assumed that persons subject to bronchial asthma are liable to be hypersensitize to the protein of horse serum preparations. Consequently, before such preparations are used the patients should be desensitized in the manner to be hereinafter described.

Desensitization.—A very valuable paper was presented by Richard Weil (3) at the annual meeting of the American Association for the Advancement of Clinical Research in Washington, May, 1913. Weil reported his studies of desensitization by means of quantitative methods. In a previous paper it was shown by him that hypersensitiveness or anaphylaxis varies in intensity, depending upon the amount of the sensitizing dose. It seemed to the author, therefore, not likely that the process of desensitization would be subject to variations of a similar kind. The practical application of this problem lies in the fact that desensitization has been widely recommended by Besredka and others, in connection with the administration of therapeutic serums, with the object of avoiding anaphylactic shock in human beings.

In reference to Besredka's suggestion, the author said: "Besredka has suggested the application in human beings, of the method of desensitization which has been studied by Besredka with great elaboration, in animals. In a series of experiments on guineapigs, he found that the sensitized animal could be efficiently protected against a fatal dose of the serum given intraspinally, if the animal had previously received a properly graded dose of the serum, either under the skin, into the peritoneum, intraspinally, or intravenously. As to the results obtained by Besredka in his animal experimentations, there can indeed be no question."

As pointed out by Weil, Besredka has more recently suggested that desensitization might be rendered still more certain by the use of repeated, instead of single, preliminary doses of the serum. These are given at fairly short intervals and are graduated in such a way that the last dose is many times as much as the first. This is known as the method *"de doses subintrantes."* He diluted five c. c. of serum in ten times the amount of physiological saline solution; one c. c. of this diluted serum is administered intravenously. Four minutes later, three c. c. are injected; two minutes later, ten c. c.;

two minutes later, twenty-five c. c. Besredka states that the curative dose can then be administered without fear of anaphylaxis. Weil says: "There can be no question that this method is extremely effective but it also holds, as with the single preliminary dose, that in order to be intelligently applied, it must be based upon some knowledge of the degree of sensitization present."

An important contribution to the subject of anaphylaxis is contained in papers by Captain H. Burrows, Captain S. Wyard, and Major A. B. Smallman, of the Royal Army Medical Corps, and Colonel Sir William B. Leischman, of the Royal Army Medical Service (4). The papers relate to the use of tetanus antitoxin as a prophylactic and therapeutic agent. Attention was called to the neglect of proper employment of tetanus antitoxin owing to the fear of anaphylaxis from repeated injections of horse serum. The experience of the British Army justifies the following conclusions: 1. Anaphylactic shock is negligible when the prophylactic dose is contained in such a small quantity as three c. c. of horse serum, whatever the interval after the preceding injections. Highly concentrated serum, in doses sufficient to maintain protection, may be repeated at weekly intervals as long as it is considered advisable, without any fear of occurrence of anaphylaxis. 2. The case is somewhat different in regard to the massive doses demanded in curative treatment after symptoms of toxemia have already shown themselves. The large doses of horse protein, which necessarily accompany the requisite number of antitoxic units, may become a source of inconvenience or danger. The paper by Captain S. Wyard, R. A. M. C., sets out clearly and simply how this inconvenience can be entirely avoided; a small rectal injection of the serum within twelve hours renders the individual refractory to a subcutaneous dose of any size, or if this amount of delay is thought inadvisable, the same result can be obtained by a succession of subcutaneous doses, beginning with a very small dose and rapidly rising to a large and efficient one. The editor of the *Lancet* says that observation of these precautions should be sufficient to remove all risks of anaphylaxis, and the fear of its occurrence can no longer justify the failure to employ protective serum in every case where it can possibly be of service.

C. H. Browning (5) recommends the following method of desensitization based upon the work of Besredka and Friedberger, namely, five mils of tetanus antitoxin are diluted with fifty mils of normal saline. Of this mixture one mil is injected intravenously; after four minutes this is followed by a further injection of three mils; two minutes later ten mils are given, and finally, after another two minutes, twenty-five mils are injected. The serum is injected intravenously with the ordinary apparatus, the rubber tube of which is clipped during the intervals between injections. Half an hour later the full doses of tetanus antitoxin may be injected intraspinally, intravenously, or intramuscularly.

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1. New York Medical Journal, December 19, 1908. 2. HEKTOEN: *Journal A. M. A.*, April 13, 1912. 3. WEIL: *Journal of Medical Research*, 1913, xxix, 233-249. 4. *Lancet*, January 20 and 27, 1917. 5. C. H. BROWNING: *British Journal of Surgery*, 1916, iv, No. 13.

11 West Phil-Ellena Street.

URTICARIA.

By Oswald Joerg, M. D.,
New York.

It has long been known that one of the causes of symptomatic urticaria in some persons is the introduction of certain foodstuffs into the alimentary canal, the disease in a given person always being brought about by the same constituent. According to Wolff-Eisner, the explanation of this is that the intestinal juices are unable to transform the foreign albumin, which enters the circulation unchanged and causes a serous caudation, apparent on the skin. If the intestinal juices are able, however, to decompose these foodstuffs so that they lose their specific character, no urticaria will appear. Herein lies the explanation of the cases in which the introduction of a certain food causes the disease in childhood, while it does not later in life.

The cases that have come under my observation do not lead me to agree with this theory. A physician with whom I was intimately acquainted from his twenty-sixth to his fortieth year suffered from urticaria every time he ate crawfishes. Another man, thirty-five years old, whom I treated recently, had the same complaint after eating strawberries. I proposed to him, as an experiment, henceforth to eat strawberries only when they were cooked. From that time on no urticaria appeared. So the toxin contained in the berries must have been destroyed by the boiling heat, whereas in the first case this process had no influence at all, as, of course, the crawfishes were always eaten boiled.

In the literature we also find mention of cases of urticaria occurring after the consumption of eggs or of pork, so that Singer was led to suppose that bacterial putrefaction was the cause, and he sometimes, but not always, found indican in the urine. However, we must confess that we are still far from a thorough understanding of these processes, both from a chemical and a physiological point of view, and that we have to rely on the often cited conception of idiosyncrasy. Every contribution may prove helpful in bringing us a little nearer to the goal.

12 Schermerhorn Street, Brooklyn.

Ocular Lesions in Scarlet Fever.—T. di Giuseppe (*Gazzetta degli ospedali e delle cliniche*, July 19, 1917) comments upon the rarity of ocular lesions in the actual course of the disease and due directly thereto, not merely sequelæ or indirect results. In an epidemic of 2,000 cases with 200 deaths Giuseppe saw only ten ocular lesions of which four were corneal ulcer, two iritis, and four panophthalmia. He also noted an ocular symptom in this disease which although not constant is of considerable importance from the standpoint of prognosis; this symptom is bilateral dilatation of the pupil. This sign even in a patient apparently in good general condition is of grave import as these patients succumb rapidly from cardiac paralysis. Whether the cause is a lesion of the sympathetic alone or of the suprarenal body first and the sympathetic secondarily, all patients exhibiting the symptom died in from twenty-four to forty-eight hours.

Our Readers' Monthly Prize Discussions

Twenty-five Dollars Is Awarded for the Most Satisfactory Paper

All persons, whether subscribers or not, are invited to compete for the prize of $25 offered for the reply deemed best by the editors to the following questions:

CLXXXVI.—How do you treat varicose veins in the leg? (*Closed.*)

CLXXXVII.—How do you treat tantrums in children? (*Answers due not later than October 15th.*)

CLXXXVIII.—How do you treat frostbite? (*Answers due not later than November 15th.*)

The award will be based solely on the value of the information contained in the answer. No importance will be attached to literary style. Answers should preferably contain not more than six hundred words, and should be written on one side of the paper only. All papers submitted become the property of the JOURNAL, and should bear the full name and address of the author for publication. The prize will not be awarded to the same person more than once within a year.

The prize of $25 for the best answer to Question CLXXXV has been awarded to Dr. Melville A. Hays of New York, whose paper appears below.

PRIZE QUESTION CLXXXV.

TREATMENT OF ACUTE TONSILLAR INFECTIONS.

By MELVILLE A. HAYS, M, D.,
New York.

Acute tonsillar infections include simple inflammation of the tonsils, acute follicular tonsillitis, circumtonsillar abscess, syphilis, Vincent's angina, diphtheria, and scarlet fever. The latter two are simply the local manifestations of general disease; syphilis may be either a primary infection of the tonsil—chancre—or a later manifestation—mucous patches, etc.—of the general disease. Although sudden chilling often seems to be the only causative agent of the first two conditions, the usual cause is an infection derived from carious teeth; this may be a carious tooth, alveolar abscess, decayed broken root, or necrosis under a gold crown, the tonsillar infection being sooner or later complicated with, or followed by, an attack of rheumatism. The causative agent of diphtheria is the Klebs-Loeffler bacillus. Circumtonsillar abscess is usually caused by the streptococcus pyogenes. Vincent's angina is probably caused by the fusiform bacillus of Vincent. Syphilis is due to Spirocheta pallida or Treponema pallidum, while the causative agent of scarlet fever is yet undetermined. The usual symptoms of acute simple inflammation of the tonsils and acute follicular tonsillitis are severe pain on swallowing, redness and enlargement of the tonsils, pain in the ears and the muscles of the neck, headache, fever chills, and a general feeling of great discomfort; in the follicular type, the crypts are marked by small plugs of yellowish white material. The treatment varies according to the type of the condition and in general is as follows:

Simple inflammation and acute follicular tonsillitis.—A brisk purge by means of a saline cathartic is given; fever is reduced by a ten grain dose of Dover's powder followed by drop doses of tincture of aconite every hour, or the following mixture which will also relieve the headache, muscular soreness, and any rheumatic tendency:

Tincturæ belladonnæ,	fl. dr. j;
Sodii salicylatis,	oz. ss;
Mist. rhei et sodii,	q. s. ad fl. oz. iij.

Dr. j in wineglass of water q. four hours.

In conjunction with the above treatment a gargle of chlorazene, Dakin's solution, 0.5, should be given every four hours; Lugol solution, liquor iodi comp., ten minims to glass of warm water three times a day; or spray of ten per cent. argyrol solution or a combination of eucalyptol, menthol, and albolene—five minims eucalyptol, ten grains menthol, and one ounce albolene—every two hours. A cold pack should also be applied and kept on the throat. When the primary symptoms have subsided the enlarged tonsils should be removed and the teeth subjected to thorough and careful treatment by a competent dentist; if any symptoms of rheumatic trouble remain, the salicylates should be freely used.

Circumtonsillar abscess.—The abscess should be carefully opened and thoroughly drained; the cold pack and one of the gargles described above should then be used. In incising the abscess, care must be used to avoid wounding a bloodvessel.

Vincent's angina.—This may be differentiated from diphtheria, which it resembles, by culture and microscopical examination. The treatment is either the use of the gargle of Lugol's solution or painting the affected area with the pure solution.

Diphtheria.—Requires the use of antitoxin, local measures as previously described, and general stimulation.

Scarlet fever.—Local measures should be used as previously described as well as general antipyretic and stimulant treatment for the general disease.

Syphilis.—When the condition is a primary chancre it should be thoroughly cauterized with silver nitrate after which a gargle of mercury bichloride or potassium chlorate should be used; for mucous patches the mercury bichloride gargle should be used, the strength being about 1:10,000 to 1:20,000. Salvarsan and mercurial medication will be indicated for the treatment of the general disease.

In all the inflammatory conditions of the tonsils, cracked ice slowly dissolved in the mouth will be very agreeable and soothing to the patient.

Dr. David Lazarus, of New York, writes:

As acute tonsillar infection may arise from a number of causes the treatment will depend upon the origin of the trouble. Simple acute follicular tonsillitis is best treated by immediately putting the patient to bed, administering a strong purgative, applying cold applications to the neck, and administering internally the following mixture:

Tincture ferric chlorid,	ʒii;
Kali chlorat,	ʒss;
Glycerine,	℥i;
Syr. Aarant Cortic,	ad. ℥iii.

Mix and sig.: ʒi in water q. two hours, taken through a glass tube.

This mixture in half dram doses to a glass of water is used also as a gargle. It is also advisable to apply to the tonsil once daily a fifteen per cent. argyrol solution. Should the temperature be high and the pulse very thin and rapid, small often repeated doses of aconite will be of great benefit. The diet should be light and nutritious.

Should the tonsillar infection be part of a general grippe, the above treatment together with the administration of ammonium salicylate with small doses of quinine bisulphate will be all that will be required. Acute blastomycetic infections of the tonsil, though rare, do occur and should be treated by applications of tincture of iodine twice daily and the application oftener by the cautery. Quinsy sore throat or acute abscess of the tonsil calls for immediate incision and drainage; in other words, surgical treatment and the application of sterile surgical methods. Diphtheritic infections of the tonsils must and should at once receive the general treatment of diphtheria by the injections of antitoxin in an amount of from 5,000 to 15,000 units, repeated if necessary within twelve to twenty-four hours. The iron mixture used in the treatment of simple acute follicular tonsillitis should be used, but should be combined with small doses of strychnine sulphate. Hot applications should be applied to the throat, and even steaming of the larynx be practised. The nose should not be neglected in this treatment. Absolute confinement to bed is imperative and a good nutritious sustaining diet should be given and the bowels kept active. The patient should be isolated. In all tonsillar infections the administration of large quantities of pineapple juice has a soothing effect.

Dr. Leonard B. Fauquier, of Jersey City, contributes:

Until diagnosed, quarantine every case of tonsillar infection with a membranous patch. If suspicious of diphtheria, take a culture and administer antitoxin. Give enough to secure a complete binding and neutralization of all the toxins in the tissues and bloodstream. Dosage varies with age and physical condition of patient, severity and stage of the infection, and experience of the physician. An initial dose of 10,000 units in a child and 20,000 units in an adult is sufficient and lessens possible anaphylactic shock. Subcutaneous injection is satisfactory; beneath the angle of the scapular the tissue is lax, no harm follows if abscess occurs, and nervous people cannot see the operation. In intramuscular injection, absorption is more rapid. Intravenous injection secures more immediate action. In asthmatics, hypodermic injection of atropine should be given simultaneously. If diphtheria is not suspected, take a culture and make the patient comfortable, pending bacteriological report.

Local treatment in infants is better omitted. Gargles are useless for reaching the crypts. In some they cause great pain, owing to a myositis which exists in the surrounding muscular structures. For cleanliness and psychical effect older children and adults should gargle with a diluted warm solution of the following alone or in combination: hydrogen peroxide, liquor antisepticus alkalinus; liquor sodii boratis compositus; Seiler's tablets, or sodium bicarbonate, sodium borate, sodium chloride, potassium chlorate. The tonsils should be painted with astringents, as a solution of silver nitrate, argyrol, or hydrogen peroxide full strength; iodine in glycerin, or glycerite of tannic acid. If there is much swelling and adenitis, cold compresses or an ice bag, or heat if more grateful, should be applied externally. If fluctuation occurs, as in peritonsillar abscess, incise. General measures consist in fresh air, rest, and dietetic treatment. Nursing infants should be kept on the breast, except in diphtheria, when milk should be obtained by the breast pump. When possible the teeth should be cleansed after each meal. In adults the diet should be nutritional and light. Sucking cracked ice lessens pain and congestion, especially in peritonsillar abscess. Calomel should be given followed by castor oil or sodium phosphate in infants and children, in adults, by a good saline. Internal medication is unsatisfactory unless begun early. Sodium salicylate, sodium bicarbonate, sodium bromide acetylsalicylic acid, sweet spirits of nitre, phenacetine, aconite, tincture of ferric chloride guaiacum, glycerin and potassium chlorate should be used alone or in combination. Give sustaining treatment when indicated. When diphtheria is present keep the patient in bed for two weeks to lessen possible cardiac pathology. Vaccines, autogenous or stock, are helpful in some obstinate cases and their sequelæ.

Dr. Beverley Robinson, of New York, writes:

The first thing to do when a patient complains of sore throat is to examine it with a good tongue depressor. One of three conditions will usually be found: 1. A throat simply inflamed without much swelling; 2, well marked tonsillitis with swelling of the organ; 3, white deposit on the tonsils, either specially limited to the crypts, or already appearing as a small, but continuous membrane, of white, rather sombre, color. The best treatment for the first form of sore throat is a soothing or mildly astringent gargle and the local application of equal parts of compound tincture of iodine and glycerin. If the patient is an adult a capsule of muriate of quinine, two grains, should be given internally every four hours irrespective of whether there is fever or not. If the patient is a young child a gargle cannot be used, neither can quinine be taken, but iodine and glycerin may be used three or four times in the first twenty-four hours after the mouth is opened and the handle of a spoon covered with a strip of roller bandage is inserted far back in the mouth and turned edge upwards. Internally, a little sweet spirit of nitre in water is the most useful and simple remedy to employ, fever or not.

Where there is tonsillitis in addition to what precedes, the throat of adult or child should be rubbed gently a few times in twenty-four hours, with soap liniment to which a little turpentine may be advantageously added. The dysphagia is thus partly relieved and the turpentine has, I believe, a somewhat specific effort to abort tonsillitis when it is simple, or catarrhal. In follicular tonsillitis pinches of freshly powdered cubebs combined with a little sugar may be used frequently, or it may be simply placed on the tongue and swallowed. It is almost a specific, independently of other medication, local or general, both for adult or child. Moreover, it does not interdict the other medication previously mentioned, if it seems desirable.

If the membrane already appears and seems indicative of diphtheria, a throat culture should be made immediately and as soon as the nature of the disease is determined, a proper dose of antitoxin should be injected. Indeed, the antitoxin may be employed as a preventive measure, even before the laboratory report is given. Meanwhile, powdered cubebs has great value. The best local application in diphtheria is, unquestionably, tincture of the chloride of iron and glycerin, one drachm to the ounce. It should be applied three times in twenty-four hours.

Whenever a rheumatic causation is evident or suspected, and especially in simple tonsillitis, the salicylates should be freely given with bicarbonate of soda or Celestins vichy. A quinsy sore throat and abscess are often prevented. If not as soon as an abscess points, it is desirable to open it and lessen the duration of pain and dysphagia. Not infrequently, the abscess will burst spontaneously, and give almost immediate relief, before it is considered judicious or safe to open it. I have wished in a brief way to state the rational and effective manner to treat sore throat, or acute tonsillar infections, because after all, in almost every case of sore throat, the tonsils are to a certain degree involved. Although the source of the causative infection is not invariably clear at first, it usually is discovered later with some probability.

Dr. Karl A. Meyer, of Chicago, states:

The diseases of the tonsil of an acute inflammatory nature are usually subdivided according to the anatomical structures involved. The process may be limited to the crypts, when it is called acute lacunar or cryptic tonsillitis; it may involve the parenchyma, when it is called parenchymatous or phlegmonous tonsillitis; or it may extend between the capsule of the tonsil and the pillars giving the so called quinsy sore throat or peritonsillitis. The pathology depends on the entrance of pathogenic organisms through the epithelium of the crypts. The determination of the causative organism and its virulence is even of greater importance than the determination of the type of tonsillar inflammation according to the anatomical structures involved. The bacteriological findings give useful information as to the virulence of the infection and are an important clue to the mode of treatment. It is of paramount importance in all acute tonsillar infections to remember the association with specific fevers such as scarlatina, diphtheria, etc. It is also of great importance to know that these acute infections of the tonsil are very contagious; especially is this true of streptococcic sore throat. Prophylactic treatment is of great importance. This should include thorough isolation and investigation as in all contagious diseases. In all recurrent infections the radical removal of the tonsil should be carried out. The operation should never be performed until all evidence of acute infection has passed. If operation is refused it is necessary to empty the crypts by expression or the injection of Beck's paste. Local treatment is as follows: In all cases seen during the first twenty-four hours the application of a fifty to ninety per cent. silver nitrate solution will in nearly every instance cut short the attack. In the application of silver salts to the throat it is well to remember that severe spasm of the larynx will occur if any of the excess fluid finds its way into that organ. After the first twenty-four hours the application of a twenty-five per cent. silver nitrate solution has a marked beneficial action. The application should not be carried out more than once in twenty-four hours. The next most effective remedy in these acute conditions is guaiacol, twenty-five to fifty per cent. in olive oil. Apply two or three times daily until the acute symptoms have abated. When this has occurred one may make daily application of twenty-five per cent. argyrol, weak silver nitrate solution, or tincture of iron in glycerine. Tincture of iodine may also be applied full strength. For oral hygiene one should use an alkaline mouth wash or a weak permanganate solution. One should here remember that gargles do not reach the source of infection.

In internal medication, to relieve the intense sore throat and for their specific effect on the infection, salicylates are to be used. One can use either sodium or acetyl salicylate with sodium bicarbonate in ten grain doses every four hours. Guaiacol carbonate in five grain doses every three or four hours exerts a very beneficial action on the course of the disease. If the patient is in severe pain and unable to obtain proper rest, morphine, grain 1/16 and atropine, grain 1/150, hypodermically is indicated. For the severe anemia following the infection a tonic of iron and arsenic is indicated. Early in the course of the disease a saline cathartic should be given. The patient should be put to bed immediately the attack develops to shorten the duration of the disease and abort the severe complications which may develop. He should be placed on a liquid and light diet and given plenty of fluids. If the act of swallowing precludes the possibility of giving fluids by mouth, glucose or salt solution can be given per rectum until the acute symptoms have abated. Medication may be given in these solutions.

In case Klebs-Loeffler bacilli are found complicating the acute infection, diphtheria antitoxin should be given. In severe cases of acute Vincent's angina, arsenic in the form of salvarsan is indicated. If a localized abscess forms inside the tonsil or between the capsule and pillars, surgical intervention is immediately demanded. In opening these abscesses one should always remember the great danger of aspirating the pus into the larynx causing immediate suffocation or a later aspirating pneumonia. To obviate this, open these abscesses under local anesthesia. Beware of general anesthesia in all acute throat conditions.

(To be concluded.)

Medicine and Surgery in the Army and Navy

BRITISH SURGERY AT THE FRONT AND ON THE LINES OF COMMUNICATION.*

III.

THE SURGERY OF SPECIAL TYPES OF WOUNDS.

(Concluded from page 609.)

Wounds of the larger vessels are generally very dangerous, as is shown by the fact that a relatively small number of such cases reach the hospitals. This is true, specially, of complete severance of the larger arteries of the extremities and of the great vessels of the trunk. It was thought by many surgeons that there would be frequent opportunities for the various forms of suture of the larger arteries, but such occasions have been very uncommon. This is due to the fact that the injuries have generally been of such a type that they offered no prospect of successful treatment by these means. In a moderate number of instances lateral vascular suture has been performed, but end to end suture has seldom been possible. In two instances, at least, rents in the vena cava have been treated, the one unsuccessfully, by lateral suture, the other successfully by means of artery forceps. The chief reason why end to end suture cannot be performed is the fact that the severed ends are too far apart to be brought together by any practicable means. In such cases, where arterial suture was out of the question, Tuffier's tubes were tried in the hope of saving the extremities from gangrene. It was found that they generally became blocked by clot within twenty-four hours, but they seemed to have carried a limb over this most critical period in a number of instances and their further use is well worth trial. In some cases the clot which blocked the circulation was found to have formed in the vessel distal to the tube and this discovery may account for the frequent failure of the tubes to maintain the circulation for a long enough time to be of value. It is possible that the period of starvation which elapses before the tubes can be employed produces changes in the vessel walls which favor clotting and will prove an insurmountable obstacle to the wide use of the method.

Contusion of the vessels and linear fissuring of the intima have been of very frequent occurrence and are of great importance as causes of secondary hemorrhage or thrombosis and embolism. The former condition has already been discussed, but attention should be called to the latter as causes of gangrene. More extended experience of the frequency of embolism suggests that it is not only the obstruction of the circulation at the site of a thrombus which leads to gangrene of the part below, but that the escape and lodgment of emboli may be of equal or greater importance. The ensuing gangrene is of interest in that there is frequently no well marked line of demarcation. The absence of this line may depend upon the primary loss of blood and the very great general disturbance of the circulation through the part which follows injuries of this type. Further, injuries causing the arrest of the circulation at points considered especially favorable for the development of secondary collateral circulation in civil practice are very often followed by gangrene. The explanation of this is not known, but the factors just mentioned as influencing the type of gangrene may play a part. In general, the men with vascular wounds reach the hospitals toward the rear for treatment some days after their infliction, but when primary hemorrhage has been slight or absent they may arrive much earlier. The latter is also the case where the wounds have been very serious or multiple. The diagnosis of vascular injury in such cases is materially helped by the stethoscope, which will often detect vascular bruits when other signs of vascular injury are wanting or inconclusive. The distal blood pressure of the limb is usually found to be much reduced in lateral arterial lesions and is a valuable sign.

The treatment of arterial injuries is generally expectant, with the provision of complete rest to permit of recovery from the general circulatory disturbance, the consolidation of aneurysms, or the development of collateral circulation. This method has not been followed by many cases of accident or gangrene and secondary hemorrhage has not been common, except in large and badly infected wounds. Active treatment has largely been confined to the ligation of the vessels for extension of the effusion, increasing pressure in the tissues, increasing size of aneurysms, secondary hemorrhage, or beginning inflammation. Ligation should be done both above and below the injury and the dangers associated with it are not increased when there is involvement of the venous trunk, which demands its simultaneous double ligature.

The treatment of wounds involving the joints has undergone much change for the better as the result of an extensive experience. As the knee joint is one of the most important in the body and at the same time probably the most frequently wounded, the present day treatment of joint wounds may be discussed with reference to it. These wounds may be classified according to whether they involve only the soft tissues about the joint; whether the missile has penetrated the joint, with or without lodgment therein; and whether there has been fracture of one or more of the bony structures forming the joint. Wounds of the first class should be treated by immediate complete excision of the whole wound and suture, with or without a small drain. The joint should be immobilized and if effusion is great it may be aspirated aseptically. In wounds of the second class the same procedure should be followed as far as the wound itself is concerned, but the joint should be opened at once, most foreign bodies removed, and the cavity flushed out thoroughly. After this has been done, especial attention having been paid to the removal of fragments of clothing,

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*The material contained in these articles has been summarized from papers published in the *British Medical Journal* by Surgeon General Sir Anthony Bowlby and Colonel Cuthbert Wallace, June 2d, and by Surgeon General Sir George H. Makins, June 16th. The illustrations are reproduced by courtesy of the *British Medical Journal*.

the joint should be closed by immediate suture of its capsule and the skin wounds similarly sutured with or without superficial drainage. When such a joint is immobilized it should be done with some extension. The course of the case should be carefully followed and frequent aseptic aspirations of the joint made to determine whether or not infection is being overcome. In the case of very small shell fragments or of bullets which lie external to the joint cavity, or bullets within the cavity, it is usually safer to leave them *in situ* rather than to run the risk of lighting up infection by their removal. Where the fragments are large, or where shell fragments lie in the cavity of the joint, immediate removal is the best plan. The x ray is of great value in such cases, to determine both the nature and size of the missile and its relation to the structures of the joint.

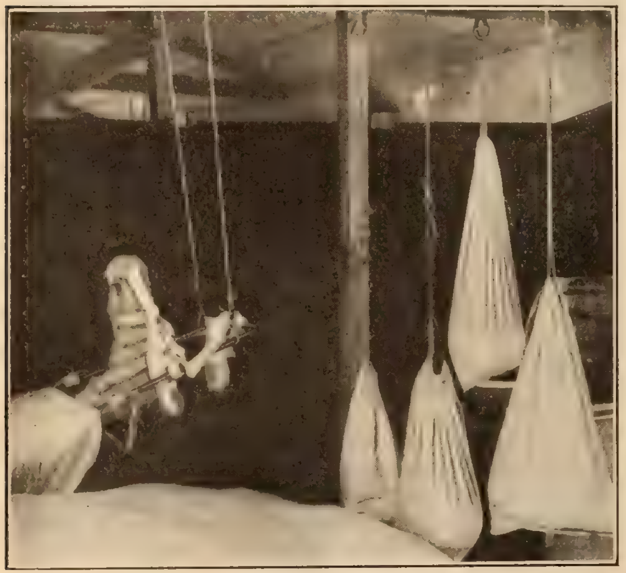

FIG. 18.—Thomas splint with foot extension, suspended according to method of Major Sinclair. The foot extension is applied by means of three quarter inch strips of flannel bandage, each passed through two metal triangles. The strips are attached to the foot over the sole, sides and dorsum by means of Sinclair's glue. They do not overlap on the dorsum. The triangles are aligned in sets of six along the inner and outer margins of the foot. A wooden footpiece with serrated edges rides on the side bars of the splint and to it the triangles are connected by a second set of flannel strips, threaded through the triangles. By this means the foot is under complete control and can be flexed or extended, inverted or everted, rotated in or out, and raised or lowered. Extension can be applied to the whole limb at the same time.

In the case of injured joints with associated fracture of one or more of the bones of the articulation the treatment differs according to circumstances. In a small proportion it is possible to make primary closure of the joint. This is specially so in the case of fractured patella and where there are linear oblique fractures running into the joint. Where the bone is much shattered and the wound is very dirty it is best to abandon all hope of saving the joint and to make a limited primary excision, followed by immobilization with extension and the institution of Carrel's treatment.

In cases of active suppuration within a joint the cavity must be kept open and be sterilized by some method, such as Carrel's, or in some cases, Rutherford Morrison's. Where suppuration involves the knee, drainage has been a matter of great difficulty, but it has been found that it can be accomplished satisfactorily if an opening be made to either side of the joint in front over the lateral extensions of the synovial sac, artery clamps passed backward in the lateral extensions, and a track made down to each clamp from behind, through which Carrel tubes are then inserted. It may also be necessary to drain the other synovial extensions in a similar manner. The excision of joints may be primary where it is obvious that such treatment will be necessary unless amputation be performed; secondary or intermediate, in which case one must always hold himself in readiness to perform an amputation at once if signs develop indicative of extension of the local infection; or it may be late, when the same attitude must be maintained.

Two problems of prime importance have to be met in the case of the treatment of gunshot fractures: fixation and transport, and the treatment of the associated infection. Very early in the war it was seen that the regular splints were inadequate, both in form and numbers, for dealing with the very large numbers of men with fractured bones. In the first place it was found that some means had to be devised whereby constriction of the part could be avoided and extension and fixation could be maintained. Following the suggestion of Robert Jones some form of the Thomas splint was soon adopted for general use in the case of fractures in the lower extremity and it is now employed almost to the exclusion of other types of splint, except where there

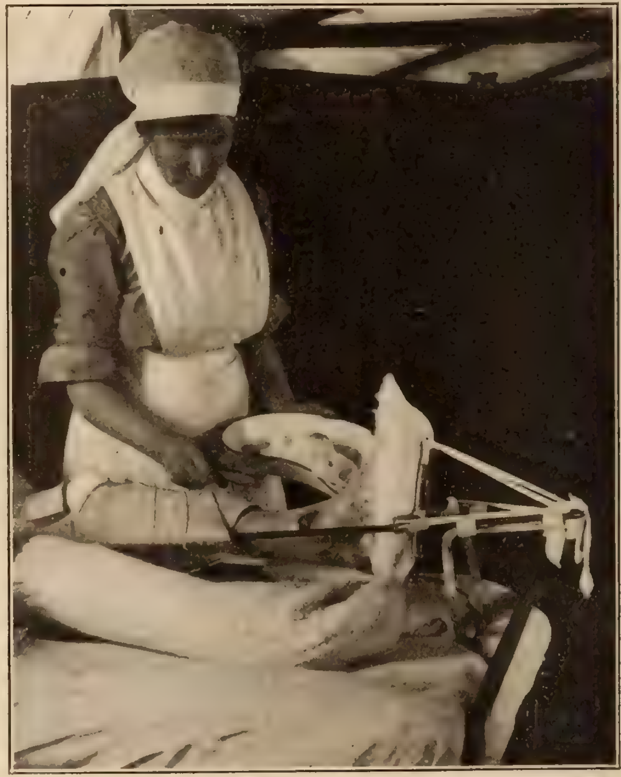

FIG. 19.—Thomas knee splint with plantar extension. The extension is obtained through a plaster cast of the sole of the foot, made of flannel impregnated with plaster of Paris. In the cast a series of tapes is incorporated. When the cast is dry it is attached to the sole of the foot with Sinclair's glue and extension is secured by attaching it to the wooden footpiece by means of the tapes.

is a wound which lies where the ring of the splint would fall. Here the old Liston splint is still used. The use of the Thomas splint had one disadvantage, namely, the lack of any provision for the support of the splint on stretchers or ambulance cars. This was soon provided, however, in the form of several ingenious metallic frames, and it is now the custom to transport the patient wearing a Thomas splint from the casualty station to his bed in the base hospital without removing him from the stretcher. For fractures of the upper extremity the Thomas splint has not proved so useful as a form of internal angular splint with a hinged back piece for the support of the upper arm.

So far as the problem of infection is concerned the best results are to be secured by immediate operative attention to the wound. This includes the free incision and opening of all pockets; exploration by sight and touch of the entire field with the removal of all foreign bodies, fragments of clothing, and completely detached bone; excision of all dead or badly damaged soft tissues, and the immediate closure of the wound in some cases or its free drainage in others, combined with the Carrel or the Morrison treatment. In general dead bone fragments should be removed, but where there has been very great comminution it is often better to leave a number of the fragments in place attached to the periosteum to aid in osteogenesis, even though they may be thrown off later.

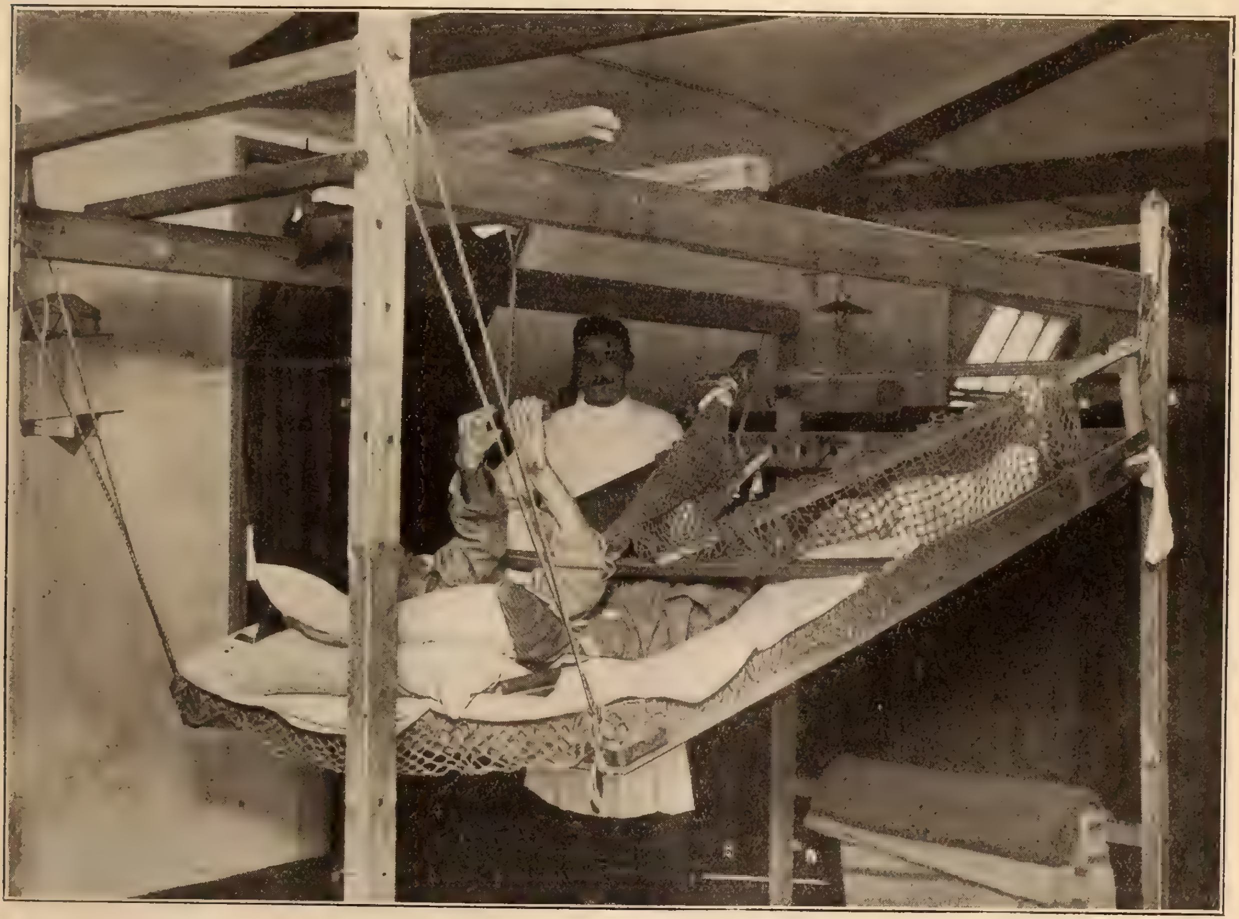

FIG. 20.—Net frame for use in treatment of fractures of upper third of femur, with or without large wounds, according to Major Sinclair. It is a wooden frame 5 by 7 feet, with a transverse bar at the level of the patient's umbilicus and two leg bars running from the latter to the foot of the frame. Both legs are extended by means of gauze and glue and tapes passed through holes at the end of the frame. The patient's back is padded and his body and legs are supported by three pieces of strong, one inch netting—one for the trunk and one for each lower extremity. The frame is suspended by its corners and counter-extension is secured by lowering the head of the frame about fifteen inches. Dressing the wounds and nursing the patient are very easy in this frame, as each of the three pieces of netting can be removed or adjusted individually.

The matter of providing immobilization and extension for the maintenance of the proper reduction of fractures has also taxed the ingenuity of the surgeons and much of value has been learned. In the first place plaster bandages and splints have been almost wholly abandoned on account of the difficulty of keeping them clean. Various methods of applying extension to the limb while in the Thomas splint have been devised, but the most valuable of these is the use of Sinclair's glue. By means of this adhesive flannel strips can be attached to any desired part of an extremity for the purpose of traction, or various appliances can be glued to the skin, especially a plaster cast of the sole of the foot for the purpose of applying extension in fractures about the ankle. A number of the more recent extension devices are described and illustrated in the accompanying photographs. Pulley extension is still much used with good results, but such methods as those of the continuous screw, nails and plates, and pin extension have very generally fallen into disuse. It seems likely that with the recent advances which have been made in the treatment of wound infections the use of bone plates and wiring can be largely extended with safety and success. With these improvements, also, it has become possible to practise early secondary suture of the wounds in a large proportion of cases with much improved results, both in respect of function and of time required for complete union of the fragments.

Since the beginning of the war two great changes have taken place in the matter of injuries of the head. The first is a great reduction in the numbers of severe injuries due to the introduction of the steel helmet; the second to improved facilities for the treatment of such injuries and an improved technic. It was the early practice to operate in head cases at the front and then send the patients back to the base, but it was soon found that these men arrived at the base in poor condition due to the disturbance of transport. Special hospitals were then established near to the front to care for this class of cases, for it was learned that patients with head injuries would travel well before operation and offered good prognosis if they could be operated upon early and be kept for a considerable time without removal. Next a happy medium was struck between the school which advocated a minimum of operative interference and that which advocated extensive operation. The present practice is to divide all head cases into two classes as they come in to the casualty station: those with rapid and those with slow pulse rates. The former group are put to bed with simple dressing of the wound and if their pulse rate slows they are then sent back to the special hospital. The patients with slow pulses are at once sent to the special hospital. The pulse rate alone is used as the distinguishing sign and no attention is paid to the nature of the wounds. At a special hospital operation is usually delayed for one or two days to prevent the rapid fall of blood pressure which follows immediate operation and to permit the initial edema of the brain to subside. Such a delay is also of advantage in that it gives time for the formation of dural adhesions which tend to check the spread of infection over the brain.

The operative practice is now to excise the wound completely down to the bone in all cases and either to suture the fresh wound or to cover the gap with some form of flap. If there is no bony injury this is often all that is necessary. Where the bone has been fractured or the missile has penetrated x ray examination is made to locate detached bone fragments as well as the foreign body and if these are not too deep they are removed through a trephine or other skull opening. It is usually safe to leave bullets and even small fragments of shell in the brain if deeply located. After removing destroyed brain tissue and foreign bodies the defect should be covered at once by suture of the wound of the scalp, pericranial flaps, or undercutting of the scalp. It is also well to insert a drain just beneath the

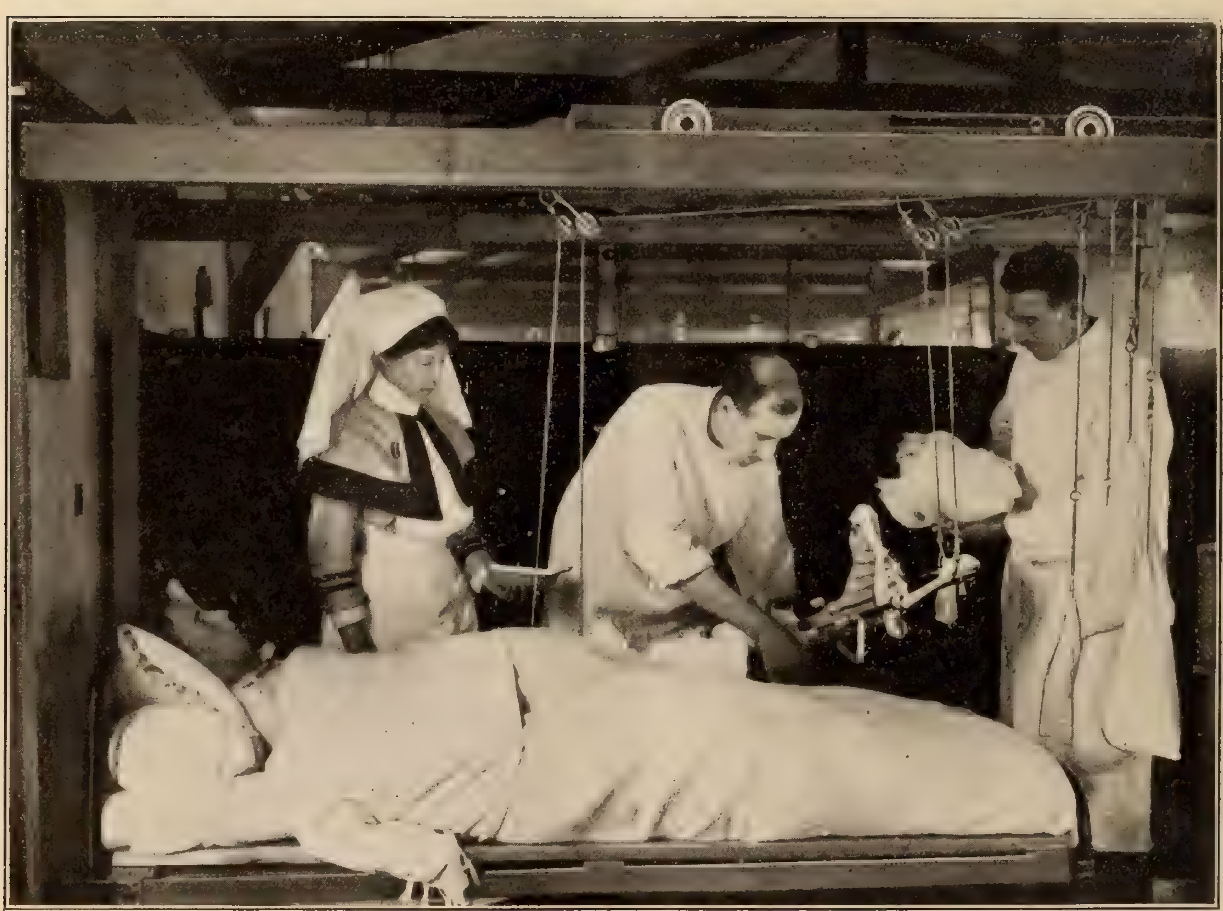

FIG. 21.—Counterpoise suspension in the treatment of fracture of the thigh, combining Thomas's knee splint and Sinclair's foot extension.

scalp for the first few days. In cases where the skull is injured it should be trephined, but if the dura is found intact the general opinion favors leaving it undisturbed. In general in the realm of head surgery the use of local anesthesia, reinforced by the previous administration of scopolamine and morphine an hour before operation, is to be preferred to general anesthesia. Of course, in all cases of cranial injury the wounds are cleansed and cared for according to the best surgical methods.

The last variety of gunshot injury to come under our attention will be that of abdominal wounds. In this field, as in so many others, great advances have been made with increasing experience, and the surgery of abdominal gunshot wounds has been almost revolutionized. This change has come about largely as the result of the improved equipment and large size of the casualty clearing stations, which enabled them to provide proper care for such cases and to retain the patients for sufficiently long periods of time following operation. Other factors also contributed to improved methods of treatment, such as the recognition that hemorrhage was the chief cause of early death and that if it were to be controlled patients would have to be operated upon promptly. It was also learned that, contrary to general belief, the modern small calibre bullet caused very extensive lesions of the intestines. Efforts were therefore made to remove patients with abdominal wounds to the casualty stations with the greatest rapidity and facilities were provided for operating upon them there rather than further behind the lines. Two important facts with reference to operation and prognosis have been learned. First, it is seldom wise to operate later than thirty-six hours after the receipt of the wound; second, prognosis is extremely grave in patients with pulse rates above 120. Experience showed that it was possible for bullets to traverse the abdominal cavity without damaging any of the hollow viscera and also that these viscera might be severely damaged or ruptured by missiles which did not enter the abdomen at all. It was also learned that wounds of the large intestine were likely to be followed by more or less localized peritonitis, while those of the small gut more commonly caused a generalized peritonitis. Further, if the psoas muscle was penetrated in cases with wounded large intestine the abscess might gravitate into the thigh or even down the leg. Radiography also proved very helpful in forming some idea of the organs which had been injured as well as in localizing the missile when it was retained. Almost every structure within the abdomen is likely to be injured by missiles, but the urinary bladder very frequently escapes, and wounds of the solid organs, if uncomplicated by injuries of the hollow viscera, are of relatively little danger except from primary hemorrhage. However, the liver is the only solid viscus which may be wounded without there being very great probability of associated hollow visceral lesions.

The treatment of abdominal injuries depends somewhat upon the nature of the wound, as well as on the general condition of the patient and the time since the receipt of injury. If received promptly most cases should be subjected to operation only after having been given a period of several hours for rest and the relief of shock by the application of warmth. This period of preliminary treatment greatly improves the outlook. As mentioned in a previous section, if fluids are to be given it is best to administer them by mouth or rectum, as they are poorly absorbed from the subcutaneous tissues in the state of shock. The general results of surgical treatment of abdominal wounds have shown much improvement since the inception of the war, but the general mortality is still about fifty per cent. of all cases operated upon. This is due more to the intercurrent infection than to the operations themselves. It is impossible to enter into any detailed discussion of the various operative procedures, and it is hardly necessary since they do not differ materially from those found most satisfactory in civil practice.

There are three chief causes of failure to save life in abdominal injuries: 1. Hemorrhage may come from any vessel in the abdomen, but most frequently from the mesenteric and pelvic vessels. 2. Sepsis may cause peritonitis, retroperitoneal sepsis, or wound infection. Retroperitoneal sepsis has been shown recently to have been one of the most frequent causes of death following abdominal injuries although it is not always recognized during life. 3. Shock does not seem to bear any necessary relation to the amount of injury, though it is usually great in multiple injuries. Injury of the small intestine seems to cause less shock than that of the large intestine, and the same seems true of the liver and kidneys.

MEDICAL NOTES FROM THE FRONT.

Psychoses Met with in Warfare.—Types of Steel Helmets in Use at the Front.—Comparison of French and German Military Surgery in Exchanged Prisoners.—French Typhoid Treatment versus German.

GENEVA, *September 1, 1917.*

The deliriums of war do not offer any particular form of evolution for the very good reason that war has not created any new types of psychosis. This is the opinion of the majority of alienists and seems to be established by facts. If the psychoses observed at the beginning of the war and those arising after several months of trench fighting are compared, including those developing in soldiers who have been at the firing line and those who have remained at the rear, it will be clearly seen that they all enter into the various groups known in times of peace. I would, however, remark that contrary to this belief certain writers have recently described certain forms of mental disease which they look upon as new. Thus, for example, Milian has studied under the term of hypnosis of battles a state between coma and sleep. It is not true coma because there is no stertor, congested face, nor deviation of the head or eyes, while it is more than ordinary sleep from the fact that the subject cannot be aroused. It is a true hypnosis. These subjects remain immovable, the eyes completely or partially closed or they are wide open and fixed. They make no spontaneous movements, but if one forces them to act they do so after the manner of somnambulists, walking so long as they are led or pushed, remaining immovable at the spot where they stop. They maintain an absolute mutism or if they reply to questions it is by an unintelligible sound or always by the same single word. The organic and reflex functions remain normal.

Some of these individuals offer besides these symptoms a true state of delirium with hallucinations, relating to episodes occurring in a battle which have most impressed them. In the first place reference to the battle provokes very marked emotional reactions in them; they weep or manifest repulsion or terror and are a prey of visual hallucinations which they translate by a word "fire" or "cannon," "the wounded," "trenches," etc. Others manifest a true delirium of action and when they are asked what they did during battle, they get up and rush forward as if holding a rifle in a bayonet charge. It is remarkable that although it is easy to provoke these reminiscences of the battle by a word or question, it is on the other hand quite impossible to obtain a reply of whatever nature on any other subject or to induce the most simple movements, such as walking or eating. In reality, this state is related to stupor, a psychosis which is encountered in peace as in war, but which borrows from the latter a special coloring while at the same time its frequency is probably greater.

Chavigny has described under the name of aprosexia a state essentially characterized by an absolute inability on the patient's part to fix his attention on no matter what object. Contrary to what is generally observed in mental confusion, these subjects are very wide awake, and are acted upon by all external excitation, but it would appear that none of these excitations become transformed into conscious impressions or sensations or are related to other psychological states. Like a little child or perhaps, better still, like a caged bird which continually turns its head at each noise, these patients follow noises and movements with the eyes, which are unceasingly mobile in an impassive and expressionless face. Dumb, the patient asks for nothing, does nothing, and remains reactionless. It would appear that there is a complete arrest of psychical functions. This psychosis has a short evolution and recovery is soon complete. In this condition, too, it is probable that the state is not a new nosological entity. At the most one can find certain rather well defined elements, as amnesia of fixation and retrograde amnesia, but the amnesia seems to be more in relation to a stupid, mental confusion than to anything else.

It seems clear from all data collected during the past three years that although warfare has given rise to deliriums of special aspect, it cannot be said to have created new types and although one cannot speak of the existence of war psychoses as nosological unity, it nevertheless appears that war often lends a certain special aspect from the fact that the delirium and hallucinations relate to the war.

* * *

It may be interesting for your readers to know what has been obtained in prophylaxis against injuries to the skull and brain in battle. Having noted the relatively large number of head injuries during trench warfare, the French command looked about for some means to diminish the number or at any rate to attenuate the gravity of these injuries. In May, 1915, resistant steel caps were distributed to the men, which were to be worn under the képi. These were hemispherical caps, somewhat elongated anteroposteriorly and had about the shape of the skull. This cap did render much service, but it presented serious inconveniences. It did not fit all heads; it was heavy and increased perspiraton as it was not ventilated; as it was not painted it soon became rusty, and it gave rise to frequent headache. As it was in direct contact with the scalp all shocks it received were directly transmitted to the cranial bones, so that these were fractured without the occurrence of any scalp wound.

The later helmet distributed to the troops in September, 1915, was a great improvement over the steel cap, and has unquestionably been the means of saving many lives. It does not lie directly on the head and by a certain device it is retained a little distance from the scalp. Thus it is ventilated and what is more important when hit by a projectile it may become deformed without injurying the integuments. Although the rounded shape of the helmet does not prevent it being penetrated by a missile coming upon its surface in a perpendicular direction it makes all projectiles striking it obliquely undergo a ricochet and should they penetrate the helmet their velocity is greatly reduced.

Since this helmet has been in use wounds of the head seem to have decreased in number, as will be seen from the following figures, which I know to be authentic. Before their use the percentage of wounds of the skull varied in different army sections from 6.83 per cent. to 15.5 per cent., and since its use the precentage is from 5.77 to 11.30, which therefore gives us a total mean of 10.12 per cent. before, and 7.90 per cent since the introduction of the helmet. Therefore, there has been a reduction of about thirty-three per cent. of injury to the cranium. I would also point out that these figures comprise all cases of head injury and not simply penetrating wounds of the skull. It is also the opinion of regimental surgeons that the number of dead from head injuries has decreased.

* * *

As you know, the Swiss Red Cross Society has superintended the transfer of exchanged wounded prisoners between France and Germany since the beginning of hostilities. The sanitary trains are very comfortably equipped. After three years' observation of the wounded passing across Switzerland in both directions, the wounded French from Germany and the wounded Germans from France, I can unhesitatingly say that French surgery has shown itself far superior to that of the land of Kultur. Let me take an example, that of amputation stumps. The French wounded who have been amputated on the other side of the Rhine have been mostly in a fearful condition, which will require reamputation in France. The amputated Germans coming from Lyons and elsewhere are in fine condition and the operative results would be a credit to the art of surgery of any country. Fractures have received practically no treatment whatever by German surgeons. They seem to consider that a splint put on "any old way" will do. The results are deplorable and from all I can judge from a large field of observation, it is clear to me that Teutonic surgery is slovenly and quite below American, English, or French standards. Here in Switzerland, we all know that their experience with the treatment of tetanus was fearful and the German surgeons let it slip that the only antitetanic serum of any value was what they stole from the French hospitals in the countries they invaded.

One point I wish to make here, and that is that surgeons of neutral countries who have seen the Germans at work have assured me that the poor operating was not confined to the French prisoners, but was just the same in the case of their own wounded. As one very competent neutral surgeon put it to me, "They had lost their heads completely." I think that the reason for this is easily explained. German surgeons are merely specialized puppets, like the rest of the race. Their university training has been of the kind that inspires no initiative, and when thrown on their own resources they are at sea when they no longer have their Herr Professor to guide them. No remark was ever truer than that recently made by Charles H. Mayo in his presidential address to the American Medical Association, when he said: "Many important discoveries in medicine in America have not been accepted here until they have been appropriated by Teutons and returned to us with the stamp 'made in Germany,'" and the same applies, only in a larger measure, to the great French school of medicine, whose vast discoveries and advances in the science of the healing art have been appropriated by the Germans as their own.

One word more before closing this letter, in reference to the mentality of the German physician, because it is absolutely characteristic and the result of their training. A French physician, prisoner in Germany at the beginning of the war, was ordered to an internment camp in Guströw to treat the French prisoners suffering from an epidemic of typhoid fever. After some time the good doctor was able to treat his cases as he wished, by free ingestion of water, pyramidon, cardiac stimulants, and for want of tubs, the use of the cold pack. What seemed to startle the German doctors was the different treatments the Frenchmen resorted to in order to adapt them to the individual constitution of the patient, while from the Teuton viewpoint the patient should adapt himself to the treatment. The minute a patient has typhoid he must, according to the German view, be treated according to their rules laid down for this disease.

The French doctor tells of a very stout patient with a marked mitral lesion; for treatment he ordered a hydric diet, as milk could not be obtained, and large doses of camphorated oil *subq.* Now, every day the German physician wanted this patient to be fed and inquired of his French confrère why he ordered so much camphorated oil—ten c. c. per diem—and if this was the method of treatment employed in France. The Frenchman replied: "When it is indicated, it is." This answer achieved its end for the Teuton was scandalized, but as the patient made an excellent recovery, the German looked upon it as an heroic remedy and undoubtedly from that day on typhoid fever for him would only mean camphorated oil, because after that he insisted upon ordering it in every case without the slightest reason. This anecdote is authentic, having been told me by the French doctor himself after his return to France.

MEDICAL NEWS FROM WASHINGTON.

Laboratories for Naval Hospitals and Camps.—Special Assignments of Junior Naval Officers Completing Naval Medical School Course.—Surgeon General Rixey to Inspect Naval Hospitals.—Reorganization of the Surgeon General's Office.

WASHINGTON, *October 1, 1917.*

Arrangements are being made by the surgeon general of the navy at the various hospitals and naval camps in anticipation of the troubles that naturally will ensue on account of cold weather. In all of the naval districts, well equipped laboratories have been established in order that adequate cultures may be conducted as a means of arresting the progress of contagious and infectious diseases. This is one of the most important projects that falls to the naval surgeons and the officers of the Public Health Service that are cooperating with them. While the investigation is expensive, it represents a saving in the checking of communicable disease. Some idea of the extent of the work in that direction is afforded by the fact that at one hospital 2,050 cultures were made. This number represented men constituting a single group. The local health officers also are aiding the naval medical authorities, notably in the case of Medical Inspector W. H. Bell, on duty at the naval operating base at Hampton Roads, Va., and Surgeon W. L. Mann, on duty at the marine corps cantonment at Quantico, Va., they having been appointed health officers with authority extending to the neighborhood adjacent to the naval reservations. In other respects, the State authorities, particularly in Georgia, have evinced a readiness in the suppression of resorts that are undesirable.

* * * * *

The junior officers of the Medical Corps of the navy, who recently completed the course of instruction at the Naval Medical School at Washington, have been divided into groups, one going to the Rockefeller Institute for Medical Research at New York, another to training preparatory to conducting examinations of aviators and candidates for the aviation service, another to laboratory training, and another to duty on board ship mostly in foreign waters.

* * * * *

Surgeon General Presley M. Rixey, retired, formerly chief of the Bureau of Medicine and Surgery of the Navy, has been recalled to active service for the purpose of making an extended inspection trip that will include the naval tuberculosis hospital at Las Animas, Colo., and the naval hospitals on the Pacific coast and at the naval training station at North Chicago, Ill. He will examine into the conditions prevaling at all the hospitals, for which duty he, of course, is admirably fitted. His assignment to this important duty is rendered necessary by the fact that the duties of Surgeon General William C. Braisted, the present chief of the Bureau of Medicine and Surgery, keep him too much occupied in Washington to permit him to make the tour.

* * * * *

With the advent of the war, it was found that it was necessary practically to reorganize the office of the surgeon general of the army and to add a number of new divisions thereto in order to take care of the greatly increasing and more widespread duties with which it is charged. General Gorgas has attached to his immediate staff Colonel T. H. Goodwin, of the British army medical corps; Colonel C. U. Dercle and Major E. Rist, of the French army medical corps, and Major C. L. Furbush, of the Medical Reserve Corps. Colonel Henry P. Birmingham, Medical Corps, is chief assistant to the surgeon general and director of the sanitary division, and he has Lieutenant Colonel James W. Van Dusen, Medical Corps, as his assistant. Lieutenant Colonel Robert E. Noble, Medical Corps, is in charge of the division of personnel, and he has as his assistants Lieutenant Colonel Reuben B. Miller, Major John S. Coulter, and First Lieutenant Walcott Denison, Medical Corps, and Major B. W. Caldwell and Captain William H. Walsh, Medical Reserve Corps. Miss D. E. Thompson, Nurse Corps, is at the head of the division of female nurses. The supply division is in charge of Colonel Carl R. Darnall, Medical Corps, with the following assistants: Colonel Edwin P. Wolf and Major E. R. Gentry, Medical Corps; Major A. C. Christie, Medical Reserve Corps, and Major W. T. Fishleigh and Captains John B. Copping, Richard A. Wood, and Patrick P. Vane, Sanitary Corps, national army. The Army Medical School is in charge of Colonel W. H. Arthur, Medical Corps. Colonel W. O. Owen, Medical Corps, retired, is in charge of the Army Medical Museum and library division of the surgeon general's office, and he has Colonel C. C. McCulloch, Medical Corps, as assistant.

The medical and surgical history of the war is being looked after by Major Fielding H. Garrison, Medical Reserve Corps, and by Captain John S. Fulton, of that corps, who is giving particular attention to statistics. Lieutenant Colonel C. H. Connor, Medical Corps, has charge in the office of Red Cross activities. The division of sanitary inspection and personnel includes Colonels F. P. Reynolds, H. C. Fisher, Weston P. Chamberland, and H. A. Shaw, and Majors Albert G. Love and Eugene R. Whitmore, Medical Corps; Major Victor C. Vaughan, Medical Reserve Corps, and Majors William D. Wrightson and James T. B. Bowles and First Lieutenant Harry N. Fuller, Sanitary Corps, national army.

Colonel Edward L. Munson, Medical Corps, has charge of the division of medicomilitary instruction, including the work of the medical officers' training camps. The divisions of hospitals and ambulance is in charge of Colonel James D. Glennan, Medical Corps, with Majors H. H. Johnson, Floyd Kramer, and Lauren S. Eckels, Medical Corps; Major W. H. Smith, Medical Reserve Corps, and Captain C. L. Brown, Sanitary Corps, national army, as assistants.

The cardiovascular section of the division of internal medicine has on its staff Major Earl H. Bruns, Medical Corps, and Majors Theodore C. Janeway and Warfield Longcope, Medical Reserve Corps. The division of neurology andpsychiatry has Majors Pearce Bailey and Thomas W. Salmon, Medical Reserve Corps, with First Lieutenant H. M. Pollock, Sanitary Corps, looking after statistics. The section of psychology of this section includes Major R. M. Yerkes, Medical Reserve Corps, and First Lieutenants C. S. Yoakum and W. S. Hunter, Sanitary Corps, national army.

The division of infectious diseases and laboratory is in charge of Lieutenant Colonel F. F. Russell, Medical Corps, with Majors W. H. Welch and H. Zinsser, Medical Reserve Corps, as assistants. The section of venereal diseases includes Dr. William A. Pusey and Dr. Francis R. Hagner, and Major William F. Snow and First Lieutenant A. N. Thomson, Medical Reserve Corps. The division of surgery is under general supervision of Lieutenant Colonel William H. Moncrief, Medical Corps, and the rotary surgical staff includes Majors W. J. Mayo, C. H. Mayo, W. D. Haggard, Stewart McGuire, A. J. Ochsner, J. F. Binnie, A. D. Bevan, Leonard Freeman, Samuel Mixter, and K. A. J. MacKenzie, Medical Reserve Corps. Major Edgar King, Medical Corps, is in charge of the division of special hospitals and physical reconstruction, with Captain H. Brooke Price, Sanitary Corps, as architect. The division of the head is in charge of Lieutenant Colonel T. C. Lyster, Medical Corps, with the following majors of the Medical Reserve Corps: N. M. Black, eye; Harris P. Mosher, ear; Vabray P. Blair, mouth, and Captain Charles Bayley, Jr., brain.

Majors E. G. Brackett, J. E. Goldthwaite, and David Silver, and First Lieutenant O. Miller, Medical Reserve Corps, conduct the work of the division of military orthopedics. The active vocational board of this division consists of Dr. Royal Meeker, labor; Dr. Davis Edsall, medicovocation; Messrs. John E. Wilder and Charles Stone, industrial and employment, and Dr. Dean Lewis, general surgeon. The advisory board on orthopedics is made up of Major Goldthwaite, chairman, Major Silver, Majors H. D. Corbusier and E. G. Brackett, Medical Reserve Corps, Drs. Robert W. Lovett, Albert H. Freiberg, G. Gwillyn Davis, F. H. Albee, and John L. Porter, and a representative of the rotary surgical board as exofficio member. Lieutenant Colonel Llewellyn Williamson, Medical Corps, is head of the division of gas defence, with the following assistants of the sanitary corps of the national army: Major Bradley Dewey, Captains Arthur L. Beese and Richmond Mayo-Smith, and First Lieutenants James S. Wolf, J. S. Babbitt, H. B. Foster, William E. Brophy, and F. J. Eiseman. The division of food has the following, all of the Sanitary Corps of the national army, with the exceptions noted: Majors J. R. Murlin and Philip Shaffer; Captain Caspar Wister, Medical Reserve Corps; Captains Walter H. Eddy and Gephart and Arthur W. Dox, and First Lieutenants Arthur Thomas and N. R. Blatherwick. Drs. Alonzo E. Taylor, Graham Lusk, and Francis G. Benedict are connected with the division in an advisory capacity.

Editorial Notes and Comments

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EDITORS
CHARLES E. DE M. SAJOUS, M.D., LL.D., Sc.D.,
Philadelphia,
SMITH ELY JELLIFFE, A.M., M.D., Ph.D.,
New York.

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SOCIALIZATION OF CRIPPLES.

A definite program has been outlined by the Government which contemplates the establishment of a number of large hospitals throughout the country for the rehabilitation of the wounded soldiers who will be returned to this country from the battlegrounds of Europe. This is as it should be. Arrangements for these hospitals should be worked out sufficiently in detail so that when our wounded and crippled begin to arrive we will not be in the position that some of our allies have been in of having no place to put them and no program of treatment. The experience of other nations is at our command and points quite clearly to certain large general principles on which these institutions should be organized. In the first place, these institutions should provide all of the surgical and mechanical opportunities for physicial reconstruction as far as that may be possible. When the masseur and the gymnastic instructor, following the work of the surgeon, have completed their work, however, the largest and most important problem will remain, namely, the social rehabilitation of the cripple.

The astounding statement is made that our industrial plants throughout the country are at present, before our soldiers are in the trenches, turning out cripples in numbers equal to the cripples produced by the war. In the United States these must number somewhere in the neighborhood of a quarter of a million, an estimate arrived at by consulting the records of the makers of artificial limbs. Still we hear comparatively little of this very large element in our population, largely because they are socially taboo. Very few employers will engage a cripple. His very appearance is undesirable, while some of the laws which make the employer liable for injuries received by an employee in proportion to the degree of disability produced render it dangerous from the employer's point of view to let down the bars. A man with one eye, for example, who loses the other eye, might as an employee collect damages for total blindness. Added to all this is of course the further fact that cripples are produced only too frequently by the sordid and unlovely machinery of economic competition, and therefore there is no halo of glory which goes with the condition. The cripple all too frequently is ashamed of his defect and seeks to hide it.

Thousands upon thousands of our young men who are training to do their bit in the great war for democracy are animated by lofty ambition, and those who come back from the front minus an arm or a leg, may justly feel that their loss, far from being a disgrace, is a badge of honor, and may expect others to treat it so. The enormous energy which is carried in the symbol "patriotism" is thus capable of constructive ends and should be used by the community for raising the cripple to a sense of higher social usefulness which will find its reflection in a community anxious to give him a chance. We may even hope by the end of the war that it will be considered unpatriotic for an employer to give a job to a perfectly sound man which a cripple could fill as well, and perhaps equally as unpatriotic for the sound man to accept it.

In the organization of these rehabilitation hospitals it would be well to combine them with the hospitals where nervous and mental diseases are treated, particularly such cases as are comprised under the broad designation of "shell shock." In all this group the underlying defect of human nature, which makes it easier to lie down, do nothing, and let someone else assume the responsibility and the care, must be borne in mind, and the mutual reaction of these two classes of patients upon each other would be of inestimable service. The man who has a psychogenic palsy of the arm would be a little ashamed not to be able to do as well as a man who had only one arm, if he were working at the same bench, and each would be helped by the effort of the other toward that higher appreciation of their social responsibilities which would spur them on to greater effort, to larger success in learning trades that would make them selfsupporting, and therefore through wider social usefulness to greater selfrespect, and therefore to health.

DOMESTIC PRODUCTION OF DRUGS.

One of the direct results of the war, an effect which might prove a blessing in disguise, is the fact that the attention of the nation has had to become concentrated on the problem of conserving and elaborating its own resources. Heretofore it has been so simple to import certain necessary articles that little trouble has been taken to discover whether or not we could produce them for ourselves, if it were necessary. Especially has this been the case where the product in question has not been used in sufficient quantities to tempt business men by the possible profit. Certain drugs which are used frequently by the profession have hitherto been obtained so cheaply from other countries that the question of whether or not they could be raised in this country has only been considered in an academic manner, if at all. The great war soon woke the profession to a realization of its dependence upon other countries for its drugs. This is true not only of the many synthetic drugs which are made and patented in Germany, but also of other drugs which are cultivated in remote corners of the world and which the present day perils of ocean travel prevent from reaching our shores.

The experience of England in this matter will be particularly valuable. In the *Lancet* for June 2d a contributor, who signs himself simply "A Drug Grower" has a few words of wisdom to say on this subject. He comments first on the fact that the attention which the British Board of Agriculture has given to the subject has been too indiscriminate, that is, no attempt was made to differentiate between the drugs used frequently in ordinary medical practice and the host of others which are seldom used except by the so called botanic druggists and herbalists. On the other hand, the Insurance Commissioners have made a report to the Board of Agriculture in which they inquired very carefully into that very point. They discuss first a few drugs which are used in medical practice and which might conceivably be grown in England. Thus, aconite, of which they found a liberal supply, had been received from Spain at pre-war prices. Dandelion, or taraxacum, grows in immense quantities as a weed, but its use in medicine is negligible; the same may be said of couch grass, or agropyrum. In the cultivation of male fern a curious difficulty has arisen. The English root apparently differs somewhat in composition from the continental; at any rate, manufacturers have been unable to produce from it an extract containing the proper proportion of filicin. The British Pharmacopœia required twenty per cent. We should like to hear if American growers find this same difficulty. The supplies of camomile and valerian from Belgium are cut off, but will of course be available in the near future when the Germans are driven out of that country. In the meantime the Japanese and Indian products are being used.

Besides the above drugs, the Insurance Commissioners considered four very important ones, digitalis, colchicum, belladonna, and hyoscyamus. The supply of the first two growing wild was found to be sufficient. Colchicum, however, requires good pastures for growth and, as its harvesting injures the grass, farmers must be sufficiently compensated. This, of course, makes the price higher than it would be otherwise. There seems to be no doubt that both these drugs could be cultivated in sufficient quantity in certain parts of the United States. Belladonna has been very scarce and the price very high, but large quantities are now being cultivated. This is a drug which can readily be produced in the United States. Hyoscyamus, too, can be easily cultivated in such countries as England and the United States, but there is this great drawback that some years insect pests may attack a crop and destroy several acres. It is no drug, therefore, for the small cultivator, who could not stand such a loss.

Long before the war began the pharmacists of the United States had been studying the question of the domestic production of drugs. One manufacturer expended $20,000 in experiments on growing belladonna on the Pacific Coast, another had over 100 acres under cultivation, and several others conducted experimental drug farms on a more or less extensive scale. For several years the United States Department of Agriculture has carried on an experimental drug farm at Arlington, Va., and drug gardens have been maintained by several colleges of pharmacy. The result of all these experiments shows that the drugs for which we have depended hitherto on Central Europe can be grown without great difficulty in the United States. The only problem involved, however, is a commercial one. With the high price of labor in the United States we cannot grow and collect drugs as cheaply as they have been grown abroad. If growers can be assured of a remunerative market we need suffer no hardship as far as our supplies of European drugs are concerned, but lacking this assurance a scarcity in certain lines will continue.

TREATMENT OF CARCINOMA OF THE UTERUS WITH RADIUM.

Although it may not yet be possible to speak dogmatically concerning the value of radium as a treatment for cancerous conditions, the feeling has been growing that its use is not altogether devoid of danger. After reading Labhardt's experience in the Frauenspital at Basle, as given in detail in the *Correspondenz-Blatt für Schweizer Aerzte* for July 28, 1917, one may reasonably question whether the dangers encountered when it is used to combat carcinoma of the uterus do not more than offset the advantages to be gained. While considering the results we must bear in mind that the remedy does not appear to have been employed recklessly; such due precautions seem to have been taken as had been suggested by the experience of others. The harmful alpha and beta rays were excluded by filters so as to permit the action of the hard, deeply acting gamma rays alone on the tumors, and while the doses given were by no means small, they were not so large as some that have been reported as used. During 1915 and 1916 fifty-four cases of carcinoma of the uterus came under observation. Seventeen of these were operated in and subsequently irradiated and thirty-seven were treated with radium alone. Of these thirty-seven thirteen were operable, twenty inoperable, and four were recurrences.

The primary results in these thirty-seven cases were encouraging. Several of the patients were greatly relieved for a time, so that they felt comparatively well and improved in their general condition, while in many the tumors apparently became smaller. This amelioration, however, was followed in all cases by an exacerbation of the symptoms and a renewed growth of the tumors. The radium acted as a palliative and was to a certain degree useful as such, but it did not effect a radical cure and the final results were not good. If we could stop here and regard radium as a means by which the sufferings of patients with inoperable cancer of the uterus could be relieved temporarily without danger from the remedy itself, it would be well. Labhardt goes on to speak of two serious conditions, tenesmus and the formation of fistulæ, the production of which he ascribes to the radium rays.

Sixteen of the thirty-seven patients complained of tenesmus, usually of the rectum. In some it was not very intense and passed away after a while; in others it was extremely severe, did not respond to treatment and reduced the sufferers to a deplorable condition. More serious than this, in his opinion, was the formation of fistulæ of the rectum and bladder, which were not the results of perforation of adjoining hollow viscera by the carcinomata. They were caused by the necrosis of previously healthy tissue independent of the location of the malignant growths and often situated several centimetres from them. Frequently the first indication that such a fistula was about to be formed was the appearance of a gray white patch of variable size on the vaginal membrane, which was usually accompanied by an intense tenesmus, in most cases of the rectum, sometimes of the bladder. After a period of varying length, occasionally months, the tissue would break down and leave an aperture through which one or two fingers could be passed. The tenesmus was apt to be relieved by the formation of the fistula, but was subject to recurrence. This clinical picture was not constant, as the necrosis of the tissue and the formation of a fistula were known to take place without any preceding tenesmus, and in one case the tenesmus followed the development of the fistula. Six of the thirty-seven patients had fistulæ at the time of the writing of the paper, and the appearance of the vaginæ in several others led the writer to expect fistulæ to be formed later.

If such sequelæ as these are likely to follow an attempt to ameliorate the sufferings of a patient with uterine cancer by means of radium, a surgeon may be expected to hesitate before he employs this remedy for such a purpose. He is certainly justified in considering carefully whether he cannot secure an equal degree of relief by other means.

CLINICAL VALUE OF BLOOD PRESSURE IN TUBERCULOUS PATIENTS.

The blood pressure when frequently taken has not merely a purely scientific and theoretical interest. It has a considerable practical value from the point of view both of diagnosis and of prognosis. Hypotension has been supposed to have great value in the beginning of tuberculosis, and Potain even went so far as to say that "every subject in middle life, who does not present any acute disease or apparent reason to account for cachexia or nervous exhaustion, should be considered suspect of tuberculosis when the tension of the radial artery is below 140 millimetres." Reymond has found marked hypotension with permanent tachycardia in hospital patients presenting symptoms of anemia without offering any explanation for these phenomena either in auscultation of the lungs or in the sputum, since this was in small amount and did not contain the bacillus of tuberculosis. Soon physical signs appeared, however, which distinctly showed that the patients were tuberculous. Other writers have observed the same facts. Although in some patients there is a marked hypotension, in others there is very marked hypertension, reaching in some as high as twenty to twenty-three millimetres, so that the diagnostic value of hypotension must not be exaggerated. It is a good sign when it exists and it is unfortunate that it is not as constant as many have supposed.

During the progress of an undoubted tuberculosis, the blood pressure indicates the possibility of certain complications when it offers rather sudden variations. If hypotension appears suddenly, attention should be directed to the heart. When it occurs without any evident immediate cause, it is usually symptomatic of a myocarditis or a neuritis of the pneumogastric. If, on the contrary, in a case of advanced tuberculosis, where the tension should be considerably decreased on account of the rapid progress of the intoxication and evolution of the lesions, if a normal or even increased pressure is found, it should lead to the examination of the urine for evidences of a nephritis. Papillon has pointed out the value of almost normal pressure as a diagnostic means in cases of chlorobrightism with commencing tuberculosis.

Hypotension means a bad prognosis, but this alone must not lead one to conclude that the evolution of the lesions is rapid, because in some cases the tuberculous process improves and at the same time the pressure increases. Hypotension is only of bad omen when it has a tendency to increase and is constant. It indicates a more serious prognosis when it is found early in the process since it shows that the patient is without resistance, that the intoxication is severe, or that the heart is organically or functionally diseased to a serious extent. The blood pressure is merely a factor in the appreciation of the prognosis and of the gravity of the case, but it does not detract from the importance of the other factors. Hypotension or normal tension usually allows one to foresee an evolution toward amelioration or even cure, unless the case is complicated by nephritis.

The tuberculous patients who live long are those in whom there is an integrity of the size of the heart or a hypertrophy together with a tendency toward increase in the blood pressure. Generally speaking, it may be said that patients who recover are those in whom the blood pressure increases; in other words, the tension rises in direct relation to the general improvement in health.

THE PASSING OF A GREAT MAN.

On July 27th last the medical profession throughout the world suffered a great and irreparable loss in the death of Professor Dr. Theodore Kocher, the famous chief surgeon of the Inselspital, Berne, Switzerland, and professor at the medical faculty of the Berne University.

Professor Kocher's many pupils have ever admired him as the greatest living surgeon. On two occasions the medical world in general has also paid him tribute. In 1904, when the International Surgical Society was founded, the meeting of surgeon delegates elected Professor Kocher chairman of the first international congress of surgeons at Brussels. On the other occasion, in 1910, he was awarded the Nobel Prize for his remarkable achievements in surgery. On the occasion of the surgical congress of 1910 he surprised his audience, which consisted of over 1,200 surgeons from various parts of Europe, when by casually mentioning that he was basing his facts upon some 4,000 operations he had performed for goitre. Numerous brilliant offers reached him from foreign countries, but he refused them all in order to devote his science and activity to the university of his native town.

Humanity is not only indebted to him for his discoveries in surgical treatment of goitre, but also for the many lessons he drew from his experiences and observations in other more complicated diseases. Professor Kocher's experience and science enabled him to write on the treatment of fractures even before Röntgen and nothing in his treatise was altered or added to. Professor Kocher's technic has led to perfect success in stomach and intestinal surgery; new methods which he introduced are now employed in cases of epilepsy. He also facilitated the diagnosis of injuries to the brain and spine, and intestinal ruptures are operated after his directions.

Professor Kocher regarded his profession as his very life and his holidays were invariably devoted to theoretical work. He remained a perpetual wonder to his assistants and his pupils who could not always realize how this man could find his life's satisfaction in constant hard work. He was not only an instructor in surgery, but he implanted into his students that sense of duty which sacrifices all to the cause of the patient. He refused in his clinic to distinguish between important and unimportant matters, for every detail held some importance for him and he never failed to impress this upon his pupils. Professor Kocher remained active to the very last. Switzerland mourns him as one of her most brilliant sons and the medical profession and many individuals in foreign lands who have received help from this great surgeon will pay a grateful tribute to his memory.

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News Items.

Columbia University Presents War Hospital to the Government.—The Columbia War Hospital changed its name Wednesday, October 3d, to United States Army General Hospital No. 1, and entered the service of the government for the duration of the war. President Nicholas Murray Butler delivered the presentation address, and the ceremonies attending the transfer were simple and brief.

Conference of Presidents of Examining Boards.—A meeting of the officers and members of the various examining boards for the Medical Reserve Corps of the U. S. Army will be held at Camp Benjamin Harrison, Indianapolis, Monday, October 8, 1917, at 11 a. m. This conference has the endorsement of Surgeon General Gorgas, and already nearly one half of the boards have responded favoring the conference at that time. Important subjects will be brought before this conference and a large attendance is solicited.

New Assistant Surgeons in the Navy.—On September 25th the Navy Medical School at Washington, D. C., held informal graduating exercises for a class of sixty-one assistant surgeons. Only twenty-one of the graduates could attend, the others being already on active duty or taking postgraduate work elsewhere.

The Care of Soldiers' Feet.—Orthopedic surgeons have been detailed to the training camps to teach soldiers how to care for their feet. Soldiers' feet will be submitted to regular inspection by members of the medical department, with special inspection after a particularly hard period of work, and great care will be exercised to see that the soldiers are fitted with proper shoes.

Camp Upton Releases Medical Students.—Medical students sent by their local boards to the Seventy-seventh Division will be mustered out of the national army and allowed to continue their studies, providing they enlist in the Medical Reserve Corps of the United States Army. Of the 13,000 recruits already enrolled at Camp Upton, at least twenty-five are medical students. Three have been mustered out of the service today that they might return to medical schools.

Mortality from Automobile Accidents.—According to a report issued by the National Highways Protective Society, during the first nine months of this year 636 persons were killed by automobiles in New York State, compared with 543 fatalities during a similar period last year. During September alone forty-six persons were killed by automobiles in New York city, and sixty-seven throughout the rest of the State. In New Jersey, during the first nine months of this year 190 persons were killed by automobiles, compared with 171 for a similar period last year.

Missouri Valley Medical Association.—Dr. A. I. McKinnon, of Lincoln, Neb., was elected president of the Missouri Valley Medical Association at the annual meeting held in Lincoln on Thursday and Friday, September 20th and 21st, and other officers elected were as follows: Dr. T. M. Paul, of St. Joseph, Mo., first vice-president; Dr. Paul Gardner, of New Hampton, Ia., second vice-president; Dr. O. C. Gebhart, of St. Joseph, Mo., reelected treasurer; Dr. Charles Wood Fassett, of Kansas City, reelected secretary for the sixteenth time. Next year's meeting will be held in Omaha.

Dinner to Doctor MacGuire.—On the evening of October 2d Dr. Constantin J. MacGuire was tendered a dinner at the Manhattan Club by Mr. J. W. Cox, who presented to the guest of the evening a very handsomely bound edition of Foster's *Encyclopedic Medical Dictionary*. Among the guests were Senator James A. O'Gorman, Judge Alfred R. Page, Judge E. F. O'Dwyer, Judge Lewis J. Conlan, Judge Francis B. Delehanty, Judge Victor J. Dowling, Mr. James Buckley, Mr. James Duane, Mr. E. J. Kelly, Mr. Patrick Francis Murphy, Mr. William N. Penney, Mr. Joseph Rowan, and Mr. Caswell A. Mayo.

Brigadier General Charles Richard.—Colonel Charles Richard, chief surgeon of the Department of the East, with headquarters at Governor's Island, has been nominated for a commission as brigadier general in the Medical Corps. Colonel Richard is in point of service the ranking officer in the Medical Corps, having joined the corps in 1879. He has done two tours of duty in the Philippine Islands, has been in command of the Medical Supply Depot, New York, and of the Army Medical School and the Walter Reed General Hospital, Washington, D. C. He is a native of New York city, a graduate of the College of the City of New York, and received his degree in medicine at the New York University.

Personal.—Dr. Alexis Carrel, of the Rockefeller Institute for Medical Research, demonstrated, by means of a series of lantern slides, the principles of the treatment of wounds at the New York Academy of Medicine Thursday evening, October 4th.

Dr. George J. Ott, of Somerville, Mass., received $10,000 through the will of the late Mr. Henry Brown, to be used in cancer research.

Dr. Honoré van der Velde has been appointed assistant director of the bacteriological laboratory of the Boston Department of Health. He is a Belgian scientist and has lived in Boston since 1915. He is a graduate of the University of Louvain and has held important posts in his own country. Dr. Philip Castleman, who was formerly in charge of the bacteriological laboratory, has been made deputy health commissioner of Boston.

German Medical Journals Advance Prices.—The principal medical journals in Germany have advanced their prices four marks per annum in consequence of the increased price of paper.

The Mississippi Valley Medical Association.—The annual meeting of this association will be held in Toledo, Ohio, October 9th, 10th, and 11th, under the presidency of Dr. Channing W. Barrett, of Chicago.

Meetings of Medical Societies to Be Held in Philadelphia During the Coming Week.—Monday, October 8th, County Medical Society (directors); Tuesday, October 9th, Pediatric Society; Wednesday, October 10th, County Medical Society; Thursday, October 11th, Pathological Society; Friday, October 12th, Atlantic County Medical Society, Northern Medical Association.

New Ambulance Companies at Allentown.—Two new units comprising Red Cross Ambulance Companies No. 4 from Cleveland and No. 37 from Minneapolis reached the United States Ambulance Service training camp at Allentown, Pa., during the last week in September, the first named unit including 163 men. A headquarters unit has been formed by direction of Colonel Persons, composed of men from various sections, selected by the commanders, to assist in the administrative work. Lieutenant Rossner E. Graham, of New Orleans, the assistant adjutant, is commander.

Pennsylvania State Medical Society.—The sixty-seventh annual meeting of the Medical Society of the State of Pennsylvania was held in Pittsburgh, September 25th, 26th, and 27th, under the presidency of Dr. Charles A. E. Codman, of Philadelphia. Dr. Frederick L. van Sickle, of Olyphant, was elected president to succeed Doctor Codman, and other officers elected were as follows: First vice-president, Dr. W. F. Donaldson, of Pittsburgh; second vice-president, Dr. B. F. Royer, of Harrisburg; third vice-president, Dr. D. E. Dennis, Erie; fourth vice-president, Dr. W. Lee Leaman, Lancaster; secretary, Dr. C. L. Stevens, Athens; assistant secretary, Dr. C. B. Longenecker; treasurer, Dr. C. W. Wagoner, Johnstown.

Sir Berkeley Moynihan to Visit America.—Sir Berkeley Moynihan, senior consulting surgeon to the Royal Army Medical Corps of the British Army and inspector of army hospitals in France, has been delegated by the British Government to come to America to aid in the war preparations of the Medical Corps of the United States Army. He will take part in the war session of the Clinical Congress of Surgeons in Chicago the week of October 22d and will deliver the convocation address of the American College of Surgeons on October 26th. He will explain the needs of the allied armies to save a maximum of the wounded and will describe the notable advances in war surgery since the beginning of the war.

American Medical Officers on the Firing Line.—Mobile units composed of doctors, nurses, and orderlies, from the army hospitals within the American zone, are being sent to the French and British fronts while awaiting field experience with their own troops. These units are operating in the most advanced casualty clearing stations in cooperation with British and French surgeons. The latest British offensive has drawn a great number of American medical officers to the firing line, and several hundred of these are working constantly under German shell fire. It is said that most of these officers in the advanced dressing stations are men who were not attached to American medical units, but who volunteered their services and have been arriving from the United States in considerable numbers.

Free Clinic for Speech Defects.—A free clinic for speech defects will be opened at 143 East Thirty-seventh Street by an association which has been incorporated under the title of the New York Clinic for Speech Defects, with Dr. Herbert L. Wheeler, of the Medical Board of the Council of National Defense, as president, and Dr. James Sonnett Greene as medical director. The staff of the institution will be composed of a number of specialists who have volunteered their services. Actively identified with the conduct of the clinic as members of the medical and consultant board will be Dr. Abraham Jacobi, Thomas A. Edison, Judge Franklin Chase Hoyt, of the Children's Court; Dr. John MacKenty, Dr. Phillip D. Kerrison, Dr. Herbert L. Wheeler, Dr. George M. Parker, and Dr. James Sonnett Greene. A novel feature of the clinic will be a pavilion for treating the accent of foreigners as a defect of speech.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

THE TREATMENT OF PERNICIOUS ANEMIA.

By Louis de M. Sajous, B. S., M. D.,
Philadelphia.

(*Concluded from page 616.*)

In view of the observations of O. H. Robertson, therapeutic performance of splenectomy appears justified, the procedure having for its purpose to free the blood from the harmful influence seemingly exerted upon it by the spleen in this disease. According to King, however, splenectomy acts through removal of the influence of the spleen on the highly hemolytic unsaturated fatty acids in the blood and also by raising the percentage of antihemolytic substances in the bloodstream. Again, according to Lee, Minot, and Vincent, 1916, splenectomy is temporarily helpful in that it causes a greater stimulation of the bone marrow than any other measure; the immediate decrease in urobilin excretion indicates also a marked diminution of blood destruction.

Clinically, the results are best shown in a statistical study by E. B. Krumbhaar, 1916, covering 153 cases. The mortality within six weeks after the operation was, in some of the more recent series of cases, as low as six per cent. Of the surviving cases two thirds were distinctly improved by the procedure; in a few of the unimproved, actual harm was noted. Of twenty-four cases subsequently traced, eight had succumbed by the end of the second year and only seven remained improved, the others having relapsed. According to D. C. Balfour, 1916, the operation is indicated particularly in cases with definite enlargement of the spleen, those with a marked icteroid hue, and early cases in general. His second indication corresponds with the view of O. H. Robertson, 1915, that where the urobilin output is high, showing considerable hemolysis, the operation is appropriate. On the whole, present opinion tends to the belief that splenectomy is, in most cases at least, only of temporary benefit in pernicious anemia.

While an important rôle on the part of the spleen is widely admitted, increasing attention is being given to possible additional factors, especially toxic influences. According to K. M. Vogel, 1916, such influences probably act directly on the bone marrow, already burdened with an unusual demand for erythrocytes on account of hemolysis occurring elsewhere; the combination of these two factors is held to account for the peculiarly stubborn and fatal character of the disease. N. M. Percy, 1917, undertook, in a series of cases, to remove not only the spleen but also any infective foci that could be found. Thus, among twenty-four cases, cholecystectomy was performed in nineteen, appendicectomy in twenty, extraction of teeth in six, and cholecystostomy and tonsillectomy in one each. The operative mortality was 8.3 per cent. Marked improvement followed in twenty-one cases, or eighty-seven per cent. Two patients died of anemia eight months after the operation, but fourteen patients, or fifty-eight per cent., were in good condition after intervals of from seven to thirty-two months. Among nine cases in which a bacteriological examination of the organs removed was made, all but one yielded a bacterial growth from at least one organ except one case, and in this case the patient had had a long standing pyorrhea. Percy deems it possible, from recent studies, that a hemolytic streptococcus may prove to be responsible for the morbid changes, suggestive of an infectious process, found by him in the spleen specimens he examined.

Antistreptococcic serum and bacterial vaccines have been used in pernicious anemia by several observers, with asserted good results. More attention has been given, however, to oral, gastric, and intestinal antisepsis and irrigation in the attempt to rid the system of toxic material originating in the alimentary tract. Frequent irrigation of the colon has been advised by Herter and others, gastric lavage by Grawitz, saline hypodermoclysis on alternate days by McPhedran, and such drugs as betanaphthol, phenyl salicylate, thymol, saline laxatives, and lactic acid bacilli, by various authors. Even appendicostomy has been resorted to. Cholesterin, 100 grams of a three per cent. solution in oil daily, and glycerin, one tablespoonful or more three times a day, have been tried with apparent good results in some instances on account of their supposed antihemolytic properties.

Another group of measures, seemingly more productive of results, is that in which the aim is definitely to stimulate the bone marrow or improve its nutrition. Stimulation appears to be readily feasible with the aid of a number of agencies, comprising not only arsenic and splenectomy but also blood transfusion, the Röntgen rays and thorium X, spleen extract, diphtheria antitoxin, etc. Pedenko, 1914, has reported good results from repeated blood letting, fifty to 120 c. c. of blood having been removed at intervals of from five days to three weeks. According to Percy, blood transfusion not only stimulates the bone marrow but also probably exerts a curbing influence on the hyperactive spleen, supplies protective antibodies, and promotes recovery from secondary changes in the various organs. Improved nutrition of the bone marrow can doubtless be fostered by a diet so ordered as to invite assimilation of a large amount of nutriment, especially proteins, without undue work on the part of the digestive organs or any tendency to stasis favoring intestinal putrefaction. For best results in this direction, constant observation, with occasional examination of the urine for indican, is manifestly desirable.

Measures calculated to spare the bone marrow, i. e., precluding all unnecessary demand on it for red cells, comprise rest, preferably in bed in the more advanced cases; ample covering of the patient to obviate the increase of oxidation necessary to maintain temperature during exposure to cold, and avoidance of high altitudes with their attending erythrocytosis. Cooperating with these measures are those taken to use to the best advantage what red cells remain in commission. Open air treatment is probably the most efficient of these, C. F. Martin, 1913, at times noting "remarkable" results from sunlight and fresh air in the absence of any other treatment. Oxygen inhalations have not proved particularly useful. Measures promoting efficiency of the circulation may sometimes be of service, the circulatory system apparently attempting to make good by increased muscular exertion what the bloodstream lacks in hemoglobin.

Finally, certain important measures are available to improve lagging visceral functions in general, thus not only bettering the condition of the body as a whole but promoting nutrition of the bone marrow by reason of the better quality of blood supplied to it. Foremost among these is the administration of hydrochloric acid after meals, emphasized by Croftan and many others. According to Brieger, 1912, pancreatin is of service. Conceivably various other gland products might on occasion prove of some utility.

On the whole it seems clear that, in the absence of precise knowledge of the cause or causes of pernicious anemia, the best results in its treatment are for the present to be obtained, not by pinning one's faith to a single remedial measure in the hope that it will prove all sufficient, but by a combined, coordinated use of a number of the available measures, thus counteracting the morbid process in its various phases from a number of different points of attack.

Regional Anesthesia in the Treatment of Malpositions and Tremor of the Lower Extremities of Functional Origin.—Henri Claude (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris,* March 8, 1917) comments on the difficulties of psychotherapy in cases of this type, especially after a long sojourn in a hospital and incorrect suggestion based on a wrong diagnosis. Even in clearly hysterical cases, psychotherapy often fails. To this form of treatment Claude therefore adds spinal anesthesia, withdrawing two or three c. c. of spinal fluid and injecting, after admixture with this fluid, a solution of 0.07 gram of stovaine in one c. c. of water. During the resulting paralysis and anesthesia, the affected segments of the lower limbs are brought back to their normal positions, limbered up, and if necessary fixed in good position by apparatus. The patient being conscious during these maneuvers, the absence of organic lesions can be demonstrated to him and various psychophysiotherapeutic measures brought into action. These measures are especially effectual during the period of return of motion and sensation. A number of examples of previously rebellious cases thus successfully treated is given, including certain cases of club foot, contracture with the leg flexed in the thigh, and contracture of the quadriceps. In cases in which success is jeopardized by return of pain in the limb, it is sometimes advantageous to place the patient under morphine for a few days.

Orthopedic Treatment of Acute and Convalescent Poliomyelitis.—E. D. Ebright (*Journal A. M. A.,* September 1, 1917) has obtained the best results from the following plan of treatment. In the acute stage of the disease the child is completely immobilized, that is, the entire body is put at complete rest, and he is kept in a darkened, quiet room to prevent all external stimuli from acting reflexly on the damaged nerve cells. In the subacute stage, which lasts from the end of the first to the end of the fourth month, the treatment includes rest and support of the paralyzed muscles and the prevention of deformity. The child is kept in bed as long as necessary in the effort to bring about a symmetrical recovery of all the affected muscles. Allowing him to get up early with braces for support is believed to be harmful in many cases in which the trunk muscles have been involved. In the convalescent and chronic stages of the disease muscle training, under proper medical guidance, is the important factor, but it should never be begun until all natural recovery of the damaged nerve cells has been secured. Electricity is of no value in treatment.

Treatment of Cranial Injuries in War.—J. Anderson (*British Medical Journal,* July 14, 1917) lays great emphasis on the need for immediate and complete surgical treatment of this class of wounds. Ultimate success depends as much on one as on the other of these factors. Immediate treatment means treatment carried out at the first possible opportunity, usually in the casualty clearing station. Complete treatment means that everything possible should be done at the first operation. The best results have been secured by shaving the scalp, disinfecting with picric acid or iodine, and excising the wound or wounds of the soft tissues by means of an elliptical incision carried through healthy tissues so as to encircle the wound completely. The wound is lifted out, including the periosteum, by blunt dissection from the margins of the incision. The injured bone is then removed by a trephine opening and nibbling or with the aid of skull cutting forceps. Soiled or destroyed portions of the dura are cut away and the brain explored with the index finger. The foreign matter and pulped brain will usually follow the finger, being forced out by the *vis a tergo* provided by intracerebral pressure. The wound should then be closed with or without suitable drainage, depending upon circumstances. In cases with much brain injury a tube should be used; in less severe cases a rubber tissue drain, and in the mild cases a tissue drain down to the dura only. In the vast majority of the cases local anesthesia with the following solution is possible and it is always preferable to general anesthesia.

Novocaine,	0.75 per cent.;
Magnesium sulphate,	0.50 per cent.;
Normal saline, or distilled water,	100 per cent.

To each thirty mils of this one mil of epinephrin solution should be added. The local anesthesia should be supported by a dose of morphine given half an hour before. Complete closure of the wound should always be secured and flaps must be used if necessary. This is the most important measure in the prevention of hernia cerebri.

Treatment of Proctitis.—Arthur A. Landsman (*Medical Record,* August 4, 1917) makes an axiomatic point that drugs taken by mouth have very little action on pathological processes in the rectum. To obtain the maximum effect of any agent the bowel must be well flushed and the medicine then introduced from below directly to the seat of the trouble by direct application, insufflation, irrigation, injection, ointments, or suppositories. In hypertrophic proctitis where the parts are bathed in free secretion, irrigation with one per cent. solution of zinc and alum, two per cent. tannic acid, ten per cent. fluid extract of krameria, two per cent. ichthyol, and application through the proctoscope of five per cent. silver nitrate or twenty per cent. argyrol to the patches give good results. In atrophic catarrh the mucous membrane is dry, thinned, and fissured, and the first care should be to correct this by a suitable diet and the administration of a bland laxative followed by the injection into the bowel of iodoform bismuth and olive oil, balsam of Peru in castor oil, five per cent. ichthyol in glycerin, or ten per cent. silver nitrate applied through the proctoscope. Introduction of medicinal agents into the colon by means of a soft rubber tube is unsuccessful as the tube coils up and the flow is thus shut off. The method of preference is to introduce the medicaments directly through the proctoscope with the patient inverted. Every case has potential possibilities of stricture and prophylactic measures directed against stenosis should form part of all active treatment.

Avoidance of Shock and Trauma in the Treatment of Eclampsia.—E. B. Cragin (*American Journal of Obstetrics,* August, 1917) states that in a former series of 251 cases of eclampsia treated at the Sloane Hospital, New York, the maternal mortality was 28.3 per cent. and the fetal 60.15 per cent., whereas in a succeeding series of 138 cases the corresponding percentages were only 14.5 and 44.9. Substitution of ether for chloroform is held to account in part for this improvement; but another important feature of the second series was the termination of labor, where indicated, in such a way as to cause the least possible shock and trauma. In the induction of labor the cervix is softened and dilated and contractions excited by the Voorhees elastic bag. Meanwhile elimination is favored by a colon irrigation of nine gallons of saline or soda solution; also, occasionally, by a wet pack. The nervous system, moreover, is quieted by giving chloral hydrate by rectum and, in the event of marked restlessness, hypodermic administration of morphine. For several years the author has abandoned vaginal hysterotomy for the delivery of eclamptics, except, perhaps, in the early months of pregnancy. He would limit the use of Cæsarean section to cases near term with a viable child and a long, rigid cervix, especially in a primigravida. He has abandoned venesection entirely after many trials, eclamptic cases after convulsions so resembling patients in shock that venesection seems illogical, as it lessens body resistance. In the cases in which venesection was formerly advised, with a rapid, high tension pulse, veratrum viride was used with good effect.

Conservatism in the Use of Artificial Pneumothorax.—John Roy Williams (*Medical Record,* August 25, 1917) protests against the rather indiscriminate employment of this measure as practised by some men. The disadvantages are pleural effusion occurring in not less than sixty per cent. of all cases; perforation of the lung with resulting pyopneumothorax; air embolism; pulmonary abscess; diminished aeration of the blood with lowered tissue resistance, and failure of the compressed lung to reexpand after removal of the gas. Reports of cure and improvement vary so extremely that no reliance can be placed upon them as a guide. Williams contends that the only clear indication for the procedure is uncontrollable hemorrhage where everything else has been tried and the patient's life seems to be endangered. Even here he advises it only as an emergency measure and not to be long continued, and his large experience dictates that early diagnosis and hygienic, dietetic, and medicinal treatment with careful general management of the case offer the surest means of cure in pulmonary tuberculosis.

Treatment of Chronic Bright's Disease.—James M. Anders (*Medical Record,* August 25, 1917) states that there are two main criteria which should guide the treatment, namely the general condition of the patient and the rate of metabolic excretion. Foci of infection should be removed and also such irritants as alcohol and uric acid, while a change of residence may be beneficial. Diet is of far greater importance than drugs and restrictions should be both qualitative and quantitative. Protein excess should be guarded against by a close watch on the functional activity of the kidneys and repeated estimation of the urea and creatinin in the circulating blood. In cases where there is no great edema considerable water must be allowed with a diminution of the protein intake as advised by Foster and Davis. When dropsy is present the total fluid intake should be restricted to not more than one litre, and a salt free or salt poor diet is a useful adjuvant. Ander's personal experience has been that skim milk and buttermilk are of great service in dropsical cases. In general a mixed diet is of advantage, as limited protein, greens, fruits and their juices, pure fats, and well cooked cereals, except oatmeal. Saline cathartics are useful, but the somewhat common practice of giving mercurials is to be condemned on account of the selective affinity of mercury for the kidney. Such diuretics as caffeine, theophylline, sodium acetate, and other members of the purin group should be avoided, although digitalis and the salts of potassium, especially the citrate, may safely be administered. High blood pressure may be allayed by nitroglycerin and hot baths. Myocardial exhaustion requires heart tonics and stimulants. Uremic symptoms may be relieved by starvation for a few days, venesection and subcutaneous saline injections, or the Murphy drip. Chloroform by inhalation, morphine hypodermically, or chloral by rectum may be used for convulsive manifestations. Kidney preparations are of use in about one half of all cases, whereas the Edebohls operation is both unreliable and of temporary action.

Skin Grafting in Minor War Surgery.—F. Debat (*Bulletin de l'Académie de médecine,* July 24, 1917) urges more extensive use of skin grafting in war surgery, not only for large wounds or burns but also in the atonic wounds so often met with after injuries of the lower extremities in varicose ulcers, and in such peripheral wounds as those resulting from amputation of a portion of the foot for serious injury or frostbite. By affording a soft yet firm scar, grafting is of great value in obviating secondary ulcerations. Where an ulcerating surface is smooth and yellowish white, and offers resistance to the curette, it must, before the grafting, be caused to granulate by means of the Vigo or better the Alglave dressing; the ulcer is directly covered with chiffon taffeta previously moistened with sterile saline solution, and this dressing renewed every two or three days. In the case of an atonic, purplish colored wound with large, flabby granulations and punched out margins suppurating freely, either Jacquet's biokinetic method or exposure to the air will improve the condition with surprising promptness. Elevation and massage soon reawaken tissue vitality and hot air baths, even better than exposure to air or sunlight, arrest suppuration and shrink down the granulations. In some instances scarification at the periphery of the wound is required to flatten out its sharply beveled margins. In a week or two a wound thus treated will be ready for grafting. Debat recommends grafts one half centimetre broad and one to five centimetres long, not including any of the subcutaneous cellular tissues, obtained from the anterior surface of the tight, and firmly applied after curettage of the wound. In extensive wounds such grafts should be placed in a series, one centimetre apart. In recurring varicose ulcers or terminal limb wounds exposed to traumatism, the open surface should be completely covered with the grafts.

Vaccine Treatment of Whooping Cough.—Charles J. Boom (*New Orleans Medical and Surgical Journal,* September, 1917) presents some impressive figures showing the serious nature of whooping cough, taken from statistics compiled by the Board of Health of New Orleans. The communicable diseases dealt with in these statistics are diphtheria, scarlet fever, small pox, typhoid fever, measles, and whooping cough. These figures show that in twenty-eight years 850 children died from whooping cough and that during the past five years the mortality has averaged 8.1 per cent. The death rate from whooping cough during the past five years has been two per cent. greater than from diphtheria, seven per cent. greater than from measles, and six per cent. greater than from scarlet fever. The actual number of deaths from whooping cough in twenty-five years was 802; from measles 739; from scarlet fever 373.

The vaccine treatment is recommended. During a period of thirty months the writer has treated some sixty-six cases, but the paper is based on forty, as the necessary statistics were lacking for the remainder. The composition of the different vaccines employed, the doses, and the number of injections given each patient are given in full. He obtained better results from mixed than from simple vaccines in the active treatment of the disease, and recommends a large initial dose, not less than 1,000 million, except in children under twelve months or when whooping cough is complicated by other conditions, then 500 million, and increase from this to 1,800 million, the maximum quantity in his series being 4,000 up to 5,000 millions. This is given every other day until one of the symptoms showed marked remissions, then twice a week until cured. For prophylaxis give large doses, particularly if the patient is in the same home with the active case, 1,800 million up to 3,800 million. His experience with phylacogen treatment was limited to four cases, all severe and all discharged within two weeks. Patients suffering from bronchial asthma or congenital lues do not respond readily, particularly the former. After the patient has passed the catarrhal stage and the spasmodic stage is marked the vaccine will not lessen the period of the disease, but will lessen the intensity of the attacks. The reasons given for the superiority of vaccine therapy are: slight reaction; duration averages only twenty-four days; loss of weight is unappreciable; intensity and number of coughing spells becomes less after seven days; vomiting ceases after from one to two weeks; no complications in the forty cases reported; mortality 0. In addition he urges that vaccine should be used extensively as a prophylatic, as it has reduced institutional whooping cough from forty to seven per cent.

Treatment of Pleural Suppuration.—Tuffier (*Bulletin de l'Académie de médecine,* July 10, 1917) reports excellent results in recent as well as chronic empyema by treating the pleura with Dakin's solution, tracing the infection in it by laboratory methods until sterilization has been obtained, then closing the thoracotomy opening, the pyothorax being thus transformed into a pneumothorax from which spontaneous recovery occurs. Of twenty-two cases of empyema of longer standing than two months seven had been thus closed and cured while fifteen were still under treatment or had been closed only recently. In twenty-two cases of pyothorax of less than two months' standing even better results were obtained. These comprised twelve cases of "medical" empyema and ten of suppurating hemothorax. In a case of streptococcic empyema with the entire side of the chest filled with pus, treatment with Dakin's solution and Carrel's tubes sterilized the cavity and brought the temperature to normal in one month. Closure of the opening with two sutures was followed by healing by first intention. Auscultation later showed restoration of breathing in the entire lung except at its base. Of fourteen cases of traumatic pyothorax due to shell injuries, treated in this manner by Combier and Hertz, ten recovered with complete restoration of pulmonary function, three had a secondary abscess and recovered, and one succumbed to pneumonia. Tuffier contrasts such recoveries with those obtained by prevailing methods in which after extensive costal resection and secondary suppurations the lung continues retracted and loses most of its functional value. Since recent pleural suppurations can as a rule be easily sterilized and cured by the new method, cases of chronic empyema should in the future become rare.

Treatment of Elephantiasis.—Walther (*Presse médicale,* August 2, 1917) reports the late results of an operation for elephantiasis of the lower extremity which consisted in embedding two rubber tubes in the tissues of the thigh and abdomen. The tubes were well borne throughout the first year, and the present condition is such as to prove that they are providing satisfactory lymphatic drainage from the limb to the abdomen. The leg returned to its normal size and the skin over it gradually resumed its tone under massage and electricity. The thigh still shows a slight deep seated edema, but is normal in function. The patient six months ago resumed his occupation in a factory in which he works ten hours daily in the sitting position.

Mustard Oil in Vaccines.—Mr. F. d'Herelle, of the Pasteur Institute, has established the immunizing power of mustard oil in relation to Bacillus typhi murium. Previous attempts to protect mice from the attack of this germ by injection of a vaccine prepared from the dead bacilli have hitherto failed, apparently because of the changes produced in the constituents of the microbes; but a vaccine in which bacilli had been killed by oil of mustard rendered the mice immune against lethal doses of the living bacteria, the theory being that the essential oil does not alter the albuminous and diastasic substances of the microbe. Although oil of mustard appears to give a very active vaccine, others have been prepared with the oils of cinnamon, thyme, cloves, marjoram, etc., but the action of these do not seem so certain as from that with the mustard oil.

Treatment by Metallic Ionization.—H. F. Pitcher (*American Journal of Electrotherapeutics and Radiology,* June, 1917) states that in the removal of senile ceratoses by the electrolytic needle, the stimulating action of the negative current used obviates recurrence, and if thyroid substance is also given the growth will not form elsewhere on the face. In urethral stricture he has used the Newman method with satisfaction. In long standing strictures the negative pole softens and absorbs the scar tissues without injury to the mucous membrane or hemorrhage, practically without pain, and as a rule permanently. The olive point electrode is passed through the stricture without force with a current strength of four to eight milliampères, a large positive pad being placed upon the abdomen. In urethral caruncle Pitcher obtains good results by first driving in four per cent. cocaine solution with a little adrenalin with the positive pole, then, with a large steel needle attached to the negative pole and the positive pad on the abdomen, passing a current of four to six milliampères until the growth is decomposed throughout. In anal fissure he uses a small copper bulb, after the tight sphincter has been relaxed with a vibrator. In bleeding piles a copper bulb which will easily pass through the anal speculum is attached to the positive pole, with a negative pad on the abdomen, and a five to ten milliampère current run through for as many minutes. A thin covering of wet cotton is usually twisted over the bulb before introduction. In chronic cervicitis and uterine catarrh a positive copper electrode is passed to the internal os and a thirty-five to forty-five milliampère current passed for six to eight minutes.

Novarsenobenzol in the Treatment of Malaria.—Laurent Moreau (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris,* February 8, 1917) reports the case of a wounded soldier who had acquired malaria in Macedonia and in whom intramuscular injections of quinine and urethane failed to bring relief from severe manifestations of the disease. The blood showed extremely numerous malarial parasites, a majority of the red cells being affected. Upon intravenous administration of 0.15 gram of novarsenobenzol in twenty c. c. of distilled water distinct improvement was noted, and the number of parasites in the blood was found considerably diminished. Later evidences of adrenal insufficiency appeared, which were temporarily relieved by intravenous injections of saline solution and adrenalin. Quinine was also given. At this time the blood showed complete disappearance of parasites. The patient, who had had a thigh amputation for gas gangrene, later succumbed, but post mortem no malarial organisms could be found in the spleen, bone marrow, or blood from the renal vein. In a second case, a similar injection of novarsenobenzol, given without quinine, had but little effect on the number of parasites, but upon addition of intravenous quinine injections, a manifest reduction was noticed. The author apparently favors joint administration of the two remedies in grave malaria.

New Method of Dressing Mastoid Operative Cavities.—Daure (*Presse médicale,* July 23, 1917) asserts that by means of his procedure recovery with complete epidermal restoration may be obtained within a period averaging one month, the dressings meanwhile being absolutely painless. At the time of the operation the wound behind the ear is entirely closed by suture, the plastic procedure described by Moure or that of Siebenmann having been carried out. The iodoform gauze previously placed in the mastoid cavity is in part drawn out through the meatus. The special treatment employed thereafter is begun between the fifth and the eighth days, and consists in daily introduction of sterile ambrine from a five to ten c. c. beaker, previously kept warm on a water bath. The posture of the patient being rendered such that the floor of the cavity in the mastoid is horizontal, and the meatus being spread open with a nasal speculum, ambrine is poured in to a depth of two or three millimetres and allowed to solidify. A small cord of sterile gauze, three centimetres long, is then inserted, issuing through the concha, and a fresh layer of ambrine introduced to a point just so far from the meatus as to permit of packing in a gauze wick to maintain the lumen. The dressing is easily removed every day merely by traction on the gauze cord embedded in the ambrine. The cavity is cleansed each time with boiled water or saline solution, dried, and dressed as before. These dressings are practised for a period averaging fifteen to twenty days. Thereafter daily irrigations with aqueous iodine solution or insufflations of powdered boric acid are given. If atresia is encountered, iodide treatment by Moure's method is administered. In a typical or complicated cases of mastoiditis, e. g., in the presence of pyemia, septicemia, sinus phlebitis, etc., Daure recommends the Carrel treatment.

Miscellany from Home and Foreign Journals

Uteroscopy versus Transperitoneal Hysterotomy.—Alfred Heineberg (*American Journal of Obstetrics,* August, 1917) believes that the value of the cystoscope, proctoscope, sigmoidoscope, bronchoscope, etc., in their respective fields may be equalled by the uteroscope in the diagnosis of intrauterine diseases. That transperitoneal hysterotomy for the latter purpose entails unnecessary risks of infection, inflammation, and adhesions is maintained on the basis of a series of twenty-seven diagnostic hysterotomies among which the cause of disturbance proved in no less than fifteen cases to be merely retained products of conception, while chronic hyperplastic endometritis was found in six cases, benign polyp of the endometrium in three, chorioepithelioma in two, and early carcinoma of the fundus in one. While there was no mortality, only eleven per cent. of the series would have required more radical measures than a thorough application of the curette or placental forceps. Uteroscopy affords a perfect view of the uterine interior without danger to the peritoneum, may be performed quickly under nitrous oxide oxygen anesthesia, is followed by no more pain or discomfort than an ordinary dilatation and curettage, and gives a clear view of the cervical canal as well as of the uterine cavity. Good postoperative drainage is insured by the dilatation of the cervical canal entailed. By uteroscopy a large proportion of cases of obscure intrauterine disease are shown to be nonmalignant and to be effectively curable by simple means.

An Epidemic of Bacillary Dysentery.—G. Loygue and J. Haguenau (*Presse médicale,* July 23, 1917) report etiological and diagnostic data from a study of 449 cases in an epidemic met with among troops on the Somme from August to November, 1916. The epidemic was typical of bacillary dysentery in its rapid extension and decline, the sharpness of the dysenteric attack, the frequency of cases of joint involvement and of transmission of the disease in a hospital, and the favorable effect of serum treatment. The true Shiga organism was isolated from the stools in thirty-six cases, the Flexner bacillus in five, the Hiss bacillus in twenty, and atypical organisms in thirty-six. Serum diagnosis was attempted in 325 cases, of which 175 reacted positively with the Shiga bacillus and fifteen with the Flexner organism. Comparing the 190 positive serum tests with the ninety-seven positive culture tests, the authors emphasize the greater diagnostic utility of the former, which they believe to be as great as was that of the Widal test in typhoid before the advent of antityphoid vaccination. The dysentery agglutination test should be systematically employed in epidemics of this disease. Agglutination was most frequent between the tenth and fifteenth days of the disease. Severe and fatal cases seemed directly related to the presence of the Shiga organism or, in a few instances, the Shiga organism plus an organism of the typhoparatyphoid group. The authors emphasize the Shiga bacillus as the main factor in dysentery, and believe too much importance has been attached to paradysenteric organisms.

Hookworm Infection.—George B. Foster and Charles G. Sinclair (*Journal A. M. A.,* August 11, 1917) record the recent experiences with this disease as it affected the encampment of troops on the Mexican border. Pneumonia and measles, both of which were severe and complicated in their courses, broke out in a single division of the troops, almost all of which came from Alabama. Simultaneously there was no marked prevalence of these diseases among other divisions in the same locality and living under similar conditions. It was soon discovered that hookworm infection was very prevalent among the men of the division affected with the two outbreaks mentioned, and a survey of over 1,250 of these men showed hookworm infection in about forty per cent. The data showed the great military importance of this infection in reducing the resistance of the men both to infection and to the diseases after they had developed. This was unquestionably due to the debilitating effect of the presence of the parasite, which was so great that many of the men who had previously had measles again became infected. When the men infected with hookworm were freed from their infection, as shown by Rosenau, the morbidity and mortality rates fell from high figures to those about normal for the region in which they were living.

Differential Diagnosis of Colonic Lesions.—W. J. Mallory (*Virginia Medical Semi-Monthly,* June 22, 1917) believes that insufficient recognition has been accorded the fact that colonic lesions may resemble in their symptoms gastric or duodenal lesions, pain being felt upon filling of the stomach at meals. The physiological explanation of this is that when the stomach is full and peristalsis begins a reflex peristalsis of the colon nearly always occurs. Pain thus felt may be referred to the colon rather than the stomach, but because it comes on after eating the patient and sometimes the physician will infer that there is a gastric lesion. Another point emphasized is that almost all painful lesions of the colon give pain in the ascending colon or around the cecum or appendix. Apparently pain is referred there owing to an increase of the normal antiperistaltic movements. Colitis may be mistaken for appendicitis or gastric ulcer for this reason. The proximity of the hepatic flexure to the gallbladder may lead to confusion because colonic ulcers are especially apt to occur at this point. Such ulcers may, however, be recognized by tenderness on palpation of the colon, usually with constipation, small scybala, and the presence of mucus and sometimes pus and blood. A confusing condition is polyp of the intestine, some cases of which cause a rightsided pain that may be mistaken for appendicitis, intussusception, or perhaps malignancy. Bands and adhesions involving the colon give so called indigestion, pain occurring when peristalsis is set up by the filling of the stomach. The x rays are of great help in recognizing these. An operation is not indicated unless it can be shown that the bands or adhesions are preventing the intestines from emptying themselves normally.

Sodium Succinate and Leucocytosis.—Frederick S. Hammett, Ernest E. Kessler, and C. C. Browning (*Journal A. M. A.*, July 7, 1917) studied the effect of subcutaneous injections of doses of 0.1 to 0.2 mil of a one per cent. solution of this salt in normal and pathological persons. They found that in the case of the normals there was regularly an increase of thirty to seventy per cent. in the leucocytes. There was apparently no relationship between the initial leucocyte count and the rise produced by the succinate, for in persons suffering from conditions which gave rise to increased leucocytosis the injections caused further increases ranging from twenty to forty per cent. The authors conclude that one of the effects of the subcutaneous injection of sodium succinate is an increase in the cellular mechanism of defense of the body.

Cutaneous Manifestations of Hodgkin's Disease.—H. N. Cole (*Journal A. M. A.*, August 4, 1917) agrees with Ziegler and with Westphal that from fifteen to twenty-five per cent. of the cases of Hodgkin's disease show one or another form of skin lesion. These skin lesions are symptoms of the disease and as such may precede, accompany, or follow the appearance of the general manifestations. Pruritus is probably the commonest of the manifestations and is often the first sign to attract the attention. The next most common lesion is an exanthem of pruriginous type, most frequently present on the extensor surfaces, but also found all over the body. Urticaria is also fairly common and edematous swellings of permanent or transient character are seen. Pigmentations are frequent, both spotted and diffuse in type; and alopecia, dryness of the skin, atrophy, and hyperceratosis are not uncommon. Icterus and purpuric lesions are less frequent. Reddish or bluish tumors in the skin, which contain bloody serous fluid and material histologically typical of Hodgkin's disease, are sometimes noted and constitute the condition called "lymphogranulomatosis cutis."

Diagnosis of Tuberculous Otorrhea.—M. Lermoyez (*Presse médicale,* July 26, 1917) lays stress on aural tuberculosis as a common, but frequently overlooked condition. The infection usually extends from the nose through the Eustachian tubes. In all truly purulent otorrheas the clinician should seek to ascertain whether or not the morbid process in the mastoid is tuberculous in character. Recognition of such a character in the latent form of the tuberculous condition, in which an ordinary acute mastoiditis develops, with recovery after the usual mastoid operation, is relatively unimportant; likewise in the patent form manifested in an otorrhea in the later stages of lung tuberculosis. In the hitherto unrecognized fruste form, however, frequently suspected by the author where a mastoid wound refuses to heal under various forms of treatment, recognition of the tuberculous cause is of importance because it orients the postoperative treatment toward prudent temporization in the tuberculous and more radical measures in the nontuberculous. Probable signs of tuberculous otorrhea are: 1, An insidious onset; 2, paradoxical deafness, viz., marked and rapid loss of hearing in spite of but slight change in the otoscopic picture, together with extensive variations in the extent of deafness and of facial paresis; 3, pale, grayish, firm fungous masses in the tympanum, recurring after curettage and increasing after cauterization, as by chromic acid; 4, occasionally a very characteristic "white caries" of the walls of the tympanic cavity, attic, and antrum, with production of fetid, cheesy masses; 5, a discrete sinus formed after the mastoid operation, the cavity remaining from the operation turning, in spite of repeated careful dressing, into a narrow channel lined with fungous outgrowths, healing up, when the dressings are discontinued, with the exception of a minute sinus through which, some time after, a small sequestrum is discharged. The only positive signs of tuberculous otorrhea are those afforded by bacteriological examination of the pus, a biopsy, and guineapig inoculation. Diagnostic tuberculin injection is contraindicated.

Poisoning from Belladonna Plaster.—B. G. R. Crawford (*British Medical Journal,* August 11, 1917) reports the case of a healthy man who had a belladonna plaster six by four and one half inches in size applied to his back for the relief of pain. The application was made at about 11 a. m. and by 2 p. m. the patient had become delirious, maniacal, and irresponsible. He had dryness of the skin with redness, the pupils were dilated, the pulse 130, and respiration 40 per minute. The plaster was removed and his condition had improved by evening. Two days later the only sign of belladonna poisoning which remained was some dilatation of the pupils. He had no memory of what had happened to him.

Influence of Labor on Brain Development of the Child.—Arthur Stein (*Journal A. M. A.*, August 4, 1917) brings out the paucity of statistics on this subject, but is able to collect a considerable amount of evidence which shows that prolonged labor often causes considerable lasting damage to the child's brain. The damage often materially affects the mental growth, producing all degrees of impairment from simple feeblemindedness and imbecility to complete idiocy. Prolonged, unassisted labor is perhaps the most potent cause in this category of brain injury and the early and proper use of the obstetrical forceps, or the proper use of pituitary extract are measures tending to reduce the danger of brain damage.

Lymphocytosis in Syphilis.—C. Patino Mayer and Augusto C. Gourdy (*La Semana medica,* June 28, 1917) from a study of 500 cases conclude that lymphocytosis is the most constant sign of syphilis; that it begins with the infection and persists during the life of the individual; that it appears earlier than the Wassermann; that it is influenced by treatment but never disappears; that its presence even in the absence of a positive Wassermann is strongly suspicious of lues. Its presence in the socalled parasyphilitic lesions demonstrates their true syphilitic nature; it is frequently the only sign of a latent lues and its persistence in the face of most active treatment shows that the disease is in reality never completely cured and that treatment should never be abandoned once a diagnosis of lues is made.

Proceedings of National and Local Societies

THE MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

Special Meeting held February 5, 1917.

The Chairman for the Borough of Brooklyn, Dr. Robert E. Coughlin, in the Chair.

Typhoid Appendicitis.—This paper, by Dr. Eugene Wilson Skelton is published in full in this issue of the Journal.

Dr. Frank Bethel Cross said that his experience with typhoid appendicitis was limited to three cases. The diagnosis of appendicitis in typhoid fever was not so simple as in a healthy individual where the symptoms were more readily recognized. An acute abdominal pain in a patient with typhoid might be due simply to peritoneal irritation of an ulcerated Peyer's patch or of a solitary gland; perforation might be taking place, or some accident had occurred in the vascular system, particularly the venous system. Diaphragmatic pleurisy might also have developed. In the cases under consideration, the trouble lay primarily in the appendix. One of the most important points was to have the surgical confrère see the patient as soon as possible, for it was a great advantage for him to observe the conditions and establish a basis of comparison. A study of the progress of the signs was valuable; if the surgeon could see for himself that there was more rigidity at a given time than there was three hours earlier, it was a great help. It was difficult for the physician to describe properly the earlier condition, the degree of rigidity, tenderness, etc. Theoretically there should be a leucocytosis, but in the two cases which he would describe with some detail, the blood count was not of much importance. The patient at the Kings County Hospital was a male, Finnish, thirty years of age, admitted on August 2, 1915, with the usual complaints of headache, malaise, diarrhea, nausea, and vomiting. He had been ill for one week with diarrhea. The chest examination was negative; the spleen was not palpable; there were no rose spots; the abdomen was negative. There was a leucocytosis of 9,600, eighty-two per cent. of polymorphonuclears. The Widal reaction was positive on August 5th. On August 8th, the man was seized with marked abdominal pain and tenderness, rigidity of right rectus, chill, and vomiting; the pulse was 122; temperature 104° F., rising rapidly to 106°. A surgical consultant saw the case and concurred in the diagnosis of typhoid appendix, but advised against operation. The tenderness the next day shifted upward along the ascending colon; the temperature dropped, and the leucocytosis fell to 8,000, with a polymorphonuclear count of seventy-seven per cent. In the afternoon of the same day it rose to 10,200, with eighty per cent. of polymorphonuclears.

On the 11th the temperature went to 105° F., and the usual typhoid course was resumed; there was soon less abdominal tenderness, and the patient felt better. His temperature reached normal on August 25th. On September 4th the temperature suddenly shot up, the leucocytosis jumped to 17,600, and the appendicular signs and symptoms reappeared. The patient was operated upon on September 9th, and a large abscess was found. Bacillus coli communis was isolated, but not the typhoid bacillus. The patient was discharged cured on November 6th, after a slow convalescence. In this case a walled off abscess probably extended when it was infected by a secondary organism.

An Italian boy, aged twenty years, was admitted to the Methodist Episcopal Hospital on July 18, 1916. He ran a typical typhoid fever clinically, with the exception that of six Widals only one was slightly positive: both paratyphoid groups were negative on agglutination tests. His condition was normal from August 17th to September 2d, when he suffered a slight relapse lasting until the 16th. On September 21st his temperature suddenly shot up to 103° F., with headache and malaise. On the 22d the temperature was 104.4°; on the 23d, 104°. At 4 p. m. on the afternoon of the 24th he had acute pain in the abdomen, a leucocytosis of 10,200, with fifty-two per cent. polymorphonuclears. He was operated upon on the 25th. Through McBurney's incision a small amount of free fluid was seen in the abdominal cavity. A short distended retrocecal appendix was removed. He made an uneventful recovery.

As to treatment, many surgeons, one of whom was Doctor Murphy, recommend not operating. That would not seem to apply in my cases, especially the Kings County Hospital case. I believe that operation should be done when an accurate diagnosis is reached and when in doubt. These cases are not unlike cases of perforation in typhoid fever. Many have made a diagnosis of perforation and have had it concurred in by the surgeon, and yet operation has revealed no perforation. Most of these cases did well after operation. Some men have been fortunate with a small group of unoperated typhoid appendices, whereas when their experience was extended it was not better than that of others. It was a great advantage to have the appendix out.

Doctor Durham said that his experience was limited to a case which occurred in 1916. The patient was a woman admitted to the hospital with acute appendicitis, and was operated upon for that. No diagnosis of typhoid was made at the time, and the appendix which was removed was of the ordinary catarrhal type. The patient, however, proceeded to run a mild course of typhoid fever, and was referred to the medical side for treatment. It seemed probable that these conditions were more frequent than was ordinarily supposed, as suggested by this case. Doctor Durham said that he could recall only one other such case, seen years ago when he was an intern, the details of which he had forgotten.

Doctor Skelton had limited his paper to the spread of typhoid infection to the appendix, and had not included other forms of infection occurring during or just previous to the typhoid fever. The question of diagnosis was made more difficult by the fact that some of the conditions were out of sequence, depending upon when the appendix became involved. A simple or an acute inflammation of the appendix might occur just previous to the typhoid fever. The patient came in with an acute colon or streptococcus infection of the appendix, and then proceeded to typhoid fever. There were also cases in which the typhoid bacillus infected the appendix, spreading through the lymph nodes. This was nothing more than that phase of the disease which attacked the appendix, causing symptoms which, added to those of typhoid, suggested appendicitis. There might also be a recurring appendicitis in which the patient gave a history of previous attacks with more or less similar symptoms developing in the course of the typhoid fever. In these various conditions the diagnosis was difficult, depending upon the time when the attack originated. In other words, all the cardinal symptoms of the appendicitis were out of order.

Doctor Durham said that much stress should be laid upon what Doctor Skelton had said regarding the leucocyte count. In acute inflammatory conditions of the appendix during typhoid fever there was very likely to be a leucocytosis as opposed to the leucopenia of typhoid. We had to consider the Diazo reaction and also take into account the presence of the typhoid bacillus in the blood stream. Pain at McBurney's point was not always an aid. Tenderness was often seen around the region of the appendix in ordinary typhoid, which was probably due to the involvement of the parietal peritoneum. Of course, as Dr. Skelton had said, the most difficult types to diagnose were those which came late, during the third week, when the possibility of perforation due to the typhoid ulcer had to be ruled out, occurring in either the appendix or any other part of the bowel.

Doctor Skelton had said that the patient should always be urged to have an immediate operation as soon as the diagnosis was made. The family physician who was watching the patient had a very difficult position in this matter, and it was not easy for him to take a firm stand and say that the patient must be operated upon. It was often impossible to insist upon it, for many of these patients did get well without it. One other point might perhaps be considered a quibble, but Dr. Skelton had referred to the appendix as a cecum. Dr. Durham said that if his remembrance of comparative anatomy was correct, the appendix was supposed to be a remnant of the stomach as seen in certain lower animals, rather than a cecum. He said, however, that he agreed entirely with Doctor Skelton in believing in operation for appendicitis developing in typhoid. Of course, each case had to be judged by the condition of the patient, but in most cases the patient could go through the operation safely in the early stages. Notwithstanding, it was trying to decide whether or not it was absolutely necessary.

Doctor Kerr said that he had seen a number of cases of typhoid in children but had never seen this complication. He would like to know if Doctor Skelton, in going over the literature of the subject, had had this point in mind, and whether he had noted it as occurring in the very young.

Doctor Skelton said that he had hoped that the attitude he had adopted, in contradistinction to that supported by the larger experience of some other men would have provoked a more general discussion. Doctor Cross had made a valuable suggestion which was practised in the Norwegian Hospital. In the presence of any unexpected abdominal condition in a typhoid patient the surgical men were notified and they were at liberty to make observations whether or not the medical man happened to be present, the examination to be made in the presence of the intern, as Doctor Cross had suggested, relative to conditions of rigidity, etc. In preparing this paper he had tried to limit its scope, and he had not wished to open too large a field for discussion. He had not necessarily meant to say that in the earlier stage of typhoid we should be limited to infection from typhoid bacilli only. In some cases the infective agent might not be the typhoid bacillus. It may be Bacillus coli communis or any other agent. Referring to Doctor Durham's remarks about the embryology of the appendix, Doctor Skelton said he believed that Kelly had spoken of the appendix being a rudimentary cecum. He himself had been under the same impression as Doctor Durham, that it was the remains of a rudimentary stomach, but his statement was quoted from Kelly's work on the appendix. Referring to Doctor Kerr's inquiry about the age of these patients, Doctor Skelton said that he had not had that point in mind. In some of the cases studied the age was stated, but he did not recall in any of the literature he had consulted any statement to the effect that children were at all prone to the development of typhoid appendicitis.

The Question of Blood Pressure.—This paper, by Dr. Robert Franklin Ives, of Brooklyn, N. Y., was published in the September 22d issue of the Journal.

Doctor Cornwall said that normal pressure in all its three phases of systolic, diastolic, and pulse pressure had a wide range in conditions of health. It was only when the ordinary range of health was persistently exceeded that the pressure became abnormal. High blood pressure was not a disease or a symptom of disease, although low pressure was often a symptom of myocardial weakness, but a physiological procedure to meet some circulatory requirement. Whatever the circulatory apparatus did actively was done in the interests of an adequate circulation; for the function of the circulatory apparatus was the mechanical one of maintaining a circulation of the blood in such a manner as to meet the varying needs of the body. If the blood pressure was persistently abnormally high, Nature was evidently trying to maintain an adequate circulation in the presence of some obstruction or to meet some extra demand. It might be that the high pressure was maintained for the benefit of some vital region whose blood supply was impeded by arteriosclerosis, or that it was maintained for the purpose of increasing the elimination of retained waste products. Whatever the condition for which the high pressure was compensatory, the high pressure itself was not a pathological manifestation, but a physiological one. This point had a practical bearing on treatment, and it also suggested some ideas regarding symptomatic treatment in general.

With this view of the nature of high blood pressure, no attempt to lower it directly should be made, for by so doing we interfered with Nature in her reparative or compensatory activities. The rational treatment of such patients should be in the line of removal, correction, or amelioration of the conditions which called for the increased pressure. The broad suggestion here was that not every unusual manifestation which appeared in the body was a symptom to be suppressed. Perhaps fever came within that category. It was regularly associated with infections of a severe character, and might be part of Nature's curative plan. If so, antipyretic treatment was obstructive instead of helpful.

This argument, however, must not be carried to extremes. In some cases of high blood pressure direct lessening of the blood pressure seemed to be called for, at least temporarily, viz., the cases in which Nature seemed to have lost control of the situation and to be overdoing her duty, as shown by the production of a pressure so high that its continuance threatened injury to the cardiovascular apparatus. In hyperpyrexia, also, for similar reasons, antipyretic hydrotherapy might be indicated.

In regard to tests of myocardial efficiency based on blood pressure observations, Doctor Cornwall said that he had used them, and considered that they had a real, though limited value, especially if the time of return to the normal of the different phases was noted in connection with the immediate effect of the standard exercise on the different phases of the blood pressure.

Dr. T. STUART HART said that he had doubtless been asked to participate in the discussion in order to defend his method of estimating blood pressure in auricular fibrillation, which had been illustrated by Doctor Ives with an elaborate table. Medicine had today become so complicated by mathematical formulas and logarithmic calculations that any additional burden in this direction must demonstrate its value and show that it serves a really useful purpose. In estimating the blood pressure in cases showing complete irregularity of the pulse, auricular fibrillation particularly, it was well known that the successive pulse waves showed constantly varying pressures; hence if one was to use observations on blood pressure at all in these cases, obviously he must have something more accurate than the old fashioned method which merely indicated the highest pressure of the occasional most forcible pulse wave. The method which Doctor Hart had devised allowed one to average these pressures of the varying successive waves and gave one an approximate idea of this element of the heart's work. If the older method was employed one would be usually misled in regard to the patient's blood pressure. Either blood pressure calculations should be given up in these cases or a method more accurate than the one usually employed should be adopted, so that these observations might have some real value.

The use of this method had proved several important points. One was that in cases of auricular fibrillation the proper administration of digitalis usually raised blood pressure. This was a good thing for these patients. The digitalis blocked a portion of the impulses set free by the erratic activity of the auricle; these, therefore, did not reach the ventricle and the ventricle acted more slowly. Hence it had a longer diastolic period during which to rest and it was better filled with blood, so that each systole was more forcible and sent out a larger volume of blood and the blood pressure was increased. In patients with hypertension and a regular pulse, digitalis did not as a rule raise blood pressure. Notwithstanding that for many years textbooks had reiterated the statement that where there was high tension digitalis should not be employed, he did not believe that this was sound teaching. We knew something about digitalis, but there was much yet to learn. Doctor Hart said that he believed that in many damaged hearts digitalis was useful in improving the muscle tone.

He had been much interested in Doctor Cornwall's remarks on treatment. We needed to individualize our cases. Digitalis should be tried in some cases of hypertension with a regular pulse that were beginning to do badly and had head symptoms, bad vision, vertigo, digestive disturbances, vague discomforts, etc. The heart would begin to work better and the patients felt better. The tension, however, did not increase. Doctor Ives had avoided one thing; not once during the reading of the paper did he say that hypertension was due to arteriosclerosis or to nephritis. He said that they were associated conditions and that was all we knew. The patient probably needed a high tension until the kidney was improved and made to work better. If the function of the kidney was improved the tension might fall or it might remain unchanged for there was no call for greater work from the heart. Notwithstanding the authorities which Doctor Ives had quoted to the effect that hypertension was always associated with nephritis or arteriosclerosis, Doctor Hart said he believed there were a number of cases of hypertension in which no evidence of nephritis or arteriosclerosis could be demonstrated. These were hypertension cases with no demonstrable evidence of arteriosclerosis; the functions of the kidneys had been most carefully studied; the urine showed no albumin or casts; there was a normal excretion of water, nitrogen, and chlorides; there was no accumulation of chlorides or urea in the blood; the phenolsulphonephthalein excretion and Ambard's coefficient were normal. In several instances there had been post mortem examinations and the kidneys were found to be normal and exhaustive search revealed no evidence of arteriosclerosis. The cause of hypertension in these cases remains unexplained; it might be due to some unknown chemical substance. In another group were those cases with a pressure of 180 to 190. You gave these patients some suggestions as to how to conduct their lives; they returned with a pressure of 150 and you thought you had helped them. They continued to follow the same regimen and the next time you saw them the pressure had returned to 180. The pressure showed wide fluctuation up and down without any apparent reason. Doctor Hart said he could not explain this but that there was probably a spasmodic action of the arteries, due perhaps to a nervous influence or some chemical toxin that would have to be treated by regulating the mode of life, the diet, elimination, etc.

Doctor HALSEY said that in patients who complained of infrequent headaches and very slight breathlessness on exertion, and who showed nothing on examination but high pressure and obesity, something could be done by proper feeding to reduce their weight nearer to the average. Arterial dilators were rarely useful and often increased the distress. Reducing the weight might not have much effect on the actual number of millimetres of pressure registered, but it would have a very great effect on the comfort of the patients.

The most important point brought out in the discussion seemed to be the fact that pressure in itself was not so much in need of attention as was formerly thought. Another important point was the importance of taking the pressure of every patient as a routine, for often it would direct the investigation to the cause of fleeting headaches and buzzing in the ears, which the patient had forgotten or ascribed to digestive disturbances.

Another type of patient was pale; this was ascribed to anemia, but questioning discovered breathlessness after exertion. The sphygmomanometer showed that these patients had a high pressure, and the urine had a low specific gravity—1.010 to 1.006; no albumin was found and no casts, or careful centrifugation showed a few hyaline casts. These cases should not be dismissed lightly. The functional capacity of the kidney should be tested for the excretion of phenolsulphonephthalein. If it was low on repeated tests you had a serious condition and not a simple anemia. Everybody could not test the blood for nitrogen content, but, if possible, it should be examined as it would give information not obtainable in any other way as to prognosis. The use of the sphygmomanometer as a routine would help to solve many problems which were now lightly treated or neglected, and would prevent a number of unexplained changes in the condition of patients. It gave light in its field as the thermometer did, and should be used in the same way.

Doctor BISHOP said that it was a very simple matter to test the aneroid instruments from time to time with a mercury instrument, and that they were a great improvement upon the original ones; they were now quite reliable. The great advantage of the aneroid instrument was that, being portable, it could be used while the glass and mercury instrument could be left home in the office. The most important advance in the knowledge of the profession had been the almost general growth of a belief in the compensatory nature of blood pressure and the abandonment of its treatment as a symptom. A general appreciation of its underlying causes had also grown up. No class of subjects was more difficult to understand than people past middle life suffering from very high blood pressure, but no set of patients gave better relative results when all the circumstances of their diseases were carefully canvassed. Doctor Bishop's classification of blood pressure cases into low blood pressure, high blood pressure, and secondary low blood pressure, which he made the basis of his monograph on blood pressure published at a time when blood pressure was first attracting attention, still proved to be a useful division of cases. The term, secondary low blood pressure, which he had introduced, had not been generally adopted but was occassionally used, and was meant to indicate that very often the blood pressure which was high numerically might be low for that patient because it was so much less than he had been accustomed to and needed. The logical conclusion of this conception was the use of digitalis in the presence of this condition, which had often proved a lifesaving measure.

Doctor VANDEGRIFT spoke on the diagnosis and prognosis of arteriosclerosis. In examination of the eye with the ophthalmoscope one could frequently detect arteriosclerosis before it was discovered in the radial arteries. The sclerotic changes could often be observed in tortuous terminal retinal arteries before the blood pressure was high or before there were any changes in the pulsation of the radial arteries. In the detection of these changes in the eye one could not say that they were precursors of nephritis or general sclerosis, but the early changes could be seen. In the macular region little spots and some edema were found; then, where the arteries crossed the veins, the veins would be pressed so that the circulation was stopped and there would be a little swelling out of the veins distally. These were very early signs. When the condition was advanced, other changes were to be noted, as toxic and mechanical effects, spasms of the arteries, and small hemorrhages. The patients might find themselves temporarily blind from the periphery to the centre. Doctor Ives had brought out that point. These spasms of the retinal vessels might be the precursors of cerebral apoplexy. When small hemorrhages appeared along the vessels they might accompany high blood pressure. Lowering of blood pressure might have no effect on them, but if the patient was brought into good condition they would disappear. These hemorrhages were also frequently an indication of early death, particularly if they could not be stopped by reducing the toxemia of the body. It would be a great aid in the protection of the body if the general practitioner would accustom himself to the use of the ophthalmoscope. Patients complaining of vertigo, headache, dizziness, etc., should be examined with the ophthalmoscope, and important data might be found before detection by the radial pulse or the sphygmomanometer.

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Book Reviews.

[*We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.*]

Otites et surdités de guerre. Par H. BOURGEOIS et M. SOURDILLE. Preface du Médecin-Inspectéur Toubert Collection Horizon, Précis de médicine and de Chirurgie de Guerre Masson & Cie. 1917, pp. i-ii, 1-188. (Prix 4 fr.)

War otology, like every other branch of surgery, and of medicine as well for that matter, has given rise to new problems practically unknown to the otologist of peaceful times, which will demand their solution as soon as the world emerges from the great struggle in which it is engaged now and settles down to peace and quietude which are indispensable to true scientific work. The postbellum ear work will, in many cases, be an untilled field to be gone over with care and assiduity. This little book, which has for its title The Otitis and Deafness Caused by War, aims successfully to cope with the difficulties of war otology as they present themselves on the battlefield. War deafness, including labyrinthine involvement and functional deafness, is gone into quite extensively. A highly interesting part of the book, almost half of it, is that devoted to expert testing of hearing and detection of feigned deafness. This is quite valuable to the lay otologist, whose opinion in time of peace is of importance in determining the extent of indemnifiable or compensable injury to the hearing apparatus. It is, however, the more important to the military surgeon, both in his selection of recruits for military service and in deciding in traumatic cases on the battlefield as to the degree of deafness and its curability. On the other hand his, the otologist's, opinion will determine the extent of the state's obligation to the wounded soldier after the war. This subject is usually passed over lightly in most textbooks, so that in this respect the little volume fills a distinct void, the more so as it presents some of the most reliable methods that are employed by the ear man for trapping the unwary malingerer. The book is divided in four parts: Nontraumatic otites, war traumas of the ear, deafness caused by war, and expert testing of hearing. We heartily recommend this book to all who desire to obtain reliable information on the effects of the war on the ear in their various manifestations.

Alcohol. Its Relation to Human Efficiency and Longevity. By EUGENE LYMAN FISK, Medical Director, Life Extension Institute. Authorized by the Life Extension Institute, 25 West Forty-fifth Street, New York City. Reviewed and criticised by members of the Hygiene Reference Board and approved by a majority. New York and London: Funk & Wagnalls, 1917. Pp. xx-216.

This book is a compilation of statistics bearing on alcohol in its various social aspects and does not differ greatly from the usual book of the kind. The facts are presented temperately enough and in a clear, readable style. The conclusion is that alcohol is an unmitigated evil. Doctor Fisk dismisses scornfully the postulate that all alcoholics are defective, evidently meaning inferior in some way, but ignores the view of the interpretative school of psychiatry, that is, that the use of alcohol is a defense reaction. What we need is not so much studies of the economic and psychological harm done by alcohol—these are common enough—but rather intensive studies of the psychology of drunkards and the men who become drunkards.

Good Health. How to Get It and How to Keep It. By ALVAH H. DOTY, M. D., Author of The Prevention of Infectious Diseases, The Mosquito, A Manual of Instruction in the Principles of Prompt Aid to the Injured, etc. Illustrated. New York: D. Appleton & Co., 1917. Pp. xiv-304. (Price $1.50.)

This little book is representative of a tendency that the busy practitioner should welcome with open arms. The busy, progressive man will see a ray of hope in relief from what to him is a waste of time on simple derangements in his patients due to bad hygienic habits. This book by Doctor Doty, who is an authority on hygiene and sanitation, is written for the layman. It contains sound practical common sense which, applied to daily living, should guide the normal average person in attaining and maintaining physical efficiency. It is a simplified, concise, and accurate account of the primary rules of health, and as a public health expert, the author's project seems to be to contribute toward raising the general health level. This sort of thing, the proper kind of public education, should keep many intelligent laymen out of the doctor's hands, and should relieve doctors of attending intermittently ailing persons who are not hypochondriac or suffering from actual disease.

After Office Hours.

For a patriotic thrill read Invaders of Sanctuary in the *Saturday Evening Post* for September 8th.

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Red Cross nurses are a favorite subject for magazine covers nowadays. *Leslie's* for September 15th shows a beautiful one holding up a thermometer as gingerly as if it were a German bomb and as daintily as if it were Sèvres china. Her patient, a large, handsome young man with soulful eyes, of course, is gazing wistfully at her. He wears a bandage about his head that was never put on by a surgeon in this world. However, this issue has a good article on the Red Cross within, accompanied by pictures of the customary *Leslie's* brand of excellence.

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Unnecessary surgery undoubtedly exists. There is also such a thing as unwise publicity. An example of the latter is an article in the *Literary Digest* for September 8th dealing with the former. It is an example of the wrong impression created when a medical article, or a few quotations from one, is lifted from its context and presented to a lay audience in a garbled form. The perspective is lost, and the lay reader takes the exception for the rule. For example, in this article, the writer admits that "The faults which I have endeavored to point out are small, indeed, when compared with the magnificent whole which represents the accomplishment of American surgery." And yet the busy reader, who has perhaps only glanced at the title and skimmed down the printed page, carries away the impression that much surgery is either unnecessary or done by unskillful men.

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The most popular form of amusement in these days is the baiting of old John Barleycorn who, tied to the stake and stuck by a score of prohibition arrows, is awaiting the *coup de grâce* of November. In the meantime the popular magazines are publishing antialcoholic articles by the dozen. *Harper's Bazaar* for September, under the guise of fiction, shows some of the sordid facts of alcoholic heredity in The Pringles: *McClure's* for October has a special article, The Side-Shows of Drink, and in the October *American* is published the anonymous confession of a writer, under the title, What Booze Did to Me in the Twenties. Don Marquis, in his Sun Dial in the *Sun* lately, takes a fling at these selfstyled drunkards who rush into print. He asserts that as a rule they are far from being tanks and by a process of selfhypnotism, combined with a greed for magazine gold, they have persuaded themselves and a host of open mouthed readers of their narrow escape from drunkards' graves.

* * *

The *Times Book Review*, September 23, 1917, contains interesting comment on *A Doctor's Diary in Damaraland*, by Dr. H. F. B. Walker, late Captain R. A. M. C, which we give in full. "This is a daily record of the travels of Doctor Walker when attached to one of the mounted brigade field ambulances under General Botha in South Africa. It was when the rebellion broke out that, as a loyal South African, he offered his services, but it was not until the last week in January, 1915, that he was ordered to report to the Senior Medical Officer in Cape Town not later than February 1st. So he went there and sailed from that port on March 11th and went, by way of Walfisch Bay, to Swakupmund, where he spent what he describes as five very disagreeable weeks. The Germans that General Botha's expedition was to teach manners had not yet surrendered, and scouts brought word into the town that they were concentrating not far away, and that they boasted that they did not fear the South Africans because they were only 'dissipated farmers and swineful fat bellies.' It was not the vaporings of the Germans that made it unpleasant at Swakupmund, but, as the author puts it in his diary in the present tense, the fact that 'sand has blown into the wheels of the army, with resulting friction, and there has been a good deal of petty quarreling in which the medical service has figured largely.'

"Much of the diary is made up of recitals of personal discomforts and dangers, and one might wonder how Doctor Walker managed to note so extensively the character of the fauna and flora of the country and its salient geological and physiological features. He did it, nevertheless, and the reader of this book will surely know much more about South Africa than he could have learned in any other way short of actually visiting that region. With this, too, he contrived to keep a close and understanding grasp on the progress of the war—all recorded in the voluminous diary. The trek from Swakupmund to Otjimbingwe is a story of hardships, suffering, and danger that is none the less impressive because related in a casual, every day manner, in an unromantic notebook. There is no attempt at fine writing, and perhaps largely for this reason the narrative is a vivid and striking one. Not only were there natural difficulties and perils of a wild country to overcome, but there was a treacherous enemy always lurking in the neighborhood, and constant vigilance was necessary. That the doctor got through safely is proved by his preparing his diary for print and actually putting it into a book. But surely many of his experiences, thrillingly told in the volume must have made him fear that he never would get out of the wilderness alive."

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Meetings of Local Medical Societies.

Monday, *October 8th.*—New York Ophthalmological Society; Society of Medical Jurisprudence, New York; Roswell Park Medical Club, Buffalo (annual); Association of Alumni of St. Mary's Hospital, Brooklyn; New Rochelle, N. Y., Medical Society (annual).

Tuesday, *October 9th.*—New York Academy of Medicine (Section in Neurology and Psychiatry); Medical Society of the County of Wyoming (annual); Ontario County Medical Society (annual); Medical Society of the County of Schenectady; Medical Society of the County of Rensselaer; Buffalo Academy of Medicine (Section in Medicine); Onondaga Medical Society; Medical Society of the County of Oneida; Medical Society of the County of Chautauqua.

Wednesday, *October 10th.*—New York Pathological Society; New York Surgical Society; Alumni Association of Norwegian Hospital, Brooklyn; Schenectady Academy of Medicine; Medical Society of the Borough of the Bronx; Richmond County, N. Y., Medical Society; Rochester Academy of Medicine; Medical Society of the County of Montgomery; Medical Society of the County of Dutchess (annual); Brooklyn Medical Association.

Thursday, *October 11th.*—New York Academy of Medicine (Section in Pediatrics); Gloversville and Johnstown Medical Association; Physicians' Club of Middletown; West Side Clinical Society, New York; Brooklyn Pathological Society; Blackwell Medical Society of Rochester; Jenkins Medical Association, Yonkers; Society of Sanitary and Moral Prophylaxis, New York; Buffalo Ophthalmological Club; Jamestown Medical Society; Society of Physicians of Village of Canandaigua; Medical Society of the County of Allegany (annual).

Friday, *October 12th.*—New York Academy of Medicine (Section in Otology); Society of Externs of the German Hospital in Brooklyn; Flatbush Medical Society, Brooklyn; Eastern Medical Society of the City of New York; Clinical Society of the German Hospital and Dispensary; Manhattan Dermatological Society (annual).

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Official News.

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending September 26, 1917:

Cobb, J. O., Surgeon. Directed to proceed to South Bend, Ind., on special temporary duty.

Frank, L. C., Sanitary Engineer. Directed to proceed to Detroit, Mich., for observation of the operations of a steam disinfector installed on the steamer *D. G. Kerr.*

Freeman, A. W., Epidemiologist. Directed to proceed to Columbus, and if necessary to Chillicothe, Ohio, on special temporary duty.

Gardner, C. H., Surgeon. Directed to proceed to Little Rock, Ark., on special temporary duty.

Herring, R. A., Passed Assistant Surgeon. Directed to proceed to Waco, Tex., on special temporary duty.

Krumrein, Louis F., Scientific Assistant. Relieved from duty on the steamer *Murray,* about October 1, 1917.

Magruder, G. M., Surgeon. Granted two weeks' leave of absence from September 15, 1917.

McLaughlin, Allen J., Surgeon. Granted one year's leave of absence without pay, from November 1, 1917.

Smith, H. F., Assistant Surgeon. Directed to proceed to Alexandria, La., on special temporary duty.

Stewart, P. M., Assistant Surgeon. Directed to proceed to Charlotte, N. C., on special temporary duty.

Streeter, H. W., Sanitary Engineer. Directed to proceed to Washington, D. C., for duty in completing report on the pollution of the Ohio River.

Williams, L. L., Jr., Assistant Surgeon. Granted twenty-one days' leave of absence on account of sickness, from August 22, 1917.

Casualty.

Acting Assistant Surgeon W. S. Walkley died August 29, 1917.

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Births, Marriages, and Deaths.

Married.

Coons-Campbell.—In Columbus, Ohio, on Wednesday, September 12th, Dr. John J. Coons and Miss Jessie Pryce Campbell.

Hughes-Livingston.—In Edwardsville, Ill., on Thursday, September 20th, Dr. Marc Ray Hughes, of St. Louis, Mo., and Mrs. Rosalie N. Livingston, of Lake Crystal, Minn.

Johnson-Hawk.—In Monroe, Mich., on Thursday, August 2nd, Dr. John R. Johnson, of Lima, Ohio, and Miss Hallie Hawk.

Jones-Rawdon.—In Fredonia, N. Y., on Saturday, September 15th, Dr. H. W. Jones, of Utica, and Miss Lurena J. Rawdon.

White-Donlevy.—In Somerville, Mass., on Wednesday, September 19th, Dr. Michael W. White and Mrs. Elizabeth Agnes Donlevy.

Died.

Bernard.—In Minneapolis, Minn., on Monday, September 17th, Dr. John Allen Bernard, aged seventy-two years.

Bindewald.—In Louisville, Ky., on Saturday, September 15th, Dr. William A. Bindewald, aged seventy-six years.

Bissell.—In Torrington, Conn., on Thursday, September 13th, Dr. Jerome S. Bissell, aged forty-eight years.

Boorman.—In Terrell, Tex., on Monday, September 10th, Dr. Thomas G. Boorman, of Princeton, Tex., aged fifty-three years.

Brady.—In Scranton, Pa., on Monday, September 17th, Dr. William F. Brady, aged fifty-three years.

Champlin.—In Block Island, R. I., on Friday, September 14th, Dr. John C. Champlin, aged fifty-three years.

Fahrney.—In Hagerstown, Md., on Saturday, September 22nd, Dr. Peter D. Fahrney, aged seventy-four years.

Hazelton.—In Manchester, N. H., on Thursday, September 13th, Dr. George W. Hazelton, aged fifty-eight years.

Leigh.—In Blue Ridge Summit, Pa., on Saturday, September 22nd, Dr. H. Gilbert Leigh, of Petersburg, Va., aged fifty-one years.

Libby.—In Smyrna Mills, Me., on Thursday, September 6th, Dr. Augustine B. Libby, aged sixty-two years.

Shaw.—In Pittsburgh, Pa., on Tuesday, September 18th, Dr. William C. Shaw, aged seventy-two years.

Staral.—In Cleveland, Ohio, on Monday, September 17th, Dr. John A. Staral, aged thirty-six years.

Weaver.—In New Bedford, Mass., on Friday, September 21st, Dr. Harry V. Weaver, aged forty-seven years.

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Original Communications

THE PSYCHOLOGICAL AND THERAPEUTIC VALUE OF STUDYING MENTAL CONTENT DURING AND FOLLOWING EPILEPTIC ATTACKS.*

By L. Pierce Clark, M. D.,
New York.

From past studies (1) we have learned that a large number of individuals who suffer from essential epilepsy have epileptic reactions which range in severity from passionate episodes to the severest grand mal seizures. These are a result of a certain type of egoistic, sensitive, and poorly adaptive makeup, plus some irritative stress or demand that seems to act as a precipitating cause for the epileptic seizure. While there are many important phases of the physical and mental makeup of the epileptic constitution to be made clear, we should continue to study all the mental factors, both immediate and remote, which appear to initiate attacks in epilepsy. In broad and general terms this has already been done. Still more specifically I undertook to show the definite causal relationship between certain types of irritation and the sequential attacks in my recent clinical study on epilepsy (2). At this time, however, I am desirous of showing that for practical and scientific purposes it is highly important to study anew the spontaneous productions of patients while in the attack itself.

The importance of this method of psychological study as such was first suggested by the detailed analysis of a case of epileptic deliria by MacCurdy (3). Although his observations were confined to a single case in different delirious episodes, it has not seemed impossible to me that even in the brief comatose state following single attacks in many epileptics one may gain a psychological insight into the essential unconscious content of the epileptic individual by such a method. Until recently I have taken for study only those epileptic seizures of the milder sort, psychic or mild motor petit mal, but lately for the purpose of demonstrating that study material may even be obtained in the mental state immediately following grand mal attacks I have studied a few of the latter sort. We know that the sleep stage after the grand mal convulsion is often deep and profound and that it represents physiopathologically a cloak, as it were, for the individual epileptic under which he recovers from the physical and mental exhaustion entailed by his seizure. However, if one chooses for the purpose of study to awaken or greatly arouse the epileptic a short time after the most profound postconvulsive sleep has passed, one may by intensive inquiry obtain a mental content which is comparable to that spontaneously produced by others or by the same patient following his milder attacks. The material thus obtained is probably from a deeper level of conscious strivings than those to which I shall limit our study at this time. Indeed, I believe one may often obtain by early questionings in these more diffused and more slowly elaborated convulsive fits the original mental content of annoyance or stress away from which the individual patient seems to be reacting. The first few episodes given in this clinical study illustrate this point. I believe the violence and rapidity of the early part of the grand mal fit in many instances carry the patient too quickly to the deepest level of unconsciousness so that the mental content of this part of his fit is not often obtainable. But no sooner does the patient reach this basic level and the convulsive part of the fit ceases, than he is from that moment making for physical and mental reconstruction of his normal consciousness. Any content from this deep level therefore must be for the time at least extremely fragmentary and difficult of analysis. Perhaps for the present we should confine ourselves to the study of the spontaneously produced or more easily induced experiences of mental content of the automatic state after mild attacks. Even here we cannot always be sure of our content as a part of the real striving of our subject. Only by careful and painstaking effort shall we be able to learn the real language of striving in the epileptic seizure reaction of any individual epileptic. While the data I have at hand for the study of the thoughts and ideas of the epileptic during his milder attacks are not so very extensive or convincing that the idea may be fully studied in future, I am putting these few instances on record at this time.

Many times I have found, when but a word or two is spoken by the patient in the disordered or partial loss of consciousness, if one is sympathetic and tactful, he can get a much larger content during this period than is ordinarily supposed. It is interesting to study the changes which the initial and supposedly quite unconscious idea undergoes as the patient gradually returns to the conscious state, and

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*Read before the National Association for the Study of Epilepsy, May 29, 1917.

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his obvious attempts to rationalize the idea and thought into his everyday acts. The principle is not so very dissimilar to that of the dreams, especially those dreams occurring in highly neurotic individuals; the latter labor with a good deal of repression and resistance to the interpretation of their dream production by psychanalysis. Some critics have stated that the studies we have undertaken are but attempts to make the epileptic fit a neurotic episode capable of analysis. To this I would say that nothing is further from my purpose. I firmly believe that the epileptic disorder is specifically and definitely conditioned upon an organic basis, but this should not deter us from using every psychological method at hand to understand the instinctive defects of makeup of the epileptic and the mechanism of his attacks. The practical and therapeutic advantages of such studies are the same as one may obtain for the understanding of the deepest conflicts of manic depressive and dementia præcox individuals by a knowledge of their inherent defects of makeup, and thus be able to utilize the fact in helping such individuals to make better personal and social adaptations. From such data one may often fashion therapeutic talks of greatest benefit.

CASE I.—A young unmarried woman, twenty-nine years of age, whose epilepsy began in early life. She has remained rather infantile and childish in makeup and by intelligence tests ranks with the mental age of ten or twelve. She has the classic epileptic constitution and bears the mental stigma of her disorder without showing much emotional deterioration, but rather an arrest of emotional development. After an extremely annoying controversy in regard to a supposed overcharge on the part of the newsdealer, the patient grew listless, confused, petulant, and irritable, and fussed about the matter all day. She would not let the bill be settled by her nurse nor would she stop talking about it, and finally she had a mild attack. As the convulsive part of the attack, which was slight, was replaced by a mild degree of automatism, she said as she buried the bill deep in her closed palm: "The newspaper man, the cheat; I will put it there." She then threw it into the wastebasket and spat on it. As usual, after the automatic phase of the attack passed, our patient began to take off her waist and finally curled upon the sofa, assumed the fetal position, and went into a deep sleep lasting two hours. When she awakened she was normal in nervous tone, manner, and deportment. Referring to the episode next day, the whole transaction assumed the character of an ordinary affair. The feeling which she then had against the newsdealer was not attended by anger or great resentment. The attack seemed to have carried off with it, or by it, her whole irritable attitude, although no detail of the facts as remembered had actually been altered.

Another interesting episode was as follows: The patient awakened early in the morning and aroused her nurse. She appeared to be highly excited, shaking her hands and arms. She said she was "terribly angry," that she had dreamed she was in a delicatessen store with her brother. (When out walking she had often stopped to look into these stores and expressed a desire to eat delicatessen food, as she liked it "better than candy.") In the dream when she asked her brother to buy her some sausages he refused to buy her even one. She then grew very angry and struck him, asking why he hadn't finished some photo proofs she had sent him some time before and which he had promised her. (She had actually sent some proofs and wondered why the brother had not returned them; she always grew excited and "hurt" when she spoke about it.) As she was sent back to bed she kept repeating: "Oh, I am so dreadfully angry, so dreadfully angry!" She had no sooner got to bed than she called to the nurse, saying she was going to have an attack. A severe grand mal followed with tonic and clonic spasm. There were short tonic clonic spasms interspersed with delirious and automatic activity in which the patient yelled in angry tones, pounded the mattress, and threw the bed clothing about. The whole attack with tongue biting and voiding occupied five minutes. It would seem as though the tonic clonic spasm kept the punitive motive disguised, and so soon as this phase of the attack passed and the automatic or delirious state succeeded, our patient seemed to be carrying out an assault upon some object as though it were an animate thing. Unfortunately, there were no spontaneous productions, nor was there any attempt made to recover any content. After a quiet sleep of a few hours our patient once more spoke benevolently of the brother. When pressed further about the early morning incident she merely smiled pleasantly, then her expression changed a little to a suspicious look as she said, rather naïvely and reluctantly: "I know. I know all about it."

We know as a matter of fact that no two diseases are mutually exclusive, and that hysteric episodes may, and indeed not infrequently do, occur in epileptics; but I believe we are on safer ground in counting all phenomena occurring in epileptics as manifestations of this latter disorder rather than being hysteric or other psychoneurotic episodes *per se*. The therapeutic use to which the above automatic phase of the epileptic attack was put was as follows:

It was found that our patient had been steadily developing a deep rooted hatred against this brother as he had the family finances as well as other personal management of the family in his hands. By simple talks with the patient in reference to her attitude toward the brother, the situation in the family was improved to the advantage of all concerned. Naturally, we must bear in mind that in any of these mental episodes there is a subsoil, the organic substratum or preparedness of these patients to take on these environmental stresses, and that the two provoking agents in the epileptic state are, pathologically, mutually coöperating to the same end. The seizures and their morbid purpose—if one may so designate a pathological process—restrict or withdraw the individual from the life demand for endless adaptations to its various stresses.

Studies in other clinical settings presented the following interesting episodes. The case is the one more fully described elsewhere (4), to which the interested reader is referred for a detailed description of the makeup of the patient and his family, etc.

CASE II.—A young man, twenty-six years of age, whose mother is also epileptic, had a slight petit mal. He was near his bed at the time, and as the attack progressed he automatically reached out for the protection of the bed and reclined upon it, face upward. As the convulsive part of the attack ended he smiled, got up from the bed quickly, and looked about him. He patted the bed cover, scrutinized it carefully, and glanced at the nurse, smiling rather vacantly. The following conversation ensued: Nurse: "What do you expect to find there on the bed?"

There was no answer at first, but the patient smiled again, a boyish, rather roguish smile, as he slowly replied in a silly pettish tone:

"Why I—I was expecting to see a string—a little a—a little string—a string of iron behind me. I was pulling it behind—I was pulling it along behind me."

Nurse: "Why were you pulling it behind you?"

Patient: "Because I was to have command of it—to control it. To help me in similar events."

Nurse: "What was the string of iron like and what were you to do with it?"

Patient: "Why, why"—here the patient frowned and hesitated so long that the question was again rather peremptorily put. "Why, it was—it was going to join in with the other things of the room—that is what they had to do with you—nurse—and me, and I was—I—I—was to have command of them."

Nurse: "You were going to have command over the things that concerned us here?"

Patient: "Yes. That's it, that's it—I was—Oh——"

Here our patient got up with the well marked annoyed expression on his face which signified that returning consciousness had at last put an end to the episode. After our patient had fully recovered, the whole affair was gone over in detail. It was found that the patient had been formulating the idea that if he might be able to get together the sequence of all the things that led up to the attacks, that he might get conscious control of himself and his disorder, and thus prevent his attacks in future. He had been studying textiles and weavings in a correspondence course, and the bed cover pattern had formed a part of the actual study.

But, one may ask, why the thread or string of iron? In various tasks he had been told that no ordinary effort would hold these tenets in his mind and that he must piece them together with the strongest rationalization imaginable. It may further be said that our patient has the greatest difficulty in ridding himself of his boyish and racial attachment to his parents, and that he is constantly struggling to gain the mastery of this infantile attitude. As he frequently says, "I must get hold and control all these things for myself and not be so dependent on others." It is more than possible that the above forced production of our patient has deeper and more symbolic content, as that of the ordinary dream, but may it not also foreshadow the constructive way out of his difficulty as contended for the significance of the dream by Maeder (5)? To further this thought it must be remembered that the precise time when these spontaneous or forced productions are obtained from these patients, is in that period of the attack when the patient is reassembling his disordered consciousness, and naturally the mental content must be concerned not so much with the withdrawal from the stress which precipitated the fit episode, as with the reconstruction and regaining of conscious control over the fit reaction. The therapeutic advantages of the above episode in our patient's life, and the use of it to help him to get thoroughly interested in his new adaptive life is quite obvious.

Quite in accord with these detailed instances of spontaneous productions of epileptics during their automatic state following the mild seizures are those examples given at length in my article, The Nature and Pathogenesis of Epilepsy (6). In the one, there was a full elaboration of the infantile concept of homosexuality and the patient himself having given birth to a child, and in the other, an instance of a middle aged man who discloses a homosexual content of the unconscious state. Another patient, whose case is given in abstract (8) in the deepest sleep phase of a grand mal attack often said: "The day is o'er," which had for its setting the intensive unconscious longing for the release from all life stress.

Another episode in the same patient was as follows:

Case III.—After a very mild attack of petit mal our patient arose from his chair, frowned, walked forward a few steps, and stamped firmly on the floor with his right foot. Smiling in a boyish, silly manner, he said: "Oh, girls." Then the convulsive part of the attack was fully ended, and the usual fatuous, dazed smile appeared. He then sat down, and a series of insistent questions of "What? How is that? What did you say?" etc., was put to him. The replies pieced together were as follows: "I was trying to kill—kill—to kill a small portion of the"—frowned in a perplexed manner—"I've forgotten what the darn thing—part of the—the—the—the game that was started by the others. Well, it's got the—I don't know, I don't know exactly what you call it"—frowned again. Here the patient became silent and looked away into space as he does in one of his characteristic day dreams. He finally began to hum a tune. Questioning as before was again taken up, and the patient continued: "It's got the back of the regular from, from"—frowned—"well, the regular—what do you call it?—the little pieces, the regular—that forms the backs of the—back ends. Wish I could remember what they are really called—seem to have forgotten. I was trying to end the thing right, there, end that part of the—the part of the piece and make it just simply—a—a—Oh! I must be all balled up, I think." Here it was apparent that consciousness was more fully established, but once more he looked off into space in another of his characteristic day dream attitudes, and the questions were once more started and the patient said: "Well, I meant I was trying to, let me see—trying to—must have slipped by me, you know how you know certain things end. I thought I had the right ending of that, but I must have been a bit previous."

Here again we have the patient apparently striving to abort the petit mal attacks. In the former setting he was trying to "get the things strung together," to control, to command, and in the later episode he was trying "to end the thing right." In this latter episode, however, we gain a deeper insight in the spontaneous production, "Oh, girls," and the equally unconscious statement of "to kill, kill," etc. Our patient, like most epileptics, really thinks that his "youthful errors" have more than the ordinary significance as a cause of his disorder. He is really almost asexual. In other words, his sexuality is so little in evidence that it, too, participated in an infantilism of peeping curiosity that has more than once been shown in the very mildest petit mal attacks, as we shall give in a characteristic episode later.

An instance of a more frankly sexual character is seen in the following:

Our patient had a very mild petit mal attack; as the spasm ended he was automatic. He smiled and began to wave his right arm in a quick outward rotary movement. He then smacked his lips, swallowed deeply, and said, in a short, sharp tone: "It's a ringer; I was throwing a ringer." He then stared about him in a pleased, elated manner for a few moments. Next the facial expression again grew dull. He frowned as he became more conscious, apparently realizing that he had had a petit mal attack. He then said in his old annoyed tone: "I wish I could get control of these things." When questioned about the "ringer" he said: "I suppose I was trying to throw the saliva out." A few minutes later, after spending the time sitting quietly, he was again questioned, and apparently forgetting the "saliva" statement, he said: "You see, the ringer is what one gets in pitching quoits. You get a ringer when you throw the ring over the peg." He had, previous to the attack, been listening quietly to some lively dance music on the victrola. He said it had brought back the memory of "other days" and the "good times" he used to have with the boys, and then he felt something rising in his stomach (epigastric aura), and he lost consciousness. The frank elation of the repressed pleasure thoughts would seem to have then formulated itself in the masturbatic ideas given above.

Other similar episodes could be related of the patient's childlike sexual curiosity and regression to the onanistic state of his puberty development. A classic peeping episode which was noted may be cited here in the same patient.

After a more severe petit mal attack than usual, the patient looked confused and the usual fatuous smile did not appear for some minutes. Then the patient assumed a crouching position, with the head well shrugged between the shoulders. He looked out of this cramped position at his attendant with a childlike expression. He cooed like a baby when spoken to and said: "I'd like to see——" No amount of questioning at the time or after could make him say more apropos of this remark. He remained in the childlike attitude for several minutes; his gaze intently followed the attendant about the room at his duties as an infant might. He then began to pick at the nurse's arm as he passed and jumped away like a playful child. When spoken to sharply he assumed an attitude of defense with clenched fists, but when no notice was taken of this he again returned to his playful attitude before described in touching and picking at the nurse's clothes. As he became more fully conscious he began to rationalize his acts as he said: "Don't get mad at me; let me pick the thread off your trousers, won't you?" But there still remained the rather fatuous, silly smile of the earlier disturbed conscious state. Evidently he was not yet quite clear mentally; as one of the fellow patients was using the urinal toilet our patient came close to him from behind, leaned over his shoulder, and in a soft whisper said: "Let me see, won't you? Oh, let me see——" In a few moments more he was quite all right again. Some two hours after he voluntarily sought the nurse and gave the following account of the episode:

"Please tell me about that attack I had this morning. I felt all right when I got up and I felt so good I thought I was through with those things," meaning the petit mal. "At least it seemed that way to me. Before I got up this morning I wakened with sexual desire and thought of masturbation, but I then got up at once and went to the bathroom instead, for I knew it was wrong to think of such things, but I felt fine and had not thought of having a wave at all. Then as soon as I got to the wash basin that same old feeling of pressure in the stomach came on (epigastric aura), and that's all I remember. I don't even remember taking my bath or putting my clothes on afterward."

It would seem as though the attempt at suppression of the sexual desire probably irritated the patient and that the automatic phase was a part of the period of infantile regression in which our patient reenacted a portion of the childhood sexuality. It may be said that our patient, although a strong, well built, robust young man, has apparently had no heterosexual longings, he rarely masturbated and has had but one or two night emissions in two years.

Occasionally one may get a part of the mental factor which seems to induce attacks, note its wish transformation as the attack progresses, and finally trace the same thought from the preseizure stage into the period of return to normal consciousness. The following episode, while perhaps unconscious, is very illuminating to our thesis:

Case IV.—At the outset it may be stated that the patient is rather an uncommonly poor loser at games, betting, cards, golf, tennis, etc. This trait is well known in all epileptics as a class. Our patient in this instance had been playing golf all the morning. He played the first nine holes in 60—that is, he turned in this score, but as usual failed to turn it in correctly. Nothing was said about this, but when he started on the second round and on the first hole turned in a score of 7 when he had actually made nine strokes, his attention was called to this fact. He became confused and began a mental calculation of his play, and finally agreed that he had made the hole in 8, but it was very apparent that he could not stand being held rigidly to account for what he believed to be a very poor showing. However, he played fairly well for the next two holes, but on the third he made fourteen strokes. This time he actually turned in the correct score. His general mood, however, was that of being disgusted with his play; the hope of better luck on the next holes tended to lessen the tension somewhat, and he played fairly well but remained rather silent. On reaching his room he at once prepared to dress to go to the city. When asked what he was going to do, his tone was sharp as he answered that he intended visiting relatives and doing some shopping. He was encouraged to follow his own inclinations, as it was apparent he was ready for an attack and it was thought best to furnish the pleasurable and easy route for him. At the dinner table, however, he ate in silence, answered briefly when spoken to and without enthusiasm. As he finished his meal he had a rather severe petit mal attack. As he relaxed from the slight tonic rigidity of the first part of the attack, and during the period of disordered consciousness, he looked about for a few seconds and began to mumble: "Let's see—that—was—the second—stroke, wasn't it? Let's—let's—let's get this settled." Then a smile played about his mouth, the left hand began to twitch spasmodically in mild clonic contractions. In a few seconds the patient looked annoyed, passed his hand over his forehead several times as though thinking, turned to the nurse and said: "I thought my head was nodding. That was why I was saying something; I thought the nod was a stroke." In a few minutes he was over the attack completely. When asked what he associated "stroke" with, he said: "Why, golf. When you make a stroke with your wooden or iron club." After he rested a little he was questioned about his idea of what had occurred on the first green when he was held up about his score. His expression showed annoyance at once, he frowned, pouted, and did not answer for some minutes; then he said: "Well, I felt sore because you said I made the score in 9 when I felt sure I made it in less. I thought a good deal about it as we played after that, and I said to myself that I was foolish to pay so much attention to a thing like that. Then I made that poor score on the fifth hole, and I said to myself again that there was no use in taking pains in shooting but to just walk up to the ball and swipe it and you would get better results. I know I was sore about it all, more so about making the poor score than at what you said." (An obvious rationalization directly opposed to his actual expression, and it was evident he was not sincere in his statement.) As he walked to the railroad station to take a train he continued to talk about the matter. He had a pouty expression, and looked as if he wanted to burst out with some expression of his irritation. He was asked if he thought the occurrence had any connection with the petit mal attack, and he said, rather quickly and sharply: "Yes, I do." Then, as an afterthought, he added: "Well, I say I suppose it did, but I don't know, for I've been told anything like that can't cause a reaction so soon." He remained in the same disgruntled mood all the way to the city, talked little, and showed that he preferred to be let alone. As soon as he reached the city he 'phoned to his relatives, and the fact that they were out did not add to his mental comfort, although he did not display any great disappointment. He did some shopping, and then suggested that they call on a man friend in town. They did this, and found the man's wife in also, and this pleased the patient greatly, for he was very friendly with her. He at once poured out to her all the news from the family and his need of money and the letter his brother-in-law wrote to him. On two occasions his nurse interrupted the conversation and tried to turn it into a different channel, but the patient only remained quiet for a while and then broke out into a fresh account of his troubles. On the whole the friends were very sympathetic, and by the time he left for the train he was in a somewhat better humor, but on the train he could not get a seat. He found fault with the road, and remarked that people should not stand on the streets when people were in a hurry to get along. It was the old story over again—one thing was wrong and he could not find any excuse to fully alleviate the situations that his environment presented.

It is apparent that the patient is greatly disturbed by money matters. He wants more money so he can purchase presents for others and things that appeal to him. A talk with him was to the effect that he suggest to his relatives that they try to dispose of some of his woodcarving for him. He said he would do this but was afraid they might purchase the work themselves. He was told if they did that, it was their right to do so and he was getting a proper return for his work. The point was to find a market, to realize a cash return for his effort and this would enable him to have money to purchase his needs and he would not have to be continually writing for funds. He said he would do this.

As soon as the patient arrived home he called up his relatives and made an appointment to visit and to shop with them. Some visitors called in the evening and the patient appeared decidedly more cheerful, but this improved attitude dated from the time he made the appointment over the 'phone with his relatives. This was the thing that made up for everything. He even joked with the boys and acted like one well pleased now that he was to have something that would be really personally gratifying.

The attack and what the patient said while still under the influence of the disturbance gives a wonderful insight into what appears to have been the cause of this disturbance. As the patient said, "Suppose I had not said that about the stroke, what then?" He appeared annoyed and frowned as he said this, as if he was displeased that anything could be said about the reaction he had. He was told that many times following attacks nothing is said, but when he did say something and the connection was so apparent and when he himself said that the situation in question did cause him considerable personal discomfort, it was only reasonable to assume that it was an inciting factor. Then he was told that knowing this was really a great boon to himself, for it enabled him to see the defect and to learn to apply the proper means for correction. This suggestion gave him a more cheerful outlook and he began to talk more freely.

I might add that considering the patient's state of mind in regard to his effort to adjust his money affairs and a desired closer contact with his relatives, he had probably slowly accumulated certain irritations and conflicts that made ready for an epileptic explosion and that the incident of the morning touched the spark. A direct personal humiliation is the severest test the individual epileptic has to bear. Following up this talk he was told that it would be best for him not to hold himself up too rigidly as far as the golf score was concerned, that after all it did not mean so much, he was learning now and this was an opportunity to improve his coordination, to live in the open air, to enjoy the companionship of his friends, and to learn the game so he could play well with his friends later on in life. This instance was proof of his sensitive makeup, and knowing this he could profit by it all. If he paid as much attention to each shot and tried to follow out the directions as he was taught he would not have to think so much about making such a low score; when a certain number of strokes was given as the score of certain holes on the course, that meant that this was the best possible score for professionals, and it was a hopeless task for him to try to hold himself up to such a standard just now. The patient became cheerful after listening to this explanation, and was anxious to learn all about the irritating situation leading up to the attack and wanted to know what he might do in future to avoid a similar one. The disgruntled manner had disappeared, he even smiled when the episode was narrated in detail again; he smiled when the nurse repeated the words: "Let's see, that was the second stroke, wasn't it?" His whole expression revealed the fact that he then understood it all, that of the boy who has been caught redhanded, but who smiles to make little of it and to pass it off.

The episode as a whole carries its own significance. First our patient could not stand the personal depreciation of his bad playing at golf. Holding him up rigidly to his score intensified the degree of irritation until finally a petit mal attack occurred and the patient's spontaneous production in the attack was grossly flattering, indeed, to his fondest wish. The afterrationalization failed to clear the patient's mental attitude as formerly until the evening following, when the whole setting was gone over in minutest detail. The golf episode was then thoroughly ironed out, but not the greater issue, the feeling that his parents had unduly restricted his allowance. The latter and larger issue continued to irritate and harass him until he had a classic grand mal two days after. Following the severe attack the entire mental state changed, although the necessity of exercising more patience and tact in dealing with the financial situation was even more patent than before. The affect or emotional attitude about his golf difficulties was, however, removed after the petit mal, and the larger irritation about money matters after the final grand mal attack. The explanatory talk regarding the poor play at golf is given here to illustrate the sort of therapeutic talk one may profitably employ in such instances. On the whole it seemed to have been a good lesson to the patient, and the knowledge acquired was the means of starting off on another better adjustment.

A more adult elaboration of a tendency to regression in the attack is well shown in the following:

Case V.—Our patient had a mild petit mal consisting almost solely of tonic spasm. He was standing at the time of the attack and refused to sit down when asked, but staggered about as though intoxicated. There was a prolonged automatic state and considerable motor restlessness. He seemed not to be conscious enough to keep from bumping into furniture, and at times would have fallen if not protected. In three or four minutes he was able and willing to respond to questions. As he did so he straightened up from the slovenly position previously assumed, smiled pleasantly, and began to mumble to himself. His remarks were not yet intelligible. As he continued to try to speak intelligibly, however, he became more elated in manner and appearance. He thrust his hands deeply into the pockets of his dressing gown, advanced with an important manner toward his nurse, smiled in a selfsatisfied way, and then began dancing about as though in a state of childish glee. The following conversation then ensued: Nurse: "What is it that pleases you so?" Patient: "Mississippi—yes, we were all invited." Nurse: "What about it?" Patient: "Why, we were invited for a ride." Nurse: "What for?" Patient: "We were to have—a nice party—on the river, in the boat. We were not prepared for the rough——" Nurse: "Rough what?" Patient, swallowing now and gazing about with less smiling: "You see, the wave broke suddenly—everyone had to duck—to struggle for himself to—well, you know, to keep his balance." A clearer look came to his face. "It seems we were all invited but didn't expect to—Well, it came on suddenly and it happened." He then frowned and moved away from the nurse, sighed as though waking from a sleep. "Oh, I had a wave (petit mal), I guess."

He sat down and had a disgusted look, the appearance he usually has on becoming conscious enough to recognize that he has had an attack. He then began to rock back and forth, hands clasped over his knees, and hummed a tune to himself. In a few minutes, when he was not yet fully conscious, the whole content was inquired into. He said: "Well, just before the wave came on I thought I was on the Mississippi River and that—Oh, I don't seem to be able to get it—it just seemed as if I was there, that's all, just like I am here now in the bathroom." At this point he stopped abruptly, looked off into space once more, and hummed a tune. When asked to go on and relate what else he had thought of, he said with an increasing irritation:

"There seemed to be a party of us and things began to happen. It was rough and we all tried to get out the best we could. All were not prepared for—Oh, I wish I could control these things!"—the attacks.

The patient was then left alone for two or three hours, and then he was taken over the entire morning's happenings, in thought and act, in minute detail. He then said: "First on getting up I thought, 'Well, look here, yesterday was not a very good day, and I hope nothing happens that will prevent me from doing some work outdoors.' The day looked fine at first and I thought, 'If it keeps this way we can go out for a walk, but if it rains I will remain in and devote myself to my school work and wood carving.' After my toilet I thought, 'Well, I'll have a good talk with the doctor tomorrow about my going home.' I thought of the long time I had been away, and when I thought of the doctor I seemed to see him with an unpleasant expression, one of disapproval of my going home before being cured—and that is all I seem to be able to recall as the wave came on. I don't recall now what I said to you after that, and what you've read to me as being what I said this morning I now don't recollect having said at all." As the nurse prepared to go out of the room the patient said: "Oh, there's another thing. Last night when the 'phone rang for me I thought at once, 'I hope that is from my relatives and that they may have a telegram from my parents.' You know they arrived from abroad yesterday. I then thought, 'Here I'm all over that now,'" meaning he had ceased depending upon his parents in a childish way, "'and I hope the message isn't from my cousins.' That may be some help to you for your notes."

He was then asked to tell what the Mississippi River meant to him, and he replied at once: "Why, home, of course, because my home town is on the Mississippi River." The party in the boat he said reminded him of the good times he had had at home and on the river. "The wave coming on suddenly while we were in the boat was probably an attack"—the patient always refers to the petit mal attacks as "waves"—"and trying to get out, everyone for himself, to retain his equilibrium, was my trying to get the best of it"—the attack—"to get over it." In interpretation it seemed as though the thought of not being able to go home until he was much better, the repression of the desire to break away from the routine treatment nevertheless, the visualizing of the doctor's facial expression, which he described as being "like that disagreeable look of my parents when they were going to correct me for something," that these thoughts and feelings formed the immediate upsetting factors inducing the attack. Probably the pleasant party of the reminiscence of times at home and on the river was the regression to the home, and finally, the sense of impending catastrophe was an incipient angst state of a deeper lying mental content which was repressed, thus generating the sense of panic. This deeper lying content was probably concerned with the death phantasy, the tragic eminence of which so obsesses the frank epileptic from his deeper unconscious strivings.

Aside from the psychological interest of this episode and its histrionic setting, we gain great therapeutic insight at the same time. Our patient says: "At times, now, the waves are light, so light that I have time to do something that prevents them. I get to thinking of something else and I avert the wave; but sometimes they break too quickly for me, and then I can't do anything. When the waves are so light that I can do something to ward them off, there is a disagreeable feeling. I can't describe it, it's not the pressure in the stomach, it has not reached that deep yet. When the attacks come on quickly I can't tell much about them—they just come. I do feel, though, that there is something always present in my mind like there was this morning, if I could only remember it."

It was suggested that every time the patient felt sufficient warning of an attack, that if he would do something to check the progress of the day dream and get interested in some active work that would break up the mechanism, it is possible that he could abort many of the waves. He has already accomplished this without realizing it, for he says: "Now there are times when I am reading and I associate what I am reading with—well, it reminds me not always of myself or of home or my parents, but something like the state or condition I am in, and I feel that this is the same thing that is present just before I have a wave, for it seems like the same disagreeable feeling; and I get up and walk around, interest myself in something else, and the thing passes away."

It is likely that this is the method by which an arrest of attacks is brought about. The patient learns, either by being told the mechanism, or he knows by actual experience, that a particular thing is bad, and he spontaneously does things that will prevent the repetition of such a state, that is, by learning how to have many and varied interests. We probably have here a fine example of the mechanism in practical operation which has been laid down in the part for aborting attacks, and which MacCurdy has urged may be more closely allied to a neurosis than an actual epileptic reaction.

To summarize: It would seem as though in many individuals suffering from essential or idiopathic epilepsy there is a peculiar type of makeup antedating the disorder, and that the frank epileptic attacks are but a more pronounced manifestation of this character makeup. The attacks are often induced by certain and varied types of stress, exogenous as well as endogenous, but the former have not been given the attention their importance demands. The mental content immediately after the convulsive part of the fit, either spontaneous or brought out by questioning, gives us data highly important for studying the unconscious strivings as well as the patient's construction of the way by which he thinks he may overcome his malady. It also gives us points upon which we may base psychopatherapeutic talks of signal aid in enabling the patient to better cope with his gigantic handicap of maladaptation to the stresses of life.

This brief and fragmentary study of the mental content of definite though mild reaction episodes in a few epileptic cases shows that the work is enormously complicated, as varying depths of consciousness may be tapped, as it were, even in the one patient and in the one attack. As our psychanalytic knowledge of the dream problem as well as of the mental content of many of the psychoses grows, the field sketched here will, I believe, be found more necessary for scientific and therapeutic study.

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Suppurative Adenitis Treated by Aspiration.—H. E. C. Keith Murray (*British Medical Journal*, April 21, 1917) reports two cases of nontuberculous suppurative adenitis successfully treated by simple aspiration.

ONIONS IN TUBERCULOSIS.

By William Lintz, M. D.,
New York,
Clinical Professor, Department of Medicine, Long Island College Hospital; Associate Visiting Physician, Brooklyn Jewish Hospital.

The reasons for recording the following experiment, in spite of the fact that it has yielded nothing but negative results, are to explode an erroneous practice based upon a false theory which is just as valuable as compounding a new discovery, and to prevent others from going over the same ground.

Those who have lived or traveled in the South, or have met people from the South, are impressed with the great faith that these people have in onions as a therapeutic agent in tuberculosis. They believe that eating onions in large quantities will prevent or cure tuberculosis. The number of "onion cures" of tuberculosis is legion. No case is too moribund, no case presents too extensive ravages of tuberculosis, but what the eating of onions will cure it. The following scientific experiments were undertaken in order to find out how much truth there is in this matter. Our object was to ascertain whether the eating of onions exerts, 1, a prophylactic, and 2, a curative influence in tuberculosis. Accordingly we tried to feed onions to healthy guineapigs and to those which had been previously inoculated with tubercle bacilli known to be virulent to guineapigs. Here we encountered our first difficulty. Our guineapigs refused to eat the onions. We withheld all food save onions, but they preferred to die of starvation rather than to eat onions. We withheld all water save onions saturated with water, but they preferred to die of thirst rather than to take water with onions. We tried to introduce an emulsion of onions through a catheter passed in the stomach, but our efforts were unsuccessful. We had to abandon the idea of introducing onions in the stomach and resorted to hypodermic injections.

In order to ascertain what part of the onion might possess the beneficial effect we worked with the following preparations: 1. We squeezed onions in meat chopper, filtered the juice and used the filtrate. 2. When the filtrate 1 was allowed to stand a sediment would form. We diluted this with equal parts of saline. 3. Onions were dried, powdered finely and 100 c. c. of normal salt solution was added to five grams of this powder. We also used the following combinations: 4, (1+2); 5, (1+3); 6, (2+3); and 7, (1+2+3). These preparations were heated to 60° C. for one half hour and 0.5 per cent. carbolic was added as a preservative.

Our experiments were conducted along the following lines: 1. Guineapigs were injected repeatedly with the various seven preparations of onions. This was done to study the effect of onions on normal tissues also for controls. 2. A series of guineapigs were injected simply with varying doses of tubercle bacilli for controls. 3. A series of guineapigs which have been previously thoroughly immunized and saturated with the above different onion preparations were now injected with tubercle bacilli to demonstrate whether onion has any prophylactic properties against the tubercle bacilli. 4. A series of guineapigs were injected with tubercle bacilli and the various seven onion preparations to see whether onions destroyed or even attenuated the tubercle bacilli. 5. Guineapigs were infected with tubercle bacilli and some time later were injected with the various onion preparations to see whether onion contained any curative properties affecting the tubercle. Our results were absolutely negative. Guineapigs which received tubercle bacilli were in no wise benefited by the onion injections. The ravages of tuberculosis were just as extensive with or without the onion injections. The lives of the pigs treated with onion were not lengthened, nor did the autopsy show lesser pathological lesions.

As the results of our experiments we can draw the following conclusions:

1. The various parts of the onion do not in the least affect the normal tissue of the guineapig.
2. Onion will not prevent the development of tuberculosis.
3. Onion will not destroy or even attenuate the tubercle bacilli.
4. Onions do not possess any curative properties in tuberculosis.
5. Guineapigs will rather die than eat onions.

1352 Carroll Street, Brooklyn.

HEALTH INSURANCE.

By W. P. Cunningham, M. D.,
New York.

Dr. William S. Gottheil, with characteristic lucidity and the economic astuteness of the shrewd single taxer, has recently assailed in a letter to one of our medical journals the legislative proposal known as "compulsory health insurance," which sustained a temporary setback in committee last spring. That letter cannot be too heartily applauded. Health insurance is only down for the count. It will be up and struggling for enactment at the next session of the legislature. It would be exceedingly wise for the medical profession to take serious thought of what that measure means and evolve some plan of organized resistance which will lay the hateful menace in the dust.

Conceived in iniquity, nurtured on hypocrisy, struggling for deliverance at the frantic behest of socialistic doctrinaires, compulsory health insurance should die a-borning. Nowhere has the swinish greed of the debasing propaganda of state socialism been more brazenly exposed than in this merciless attempt to steal the livelihood of the most unselfish profession in the world. Socialism would adjust the recompense of the almighty dictator of the hammer and the chisel to the full product of his toil, but would sweep away the meagre earnings now enjoyed by the half paid Æsculapian! What a noble effort to uplift is this initial effort to destroy! What a glorious harbinger of industrial emancipation is this attempt to shackle and impoverish a great and zealous body of practical humanitarians! And with what honeyed words of shameless deceit, is it sought to cajole the guileless practitioner into supporting a conspiracy to cut his own professional throat! He is assured that it will actually be to his material advantage to do for ten cents a visit what he now does for a dollar or more! Can that be matched for impudence! The motives actuating the prime movers of this monstrous treachery of a licensing community to the holders of its certificates, are not far to seek. Professional "uplifters" of a certain stripe working for a salary or for the dominance of their pseudohumanitarian institutions seek to put the medical profession in a position of utter helplessness. Thus the "uplifter" will be the commanding factor in the management of the sick and the doctor his cowering dependent. The socialistic element has already been referred to and is perfectly frank in its purpose. Politicians lay hold of any scheme that will prove attractive to their constituents and involve the spending of the public money.

If the doctors had had the sense to combine for mutual protection, as have the smarter plumbers, hatters, street sweepers, motormen, and navvies, the truckling politicians would not have dared to make a move in the direction of compulsory health insurance. But the doctors had faith in the honesty of the state that gave them authority to practice after laying down rigorous conditions. They never dreamed that the state would repudiate its agreement and suddenly contemplate entering into unfair and ruinous competition with them. They could not see the need of combination for protection against an unthinkable prostitution of governmental influence! Yet this very thing has come to pass and our legislative halls resound with demands for the consummation of this infamy from the brazen throats of the professional "uplifter" and his curiously assorted partner for the nonce, the state socialist. The only common ground on which these two worthies can meet is that of determination to wreck the medical profession. On every other proposition they are at sixes and sevens. The socialist believes in big returns for all labor except that of treating the sick. The "uplifter" rarely believes in uplifting wages; so his attitude toward the profession is so far consistent. He believes in coddling and fussing with the poor; in meddling with their privacy and civic privileges, but he does not believe in movements for substantial economic reform.

All the poor need is better wages and they will uplift themselves. But then you see like Othello the uplifter's occupation—and salary—would be gone. Add to these the inveterate meddlers that must be always putting a spoke in somebody's wheel and you have the notorious combination of grafters and zealots that seem determined to debase the American medical profession. Mark you, too, that they are not concerned only about the very poor. They feel keenly the hardships of the unfortunate wretch with an income of only one hundred dollars a month. They see that he cannot meet the vicissitudes of fortune like a man and pay for what he gets like an independent citizen! No, he must be protected against the rapacity of the doctors and insured his medical attendance at the rate of ten or fifteen cents a week: something less than he spends for beer in a day! Is it not a pretty picture to note the sweet concern of the "uplifter" for this dreadfully underpaid individual? So hard are the conditions of life that it is proposed to remedy them a little by starving the doctor. Why not protect him against the butcher and the baker and every other scalawag bent on getting paid for what he does?

We are confronted with the amazing argument that this health insurance is all in the direction of preventive medicine and in accord, therefore, with the trend of modern progress. It is a sort of extension of board of health control for the improvement of the general physical welfare. The health of the public is to be better conserved by the slipshod ministrations of an indifferent, underpaid contract doctor with absolutely nothing to look forward to in his profession but the mean income accorded by the panel system than it is now in the control of the wide awake and active practitioners, alive to the advantages, material and honorary, accruing to the man who achieves the best results for his patients. These wonder workers will not change human nature. They will not, because they cannot, get from a cheap stipendiary the intelligence and alertness that signalize the efforts of the free and independent seeker of the best returns for his professional outlay. It has been retorted that our hospitals furnish a refutation of this argument, inasmuch as the medical staffs work for nothing and do it thoroughly and efficiently. False premises. The medical staffs do not work for nothing. They work for information and experience, which they may turn to advantage elsewhere. It will not do to cite the instances of health boards and other sluggish public functionaries as examples of what cheap salaried doctors can do for the people, for this will raise a shout of derision wherever there is any one capable of properly estimating the value received for the expenditure. In medicine as elsewhere in this economic system of ours, you will get just what you pay for. It is the law of nature. If you pay little you will get little. If you pay well you will get much. Change that if you can, uplifters and meddlers in general. Get out of a ten dollar man the work of a hundred dollar man if you can. Get out of a crowd of meanly requited and despondent doctors, if you can, the same work that you can get out of the men who are hoping for a reasonable pecuniary recognition and preparing for better work and conditions all the time. The tricky suggestion that the doctors will actually get a better monetary return than now, because they will be paid for everything they do and will not be cheated at all, is answered out of the other side of the "uplifter's" mouth by the declaration that the people will get cheaper treatment. The treatment cannot be cheapened by giving the doctor more. It can only be cheapened by giving him less. He can protect himself against loss by a little caution now. It is not to his advantage to shield him from crooks by depriving him of his desirable patients. Let him, like any other sane man in the community, guard his own interests. He does not have to be protected against dishonest people any more than the lawyer or the tradesman. The kindly concern of the mischievous welfare nuisances is really ludicrous in this instance. If all members of the economic body were as generously cared for, the whole concern would tumble into ruin. If these be the friends of the medical man looking out for his interests the while they look out for the interests of the public at large, then let us ejaculate in the spirit of the disillusioned poet:

> But of all plagues, good heaven, thy wrath can send,
> Save, oh, save me, from the candid friend.

Every avenue of advancement is to be closed to the struggling practitioner. Not only is he to treat the head of the house at the rate of ten cents or so a week, but all the members of the family are to be similarly provided for. And the mother's additions to the population are to be received at the hands of just as magnificently requited obstetricians at home or in the hospital. So the wretched doctor knows that there is absolutely nothing to be made out of that or any other family of the same standing, but the ten or fifteen cents a week fixed by the State legislature. Nor does the iniquity end here. Do not console yourselves, you specialists, that you are above the storm that is about to break. No matter how great you are, the stress of bad weather may be felt in your direction. It is proposed to establish clinics of specialists to give advice at night at the rate of one dollar a consultation. The younger workers in the special fields will be impressed into this service and receive the princely recompense of five dollars a night! Even the practice of the best known men is bound to suffer under such competition. Of course, those who have only millionaires to treat may escape until the nose of some specially acute "uplifter" scents out a method of successful interference. It is perfectly clear to any one but a professional meddler that if you reduce the attractions of medical practice to the vanishing point our budding manhood will turn its intelligence in disdain from this field of endeavor. Every man begins his professional studies with the hope that he may accomplish much. If that hope is limited to the emoluments of a ten cent practice enthusiasm will die and resolution falter. Eventually this would bring about the collapse of the whole beautiful scheme of health insurance, for it could not be conducted without a supply of men forced by necessity to accept its terms. When this was exhausted the attraction would have to be markedly increased to draw the favorable attention of others. Then good by to ten cent doctors! Meanwhile the threat overhanging the men actually harnessed to the car must be met by resolute defiance. Denounce the whole wretched scheme. Expose the duplicity of the fake benevolence that would seek to save the beer money of the working man by cheating the doctor! Let your assemblyman and senator know that you will hold him responsible for the vote that he casts to your detriment. Organize, medical men: organize for united action against this insidious enemy!

Even if you have been blind to your own interests hitherto, arouse yourselves now so that when this nefarious attack is renewed in the winter you will be able to present the solid front of organized resistance, which alone appeals to the practical politician. Don't beg. Combine and demand. Would Albany dare to propose legislation antagonistic to the interests of any labor union? Take counsel thereby. We are gravely assured that this scheme of health insurance is working well in England and Germany. Are we on the same economic level as those two old and densely populated countries? Do the reasons for such a mode of practice there apply to us? The poor are the immense mass of both those populations and their resources are inadequate to the remuneration of private physicians. They are in the grade of our free dispensary patients. In America it is our boast that we have not descended to the depths of poverty of the European peoples. Our citizens are more independent and are possessed of different notions regarding the acceptance of charity. Most of them feel like paying their way and holding up their heads. They have hardly lost pride enough to demand that taxes shall be levied and employers mulcted to pay *their* just and moderate medical bills. They know that given a fair opportunity they can pay their doctor just as well as they can pay their grocer. Strange as it may seem, this agitation for a compulsory health insurance law has not come from the people in whose behalf it is supposed to have originated; for it is a significant fact that few of them seem to know anything about it. It has germinated in the brain of the noxious state socialist and the professional "uplifter." I cannot recall an instance of a single individual having any knowledge of the proposed revolutionary legislation outside of my medical friends and the rabid socialists. It certainly must be badly needed and loudly demanded when the very ones most concerned have never even heard of it! Curious and disquieting development in this land of the free when a man may be ordered to take out health insurance and tie himself up to a system of which he is utterly ignorant. Admit the right of the state to do that and an enormous and ominous change has occurred in he whole attitude of the state toward the citizen. The state looms large and the citizen begins to be only a cog in the machine. His independence shrinks. He is moulded for his place in the vast industrial automaton that socialism would substitute for individual initiative. Next move and he may be ordered to take insurance for his moral health and attend church. The socialists may not approve of that idea, being on rather indifferent terms with religion in general, but their fellow conspirators, the "uplifters," might be able to put it across in spite of the lack of Marxian enthusiasm.

My dear fellow practitioners, wake up! Raise an outcry that will send these frauds scudding to shelter. Show that if they will reduce the consumption of alcohol among these poor hundred dollars a month protégés of theirs, it will not be necessary to offer them charity, however euphoniously disguised. But, of course, this would antagonize the powerfully organized liquor interests and the politicians would have none of it. So in order that the liquor interests may not be disturbed the money paid over the bar must be deducted from the physician's income and the wastrel saved from the biting touch of his selfinduced destitution. Living conditions are so hard for a man, who must have fifty cents worth of drink a day, that it is imperative to hand him the fees of his medical attendant to supply the deficiency. A profession that has treated the poor without money and without price; that has always shown eagerness to spend itself in the sweet service of suffering humanity; that has worked free in the charities of this State, which have consumed ten millions a year for other than medical charges, is to be rewarded for its unselfish zeal by being deprived of the means of living in decency and maintaining its selfrespect! What devilish arguments these disturbers have employed to persuade the legislature to consider a measure unsolicited by the people or the doctors, it is, of course, impossible to determine. Surely those advanced in public are devoid of every shred of fairness. Two years ago I was approached by a man with the proposition to edit a journal for the discussion of the question of compulsory health insurance, which he asserted was bound to come. I had no idea what he meant at the time. There had been no demand for it on the part of the people. The papers had not got hold of it. But, "it was coming." How did he know? How could any one know that this unsolicited innovation "was coming?" Who was fathering the notion to make its accomplishment so exactly accord with the prediction? What influence was strong enough to initiate legislation never demanded by its beneficiaries-to-be, and absolutely unknown to the vast majority of physicians and laymen? Answer those questions and you will have the real explanation of this sudden access of interest in the welfare of one part of the public at the expense and to the positive detriment of another. You will have the real reason for the "uplifters" at Albany. Be assured, my fellow practitioners, that it is not unmixed love for the common people that is engineering this vicious attack upon our supine profession, for don't you see that we also are of the "common people?" Have they any regard for our welfare when they seek to put the half of us out of business and compel the remainder to work at a greatly reduced remuneration? There do not seem to be any "uplifters" interested in the doctors! And mark me, they would not be interested in the public at large were it not for the concealed motives that have brought the whole hypocritical crusade into being.

Stir yourselves, medical men! Bethink you of the danger you run, and act. Write to your assemblyman. Write to your State senator. Write to the governor. Go after the district leaders of the dominant parties. They all know and dread the force of concerted action. They are afraid to antagonize a really vigorous and organized opposition. Above all, organize! Organize politically. Do not be content with the kind of organization that you have in your medical societies, some of which are manipulated to your material disadvantage. Organize for the purpose of resisting politically adverse legislation. And stay organized. The watchword of modern business should be the watchword of modern medicine—organize!

616 MADISON AVENUE.

Ichthyol in Burns.—Marcos R. Suarez (*La Semana medica,* July 12, 1917) states that he has obtained uniformly excellent results in burns of first, second, and third degree with ichthyol in the strength of ten to fifteen per cent. in petrolatum. Not only is the healing rapid, but there is a notable absence of pain.

HEALTH INSURANCE.*

By AUGUST SCHACHNER, M. D., F. A. C. S.,
Louisville, Ky.

FOREWORD.[1]

The favorite argument of the advocates of compulsory health insurance is their reference to its adoption by Germany, England, and various other countries, and this reference is usually a purely general one. It is hardly safe to make use of such a general and sweeping statement as a justification for the adoption of a measure so far reaching as compulsory health insurance in the United States. Conditions exist in Germany, as well as in other European countries, that are not identical or analogous in the United States; if this were not the case we would not find ourselves at present at war with Germany. To these conditions might be added temperamental, economic, and other differences, that are not considered when this fact is pointed to as an argument. If you begin to superintend humanity with reference to medical attention, how long will it be before you superintend humanity in other directions, and what will humanity be worth when all its human needs are carefully regulated? Those who refer to Germany and England are hardly without some knowledge of the friction and dissatisfaction that compulsory health insurance has caused in these countries, and on this point they have not even used the soft pedal. "I was told by health insurance physicians in Berlin that more than half of the calls which they were required to make were entirely unnecessary and would not have come in at all had the recipient been required to pay for the call out of his own pocket" (1).

In England, when the insurance doctor does not give satisfaction, the laity resort to what they call getting "a proper doctor." The following extracts from an address by A. Parker Nevin, delivered January 22, 1917, at the meeting of the National Civic Federation, are interesting, as follows: "But in our borrowing from Germany, England, or any other foreign country, of any of their industrial or social systems, let us be absolutely certain that we are not taking over with our innocent and complimentary borrowing their form of government. There is something un-American in seeing a part of our citizens blocked off by law and told in effect that they are a class designated by legislation as incapable of taking care of themselves, a group of wards, whom the State does not trust to work out their own destiny. If I were a manual laborer, I should resent being legally ostracized as incompetent and legally classified as improvident."

From a capitalistic viewpoint, a given number of employees, each able to create through his labors a wealth of say ten dollars per day, of which the employer received eight dollars, and the employee two or even three, it would be to the material interest of the employer to keep these employees steadily on the job and, judged by the standards of wealth and commerce, it would be better business judgment to contribute to an agency that was endeavoring to lump the medical attention, even though the employer contributed two fifths of the cost of the lumping, especially if means could be used to eliminate the sickly employees, rather than seriously impair the arrangement by which the employer receives the overwhelming excess of the wealth that each employee produced per diem. From the medical politician's viewpoint, compulsory health insurance, besides affording an opportunity to dole out jobs to the faithful, would also enable the politician even more perfectly to assume the rôle of a boss.

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*Read before the Louisville Medical Club April 6, 1917.

[1] This foreword was written since reading the paper and is based upon the remarks that were made by various speakers including a Kentucky representative of the American Association of Labor Legislation, who was invited to be present that both sides of the question should be represented.

A professional social worker attached to the propaganda of compulsory health insurance, would favor it just as a lawyer labors for the client he represents, without reference to the merits of the case. Furthermore, there is a truly altruistic class of people that lend their names, efforts, and funds to many movements like the compulsory health insurance, not because they know anything specially about them, but because on the surface they look good and they are told that they are good, and they are willing to believe what they see and hear without making further investigation, and so lend their aid. Finally, compulsory health insurance is not socialism, for socialism has no patience with makeshifts, and if it aims at anything, it is at the complete emancipation of humanity, from every form of embarrassment or oppression whatever.

ADDRESS.

From a fair study of both sides of the question, the writer so far remains unconverted to the desirability of compulsory health insurance. While it may not be entirely without some good to the wage earner, yet as a constructive measure, intended to correct the economic injustice and really help the economic status of the underpaid workers, it is at best a makeshift and in the end seems destined to certain failure. It was said in a recent statement that Mr. Lloyd George, who introduced compulsory health insurance in England, expressed himself in a similar manner. Although compulsory health insurance has been in practice in a number of countries for a number of years, the literature in its favor as issued by the American Association of Labor Legislation has not, so far as the writer is concerned, been entirely satisfactory reading, and the following letter asking direct questions of the Association has hardly improved the unsatisfactory feeling:

MR. JOHN B. ANDREWS,
Secretary American Association for Labor Legislation,
New York City.

Dear Sir:

Your voluntary communication of December 13, 1916, aroused my interest in health insurance, and your letter of January 8, 1917, soliciting questions encouraged me to ask the enclosed questions. I have already been asked some of the questions, and I feel that the others will be asked when the matter comes up before the Louisville Medical Club, and I thought it would be fairer to read this letter and your answer, than attempt to answer the questions for you. Should you not be the proper person to answer these, you will confer a favor by forwarding them to the proper person, that I may be able to present your views fairly and fully to my colleagues.

1. Would not a form of health insurance with fewer officers be more economical for the working classes? 2. Is the public supposed to receive compulsory health insurance as an altruistic movement? 3. If so, why does its altruism cease with those workmen who are unable to pass a satisfactory medical examination, and those members of the community, that are without work, or if insured after the expiration of the twenty-six weeks, even though still sick? 4. Why should the State be asked to contribute on behalf of the needy working class, and ignore that class that is, economically speaking, not eligible for health insurance? 5. How are the funds secured for this movement? 6. In what way can this be of benefit to the medical profession? 7. Why should this not distinctly impair the profession through its bureaucratic control, insufficient remuneration as the result of competitive bargaining, and loss of individualism? 8. Why should there be a needy working class and would not the payment of adequate wages, as recommended in the *Summary of the Manly Report of the Commission on Industrial Relations* be a nearer solution than your plan? Answers to any or all of these questions will be appreciated, and since the subject is one of such great importance, I think you will agree with me that it is proper that it should be discussed from every angle.

Awaiting your reply, I remain,

Respectfully yours,
AUGUST SCHACHNER.

In answer to this letter is the following:

New York City, March 21, 1917.

DR. AUGUST SCHACHNER,
Louisville, Ky.

Dear Sir:

I am very glad to do my best to answer the various specific questions which you ask in your letter of the 16th. I shall take the liberty of arranging the order of my replies, so as to answer first some of the most fundamental questions.

1. Unfortunately, we are faced in the present conditions with the existence of a really "needy working class population." Of course, the reason for all this is the inadequate wage paid to many of the industrial workers. A rise in wages would enable many to save, so that sickness would not mean destitution. But many investigators, including the Massachusetts Social Insurance Commission and the authors of the *Manly Report of the Commission on Industrial Relations*, feel, in the words of this report, "If we might reasonably expect a rapid increase in the wages of all classes of workers to a standard which would permit proper living conditions and adequate medical attention, it would perhaps be inadvisable to recommend any governmental action. But we feel sure that no such condition is to be expected in the near future, and probably that new methods of dealing with the existing evils, must be adopted —a system of sickness insurance is the most feasible single remedy."

2. The aim of health insurance is to distribute the burden of temporary sickness among those who are responsible. The act, therefore, distributes the burden among the employers, the worker, and the State. The unemployed worker, who has no employer, will not be entitled to a contribution from an employer. He may, however, under the bill as drawn, avail himself of the voluntary provisions of the Act, paying both his own and the employers' share, and receiving a subsidy of twenty per cent. from the State. I wish to call your attention to Section 21 of the third edition which provides that if the workmen are unemployed for some reason other than illness, and should fall ill during the period of unemployment, the right to receive the full benefit provided in the bill, shall be extended one week for each four weeks' contribution. This provision aims to take care of the regularly employed workmen who falls ill during a period of temporary unemployment.

3. The benefits of this bill are not limited to those who have passed a satisfactory medical examination. Section 78 of the bill, as introduced into the New York Legislature, provides that "every person subject to insurance shall by virtue of this chapter and without regard to his physical condition, be an insured member of the trade fund—or of some local fund of the district as provided by the regulation of the Commission." Moreover, the bill has been so drafted that the insurance contributions will be based upon the sickness rate of a given locality or of a given

> trade, rather than upon the sickness rate within an individual factory. This arrangement whereby employer "A" pays for the average sickness in the local fund offers the minimum inducement for him to establish physical examination for his own employees.
>
> 4. The drafters of this bill have aimed to make this system of health insurance as economical as possible. We shall be glad to have constructive suggestions for a more economical system than the one which they have outlined. It should be remembered that this system does away with the necessity for the house to house collection of contributions, which is a very heavy expense in the industrial death insurance so common today. In the State of Massachusetts, four large companies collected in one year over twelve million dollars in premiums and paid back to the policy holders very little more than four million dollars. It is not uncommon for the insured person in such companies to pay out one dollar for every fifty cents' worth of insurance which he receives in return. In systems of health insurance similar to that proposed by this association, the cost of administration is frequently less than ten per cent. of the total expenditures.
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> 5. The funds for the health insurance movement are secured wholly through voluntary contributions from those who believe in the desirability of such legislation. For example, in my morning's mail I have a check from a physician who states: "I think that if physicians were in positions to observe the benefits to be obtained by some cooperative method of health legislation, they would quickly change their objections to a spirit of boost. I cannot believe the more progressive physicians of this country can object particularly if they look about them and observe the crying need of some humanitarian methods of caring for the morbidity."
>
> Hoping that this may meet some of the objections you have in mind, I am,
>
> Very truly yours.
>
> (Signed) JOHN B. ANDREWS, Secretary.

Instead of being convinced that this is altruistic, broadly considered, it is difficult to resist the conclusion that it seems more like an arrangement by which the payment of a proper wage is dodged, or as some one has said, "A scheme to supplement insufficient wages." If this should be correct, it would mean spreading the evil by impairing the medical profession in making it do what rightfully should be done by others. A few of the criticisms so far advanced in opposition to the plans are added and are emphatic to a marked degree, such as, "Is it a joke or an insult?" (J. V. Woodruff).

Mr. Samuel Gompers, head of the American Federation of Labor, in an address to the Social Insurance Session, January 22, 1917, says (2), among other things: "Not even compulsory benevolence will do . . . Compulsory social insurance is in its essence undemocratic and it cannot remove or prevent poverty. . . The workers of America adhere to voluntary institutions in preference to compulsory system, which are held to be not only impracticable, but a menace to their rights, welfare, and their liberty . . . Compulsory sickness insurance for workers is based upon the theory that they are unable to look after their own interests and the State must interpose its authority and wisdom and assume the relation of parent or guardian . . . Labor does not want it, the medical profession does not want it, the insurance corporations are not eager for it, judging from their lack of interest. Then who wants it? We have yet to discover anyone outside of the A. A. L. L. who has come forward and spoken in favor of it."

After discussing in detail statements made by various individuals for and against compulsory health insurance, Frederick L. Hoffman (3) closes with the following summary:

> Thus briefly restated, organized labor is not in favor of compulsory health insurance, but opposed to it; organized industry and business interests are not in its favor, but opposed to it; and the organized medical profession is not in its favor, but opposed to it. The argument is advanced that health insurance diminishes illness, and that "as a public health measure this is one of the most important bills which has come before the Legislature of the State of New York for many years." There is no evidence that any of the measures proposed aim specifically and effectively at a well considered plan of coordination of compulsory health insurance and public health administration. In flat contradiction to the assertion is the official statement of the Surgeon General of the United States Public Health Service in his annual report for 1916: "As yet none of the legislative measures proposed has contained anything more than provisions for the relief of sickness." The endorsement of compulsory health insurance by the United States Public Health Service provides for the coordination of the proposed organization with national, State, and local health agencies. No bills as yet introduced provide for such a plan of administrative coordination, nor has there been a comprehensive and far reaching administrative coordination in any one of the foreign countries in which compulsory health insurance has been established.

The problem can be considered from two major standpoints, namely, that of the wage earner or insured and that of the physician. From the standpoint of the wage earner, it is entirely natural to look upon this as a choice between a really living wage that increases with the increased cost of living and that enables the wage earner to retain his full measure of American independence and self-respect and regulate his own private affairs and destiny, and having these carefully regulated for him through bureaucratic supervision. It goes without saying that there is a certain element in the working class, as there is in the capitalistic class, that is hopeless. All normal arguments, however, should be addressed to the normal members in each class.

To appreciate more fully the economic side of the wage earner, a few quotations from the *Summary of the Manly Report of the Commission on Industrial Relations* will be illuminating:

> Have the workers received a fair share of the enormous increase in wealth which has taken place in this country during the last twenty-five years largely as the result of their labors? The answer is emphatically, No. The wealth of the country between 1890 and 1912 increased from 65 to 187 billions or 188 per cent., whereas the aggregate income of wage earners in manufacturing, mining, and transportation increased between 1889 and 1909 only ninety-five per cent., from 2,516 millions in 1889 to 4,916 millions in 1909. The most exhaustive investigation ever made showed that the income of almost two thirds of the wage earners' families, including the earnings of father, mother, and children, were less than $750 a year, and of almost one third were less than $500. All the investigations that have been made in different parts of the country show that the least that a family can live on in anything approaching decency is $700 per year. These figures show conclusively that between one half and two thirds of these families were living below the standard of decent subsistence, while about one third were living in a state of abject poverty. American society was founded and for a long time existed upon the theory that the family should derive its support from the earnings of the father. Now investigation shows that seventy-nine per cent. of the fathers of wage earning families earn less than $700 per year, therefore, less than one fourth of these fathers could have supported their families on the barest subsistence level without the earnings of other members of the family.
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> The effects of such low wages are shown by the follow-

ing facts: The death rate of babies whose fathers earn less than ten dollars per week is 256 per thousand, while those whose fathers earn twenty-five dollars or more per week die at the rate of only eighty-four per thousand. Thus the babies of the poor die at three times the rate of the fairly well to do. The last of the family to go hungry are the children, yet statistics show that in our larger cities from twelve to twenty per cent. of the children are noticeably underfed and ill nourished. In the families of the workers thirty-seven per cent. of the mothers are at work and consequently unable to give the children more than scant attention. Of these mothers, thirty per cent. keep boarders and lodgers and seven per cent. work outside of the home. We have, according to the income tax return, forty-four families with annual incomes of a million dollars or more, whose aggregate incomes, totaling at the very least fifty millions per year, are equivalent to the earnings of 100,000 wage earners. The ownership of wealth in the United States has been concentrated to a degree which is difficult to grasp. The rich two per cent. of the people own sixty per cent. of the wealth. The middle class thirty-three per cent. of the people own thirty-five per cent. of the wealth. The poor sixty-five per cent. of the people own only five per cent. of the wealth. Effective action by Congress is required, therefore, not only to readjust the existing injustices in the distribution of wealth and income, but to check the growth of hereditary aristocracy, which is foreign to every conception of American government and menacing to the welfare of the people and the existence of the nation as a democracy.

If the writer understands compulsory health insurance, it means: 1. Placing about ninety per cent. of the medical practice under bureaucratic control; i. e., someone tells the doctor when a particular person is sick and when this particular person is well, and while declared sick, he is to be treated by the doctor, subject to the approval of some one else, and if the doctor is not satisfied, he can take his troubles and thresh them out before a board. 2. For all this the doctor is to be paid through a system of bargaining by professional bargainer who has the art of bargaining down to an exact science, and it will be entirely safe to say that it will go to the lowest bidder and not the highest, and it will be equally safe to say that there will be, in view of the present overcrowding and struggle for existence, some attractively low bids. No one would select medicine as a royal road to wealth, but those who enter the profession should have a right to expect at least a decent living, which compulsory health insurance hardly affords. 3. All remnants of individuality and individual effort and interest which is the essence of the profession and the soul of medicine must be eliminated as quickly and thoroughly as possible, because this is commercialism, and commercialism has no use for perfumes or souls. The practice of medicine is to be made as mechanical as possible and the practitioner is to be placed as nearly as possible on the level with a piece worker in a factory. Schopenhauer said that "wealth and power are like sea water; the more you drink, the thirstier you grow."

But is there no good to be derived from compulsory health insurance? Yes, I see a gleam of hope. It might serve as a kick that will arouse the profession, especially the ranks, who are the real slumberers, as well as the hewers of wood and drawers of water to assert themselves to their full rights and privileges. That the profession is sorely in need of this impulse, the following quotation will emphasize. Carr, Garnett, and Taylor (4) in discussing the National Insurance Act in England, say: "The community has been so accustomed to regard medical men as amiable weaklings in business matters, easily gulled by piteous tales or flattering remarks about the magnanimity of the profession, that the idea of what was called a strike of doctors, seemed to be rather amusing, and it was only after several months that the public began to realize that the profession was showing itself in a new light and was determined at all costs to insist on certain definite provisions being included in the bill."

Can a system of compulsory health insurance be introduced? Unfortunately, yes, and it will be just as compulsory, so far as the doctor is concerned, as the wage earner is concerned. If you can control ninety per cent. of the medical practice through a legislative act, you automatically control the doctors who formerly looked after this ninety per cent. and who, after the passage of the act, will continue to look after this ninety per cent., only provided they do so under the act. If they give up the act, they give up the practice which has gone with the act. After it becomes a law, they have no choice. This is but one of the reminders of the helplessness of the medical ranks, and this helplessness, together with evils that we all know exist, will continue to exist so long as the profession continues in its present overcrowded state. The evils and helplessness are not due to the individuals, but to the conditions under which the individuals operate and will last as long as the conditions last; reforms directed at individuals and not conditions do no good. Several crafts, bricklayers and others, have long since learned that their emancipation lies in the prevention of overcrowdedness, and this lesson must be learned by the medical ranks. It is hardly overdrawing the picture to say that there are but few cities small and large in the United States where there are not at least two unnecessary doctors for every one that is needed; if this is correct and as long as it continues, those doctors that are needed, will find themselves as helpless as the reformers are to protect and improve the conditions within the profession.

Part of the policy of the Louisville Medical Club centered about the closure of a third to a half of the remaining medical schools and the opening of the municipal hospital under proper regulations as the two most urgent needs. If you are fit to practise in the municipality you are fit to practise in the municipality hospital and vice versa. I must insist that when it comes to life itself, the rich on the outside of the hospital have as much right to be protected as the poor on the inside of the hospital. In the closure of this remaining one third, or one half, those without visible means of support should be stopped first and all this in the name of the economic and ethical emancipation of the profession.

Finally, what will be the effect should compulsory health insurance become established? That there will be no great difficulty in establishing this insurance unless conditions in medicine rapidly and radically change there is little doubt, but when the real effect becomes thoroughly felt, what incentive will there be for a man with a college education to spend six to seven of the best years of his life in the study of medicine, to say nothing of the capital involved, and then to engage in the responsibility of medical practice and receive for all this no more or perhaps not as much as a bricklayer or a mechanic's assistant in a garage? If medicine is to grow more complicated with time, and I believe it will, then the prospective student who is intelligent enough to begin the study of medicine and intelligent enough to continue, will be too intelligent to be caught like a rat in a trap of such construction, and then we may have not only a closure of the medical schools, but also a reduction of doctors because the conditions again determine the situation and action. Not alone this, but the laity itself will then realize that such an arrangement is pitched upon too low a level and is entirely too cheap to be of any real possible good.

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844 SOUTH FOURTH STREET.

WAR DEPLETION OF THE AMERICAN MEDICAL PROFESSION.

By A. L. BENEDICT, A. M., M. D., F. A. C. P.,
Buffalo.

The highest estimate of needs of military medical men thus far announced is somewhere in the neighborhood of 25,000, including those already in the army and navy service and those already in the National Guard and a Reserve Corps of about 20,000, of which about 15,000 have probably been commissioned to date, while it appears that the remainder are volunteering in adequate numbers. These figures are, on account of rapid changes and lack of official information, approximate but probably fairly accurate in the aggregate. Of the 10,385 medical students remaining after the 1917 graduation, more than eighty per cent. are subject to draft and nearly thirty per cent. to the first draft, possibly nearly forty per cent. Allowing as well as possible for the expected number of rejections for physical reasons and ordinary exemption, and for the progressive action of the draft on later classes, the annual graduation for the next three years will be about 2,000, possibly less, the number having previously declined from the maximum of 5,747 in 1904 to the minimum, since 1880 or thereabouts, of 3,379 in 1917. At an estimated mortality of twenty per 1,000 per year, about 2,700 graduates would be required to keep the medical profession at its present strength. At first sight, the withdrawal of actual and potential numerical strength from the medical profession seems serious, but the writer feels that there are economic reasons why the depletion should be regarded as conservative.

Polk's Directory, 1917, lists 134,000 physicians in the United States. There are many others, subject to estimate only by guess, properly prepared, except perhaps by lack of license, "rustiness," personal sense of unfitness, or preference for some other line of work. There are probably 10,000 physicians not at present in practice who could, in an emergency, be returned to practice with proper supervision and limitation of work to assure competence. At the worst, these men could be utilized for routine work not requiring great technical nor educational skill and subject to training in details. For example, vaccinations, inspections, simplest minor surgery, and routine therapeutic procedures consume much time and if necessary could be relegated to medical graduates withdrawn from ordinary nonmedical occupations. But, even the 134,000 physicians listed by Polk include or imply by accidental omission proportionately carried from one edition to another, a considerable reserve. For example, the directory of the Medical Society of the State of New York contains fewer names, though aiming, by a system of local reports, to include every physician licensed to practice and either actually in practice or desiring to be so considered. This directory, though dated 1916, was published after the 1916 graduations and, except for the additions due to the delayed license and entry of interns into private practice, represents the same medical population as the Polk directory of 1917. On a proportionate basis, the total number of physicians for the whole country is 123,000 instead of 134,000. Even the smaller number, so far as it can be checked by local acquaintance, includes about ten per cent. of physicians who are not actually in practice, at least not to any appreciable extent, but who desire to maintain their professional affiliation. Perhaps the largest item in this reserve ten per cent. consists of women physicians married to other physicians, but there are druggists, business men, and others and a few retired on account of age.

Very approximately, it may be stated that the medical practice of the nation is carried on by about 110,000, not excluding those whose practices are small or even decadent on account of moderately advanced years; that there is a reserve of 10,000 sufficiently interested to keep up professional affiliation and to attend to a few cases when offered; that there is a further reserve of 10,000 that can be listed by careful search without insisting too strongly on technicalities of license, etc.; and that there is an ultimate reserve of men who regard themselves as permanently out of practice. This last reserve may be considerably less than 10,000, while others have estimated it as a sixth of the total graduation, which would bring it to at least 20,000. It should be noted that even if the statistics of the profession are decidedly an underestimate, they are fairly consistent in various directories from issue to issue and hence represent a true numerical strength for comparative purposes, just as a measure or weight consistently used for a considerable period affords reliable comparative conceptions even if it is not strictly in accordance with standards.

With this qualification, which need not be further emphasized, it will be seen that the physicians of the country who formerly bore about the relation to the population that leucocytes do to red blood cells have, by the operation of increasing educational requirements and growth of total population, been gradually reduced in proportion so that the average clientele on the basis of actual practitioners, is about 900 or, on the basis of Polk's Directory, about 740. The maximum withdrawal for military purposes at present contemplated would change these numbers to about 1,100 and 900 respectively. Without attempting to estimate how the withdrawal of 2,000,000 active men from the civil population would affect birth, death, and morbidity rates for the remaining population, the following is a fairly accurate statement of what a clientele of a thousand means. Twenty-nine labor cases a year; one and one half stillbirths; twenty-seven and one half living infants of whom about three or a fraction less will die in the first year; one death from drowning, suicide, or accident brought to the physician's notice, perhaps requiring a futile emergency call and the filling out of a death certificate; about ten fatal cases a year in addition including slightly less than one of cancer and one and one half from tuberculosis, representing one or two cancer cases, and about three tuberculous cases under supervision all the time. The actual morbidity cannot be closely estimated and will, of course, vary greatly according to season, epidemics, and accidental causes. It can scarcely be estimated at more than ten patients requiring attention in any single average day. Of course, such a presentation of averages does not represent the actual division of practice by specialties, but it rather exaggerates the difficulties since the more practice is systematized, up to the practial limit, the less time and effort is required, there being, in particular, an enormous saving of time wasted in transit and in preparing for unusual problems. It should be remembered that even the minimum estimate of 110,000 physicians in actual practice includes a large number of those who are not fully employed. Some pessimists hold that not over ten per cent. of the profession are fully employed in the optimum economic sense. Scarcely any contend that more than fifty per cent. are fully employed.

Perhaps the general contention of this article can be still better presented by getting away from statistics. Suppose there were no war and a physician of average practice announced to one of his friends that he was going to leave town indefinitely and intended to divide his practice among that friend and five others. What would the friend say, if he were absolutely honest and did not want to appear hoggish? What would be the result of a shortage of surgeons to a physician who desired to take up surgical work, had the necessary fundamental training and skill, but very few surgical cases referred to him, encountered difficulties in securing hospital accommodations under existing conditions? Would even the profession and the people as a whole be worse off if his ambitions were encouraged instead of thwarted? Every summer we find men who are practically idle, but who cannot afford to take a vacation. Suppose they were so busy that fatigue not only forced them to take a vacation but that the results of that fatigue enabled them to do so. Consider merely the cases of men waiting around for a labor case that does not come off, when they otherwise could take a trip. Thirty labor cases for each physician in a year, instead of twenty-five or twenty really means that a few will average 100, possibly 200 or even 300, conducted in institutions where every care can be given the patients and every possible economy of professional time and effort can be effected and that the average general practitioner, simply because his potential average is increased, will have his actual average diminished. He and his work will have the advantage of five to ten nights of sleep a year beyond his present assets of strength. The reaction of a state of universally busy general practitioners upon special practice and the efficiency of results to the laity and to medical science in general need not be discussed; it is obvious. The profession is almost immediately confronted with the problem of so called health insurance, meaning a legalized system of contract practice with hours and pay on a highly unfavorable basis. The one condition that can counteract this demoralization of the profession is a bona fide balance of supply and demand which will enable the potential panel physician to insist upon fair remuneration for such hours as labor demands and which will not leave eighty per cent. of the profession to be supported by the twenty per cent. of the population excluded from health insurance legislation.

It is impossible to forecast the future, but it is entirely conceivable that the 20,000 men required from the medical profession for military service will either not be all ordered into service or will be returned to civil life within a comparatively few months with no greater death and disablement loss than would have occurred in peace. It is almost inconceivable that the withdrawal of this body of men will cover a period of more than five years, or that the death and permanent disability will amount to more than three per cent. a year, approximately half greater than for peace, according to past experience in the allied armies, if reports can be accepted as accurate, or that the accessions to this body will exceed the expected increments from graduating classes. Only a prolongation of the war, increase of troops and medical corps far beyond present expectations, and a far greater loss than has thus far been reported would justify measures to conserve the medical profession in the sense of relaxing educational requirement or stimulating matriculation by offering exceptional inducements or exemptions to prospective medical students. To exempt, in an indirect way, bona fide students is another matter and to assign duty to volunteers so as to provide for the pursuit of studies without delay, or to afford opportunities for practical medical experience even if delaying graduation, is a matter of common sense.

There is one phase of this matter that deserves special emphasis—the fear of a shortage of interns. When we analyze what has been said in this regard, it means that there is danger that men averaging twenty-six years, all with high school education, many with one or two years of college education and twenty-five to thirty per cent. of them with full college education, all having had four years of technical medical training, will not apply in sufficient numbers for the privilege of a year's hard work in return for board and washing and experience, especially when the experience is comparatively inadequate. The equivalent of one ward bed would at least make these men independent of their families for supplementary support and the equivalent of two or three ward beds would provide reasonable salaries, such as graduates in the ministry, law, engineering, pedagogy, stenography, etc., expect to receive even when they are lacking in practical experience. War is not unmixed evil if it will remedy this exploitation of our profession.

DIFFERENTIAL DIAGNOSIS IN CASES OF SUSPECTED PULMONARY TUBERCULOSIS.

By Arnold Minnig, A. B., M. D.,
Denver, Col.

Not only are there difficulties in differentiating between early tuberculosis and other diseases, but even advanced tuberculosis offers diagnostic difficulties with a great variety of pathological states. I have selected the following as offering, at times at least, real diagnostic problems. In the enumeration of the various symptoms it will not be necessary to repeat such selfevident facts as the finding of the tubercle bacillus, guineapig inoculation, complement fixation test, and even the x ray.

Aneurysm of the arch of the aorta with hemoptysis, cough, pain, and apical râles may easily enough be mistaken for tuberculosis, but the inequality of the radials, the location of the dullness, pressure symptoms, absence of tubercle bacilli, and especially the fluoroscope showing a pulsating tumor will settle the question.

Bronchial asthma may as a rule be easily distinguished by the general bilateral symmetrical wheezing. Usually there are paroxysmal attacks of expiratory dyspnea. The blood shows eosinophiles. The chest is emphysematous. I call particular attention to the facts that a tuberculous family history will practically always be obtained from an asthmatic and that while tubercle bacilli may never be demonstrated in life they may be found post mortem. In a large series of autopsies done a number of years ago I found that 100 per cent. of asthmatics had a coexisting tuberculosis.

Bronchiectasis and chronic phthisis with extensive cavitation and secondary infection of the cavities may present very similar signs. In both the symptoms are likely to have existed for a long time; marked clubbing of the fingers may be present; in both copious expectoration is raised by the cupful within a few minutes. The two diseases may be differentiated by the fact that in bronchiectasis there is absence of tubercle bacilli; fever is not usual; there are sweats; there is no hemoptysis; in bronchiectasis the cough is likely to be paroxysmal; the sputum separates into three characteristic layers; the tuberculous cavity is surrounded by a dull area due to infiltration of the lung and a bronchiectatic cavity has normal lung tissues about it.

Chronic bronchitis is probably the disease which gives the greatest difficulty. Here the persistent absence of the tubercle bacillus, the symmetrical distribution of the râles, the improvement in the summer, and the emphysema usually favor bronchitis. In tuberculosis there is usually in one of the apices an area of dullness with increased tactile and vocal resonance over the affected area. Fever shows a greater daily variation, there is progressive loss of weight and strength; finally, the tuberculin or complement fixation test and the x ray will establish the diagnosis. Barnes (1), superintendent of the Rhode Island State Sanatorium, reports that 14.5 per cent. of tuberculosis cases admitted had been previously diagnosed as bronchitis, the average delay before a proper diagnosis was made having been 10.6 months. Chronic bronchitis occurs frequently at the two extremes of life, in asthmatics, in alcoholics, and in those whose occupation is an etiological factor, but chronic bronchitis when occurring in a young or middle aged adult without a definite cause should be considered tuberculosis unless proved otherwise.

Bronchopneumonia lasting several weeks will often be confused with tuberculosis. The absence of the tubercle bacillus with the physical signs will serve to differentiate. Furthermore, observation over a period of several weeks will tend to show that the usually confusing forms of bronchopneumonia, namely, those caused by influenza or so called grippe, have a tendency to clear up, while in tuberculosis the condition is more protracted and obstinate and has a tendency to spread.

Chlorosis may be differentiated by the great reduction of hemoglobin and moderate reduction of the red cells. It occurs in young girls. The presence of the greenish hue of the skin and absence of fever, chest dullness, and tubercle bacilli plus the x ray should put us on the right track.

Chronic pneumonia may simulate tuberculosis exactly as to physical signs, the absence of the tubercle bacillus, the regular course of the fever in contrast to the evening rise in tuberculosis, hemoptysis, and emaciation favor tuberculosis; finally, the history, tuberculin, and x ray will settle the point.

Diaphragmatic pleurisy is one of the most difficult propositions with which we are confronted as was pointed out by Doctor Webb (2). Here a careful examination of both the chest and abdomen is indicated. Painful points on pressure above the clavicle and to the side of the umbilicus and the tender twelfth dorsal vertebra are all suspicious. There is usually a high white blood cell count ranging from thirty to forty thousand. If vomiting is present this may be confused with appendicitis for there is usually rigidity and sudden pain in the abdomen. Capps (3) in a study of sixty-one cases of diaphragmatic pleurisy in Cook County Hospital gives the following main points of differentiation between diaphragmatic pleurisy and inflammation of the abdominal viscera:

"1. The skin and muscles of the abdomen are more sensitive to pain and touch in referred pleural pain than in visceral disease. This is best elicited by pinching of the wall and scratching of the skin. 2. The cutaneous reflexes are more lively in referred pain than in visceral disease as a rule. 3. Deep pressure with the flat surface of the fingers is well borne in referred diaphragmatic pleural pain, while it elicits a dull deep pain when applied over an inflamed organ; e. g., an appendix or gallbladder. 4 Evidences of respiratory infection are usually present in diaphragmatic pleurisy, such as cough, expectoration, herpes of lips, sore throat, high leucocytosis, rapid respiration, etc. 5. Appearance of a sharp, definitely localized pain in the neck on the same side as the abdominal pain often reveals the true condition, since it points to an irritation of the phrenic nerve. 6. The referred pains in the neck and abdomen are usually induced or aggravated by cough and deep inspiration. 7. Nausea and vomiting are more constant in visceral abdominal inflammation, but may occur and be very pronounced also in diaphragmatic pleurisy. 8. Hiccough is not a common symptom in diaphragmatic pleurisy, contrary to the current belief. It was present only five times in our series of sixty-one cases. It is more often seen in visceral diseases of the abdomen than in diaphragmatic pleurisy." Finally, the x ray may help more than any other thing.

Echinococcus cyst of the lung is an exceedingly rare condition and the physical signs do not give much help in the differential diagnosis. The disease is commonest at the bases. There may be localized bulging of the chest wall or if the cyst is full and near the surface there will be dullness and weak breath sounds but no râles. Fever is absent. There is eosinophilia. The x ray gives a valuable clue and a more or less characteristic picture (4). If the cyst evacuates itself, the microscope will clinch the diagnosis.

Empyema which has ruptured into the lung may simulate tuberculosis. The fever, leucocytosis, dyspnea, the flat dullness without breath sounds, an exploratory syringeful of fluid, the fact that it comes after a pneumonia or other infection will help to clear up diagnostic difficulties.

Foreign body in the chest as was indicated by Doctor Webb (2) may simulate tuberculosis, but here the x ray will establish the diagnosis absolutely.

Gangrene of the lung ought not to be confused. Here the foul stench of the breath and sputum are characteristic. This condition must be differentiated from bronchiectasis and the retained sputum of old tuberculosis cavities and empyema, which has ruptured into the lung. Gangrene is further differentiated by the quantity of elastic fibres, absence of clubbed fingers, and the history being much shorter than in the others. There is absence of tubercle bacilli. Gangrene and abscess of the lung are essentially the same disease according to Cabot (5). "The one may pass into the other at any time if the organism favoring gangrene supervenes."

Hodgkin's disease may be confused with tuberculosis when early but the general glandular enlargement, especially the glands of the neck, enlargement of the spleen, examination of the histological changes in the excised gland, and the blood picture should clinch the diagnosis.

Hyperthyroidism is often mistaken for tuberculosis and is very often associated with it. It may be diagnosed by the goitre; tachycardia without fever; tremor; exophthalmos; stomach and bowel symptoms; keeping patient under observation for some time with frequent examinations; tuberculin and complement fixation tests; the x ray; the chest examination, and absence of the tubercle bacillus.

There are a number of *infections* which may give every clinical sign of tuberculosis, but if continued examination of the sputum is negative the rarer organisms must be looked for. Notably among these are actinomyces, aspergillus, streptothrix, Friedlander's bacillus, pneumococcus, amœba, Micrococcus melitensis, blastomyces, etc.

Influenza.—Influenza often ushers in tuberculosis. Repeated attacks of the grippe should arouse a suspicion of tuberculosis, and a careful search, especially of an obstinate so called grippe, should be made for the tubercle bacillus.

Intercostal neuralgia is often given as a diagnosis when the pathological process is simply a tuberculous pleurisy. Intercostal neuralgia is an exceedingly rare condition *per se* while tuberculous pleurisy is common. Pottenger (6) gives as a differential point that the motion of the lung is more restricted in pleurisy than in intercostal neuralgia and the pain is more acute on respiration.

Malaria.—Barnes (1) states that of his 165 tuberculosis cases the diagnosis of malaria was made in five or three per cent.—the average delay in making the proper diagnosis being seven months. Malaria is particularly confusing in districts where this disease is prevalent. The toxic symptoms of early active tuberculosis so closely resemble those of malaria that it is little wonder that the two are confused. Careful examination of the blood and the sputum will settle the diagnosis.

Malignant disease of the lung is very commonly confused with tuberculosis. As pointed out by Doctor Webb (2) it is to be suspected when it occurs in a patient who has never been troubled with chest symptoms until after the age of forty years. To this I offer at least one very marked exception and that is silicosis or miner's consumption. Any man, no matter what age, who gets into quartz mines and works on the machines, sooner or later is as sure to get tuberculosis as anything in medicine. In malignancy the tumor may be anywhere, while tuberculosis prefers the apex. Careful search should be made for the primary seat. Of course, there is the absence of the bacillus.

Mitral stenosis.—Here a hemoptysis may put us off our guard but mitral stenosis is second only to tuberculosis as a cause of hemoptysis and should always be thought of in hemorrhage. A careful examination of the heart will clear up the diagnosis.

Neurasthenia.—A most careful examination is necessary here as many cases of tuberculosis are neurasthenic, hence only repeated careful examination can exclude tuberculosis.

Pleurisy.—As nearly every case of pleurisy is tuberculous every case should be so treated. If there is an effusion an exploratory syringeful injected into a guineapig will probably establish the diagnosis. If there is still doubt after a thorough physical examination the x ray ought to clear the picture.

Pneumonoconiosis, silicosis, or miner's consumption may be diagnosed by the occupation, emphysema, bronchitis, black sputum, and the absence of the tubercle bacillus for years, finally appearing shortly before death. In this case I feel a diagnosis can be made of tuberculosis without the presence of the tubercle bacillus. Given a patient, who has worked in quartz mines for a number of years and especially on the machines, if he has a chronic cough with signs in the chest, gradual loss of strength, he has miner's consumption and the bacillus will appear sooner or later.

Pulmonary abscess is hard to differentiate, but it usually follows a general infection or a thrombus. X ray usually shows a shadow not remote from the interlobar line.

Pulmonary infarct may simulate acute tuberculosis, but the history of an operation, the sudden onset of pain in the side, dyspnea, faintness, and shock should put us on our guard.

Sepsis may simulate phthisis, but the great majority of cases show a definite localized focus, as for instance, the pelvis; or in the absence of such a focus the patient is in a serious condition and has an anxious expression.

Streptothrix infections may cause exactly the same clinical symptoms as tuberculosis, besides streptothrix is an acidfast bacillus, but it is only weakly acidfast and does not resist antiformin. Guineapig inoculations, the absence of the tubercle bacillus, the tuberculin and complement fixation tests, streptotrichins give definite skin reactions, and the fact that the symptoms clear up with potassium iodide will clear the diagnosis. In these cases it is well to bear in mind the possible coexistence of tuberculosis and streptothrix infections.

Syphilis may be easily diagnosed. It is extremely rare, but the lung signs may be identical with tuberculosis. The history of exposure, the Wassermann reaction, and the response to antisyphilitic treatment will clear the picture.

"Throat trouble."—Barnes reports that in his series of cases "throat trouble" was diagnosed by attending physicians in 2.4 per cent. of cases of tuberculosis. In two cases the uvulas were amputated, and in one case tuberculous tonsils were excised after the onset of continuous lung symptoms. Evidently they had attributed the cough to pharyngeal irritation. The consequent delay of diagnosis was two to six months in one case; the longest delay two years; average, eleven and a half months.

Typhoid fever.—Here much difficulty may be encountered to distinguish this affection from acute miliary tuberculosis. The fever in typhoid is characteristic; in tuberculosis it is irregular. There is more intestinal disturbance in typhoid; in a few days there will be rose spots, an enlarged spleen and a positive Widal. Blood cultures show a leucocytosis in miliary tuberculosis, while there is leucopenia in typhoid. There is more rapid respiration in the tuberculosis and involvement of the meninges. Consequently examination of the spinal fluid should not be overlooked.

Yeast infection.—Simon (7) has recently reported a case of yeast (Monilia) infection of the lung which gave all the clinical symptoms of tuberculosis without the presence of the tubercle bacillus. Culture gave a yeast organism. The infection cleared up promptly under potassium iodide.

Urticaria.—Cabot (5) calls attention to an unusual case.

CASE.—A weaver, twenty-four years old, had cough, headache, vomiting, chill, pain in the left side, loss of appetite. He had been in bed three days. Examination showed harsh respiration and a few fine râles in the left back close to the spine of the scapula. Palpation of the abdomen caused severe paroxysms of cough. Temperature up to 102° F., pulse 105. On the second day an itchy erythematous eruption appeared on the right side of the body. It was a case of urticaria, which caused lesions in the bronchial tree similar to those in the skin.

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846 METROPOLITAN BUILDING.

A PORTABLE OPERATING TABLE ATTACHMENT.

By THOMAS C. STELLWAGEN, JR., M. D.,

Philadelphia,
Assistant Professor in Genitourinary Surgery, Jefferson Medical College.

The problem of position of the subject in renal surgery is of the greatest importance; it is sometimes difficult to get and maintain satisfactorily. This difficulty led us to undertake to devise an apparatus that would be portable and readily adjustable to practically all makes of table, including a kitchen table. With this appliance the ordinary kitchen table can be made to serve almost as well as the more complicated and expensive types. This attachment has been used in the urological clinic of the Jefferson Medical College Hospital, and we believe its success there warrants our presentation of it to the surgical profession. It seems particularly opportune to present it at this time, as so many base hospitals must be equipped for foreign service. In them low cost and compactness are of vital importance, and we believe the bridge will help to solve some of their problems.

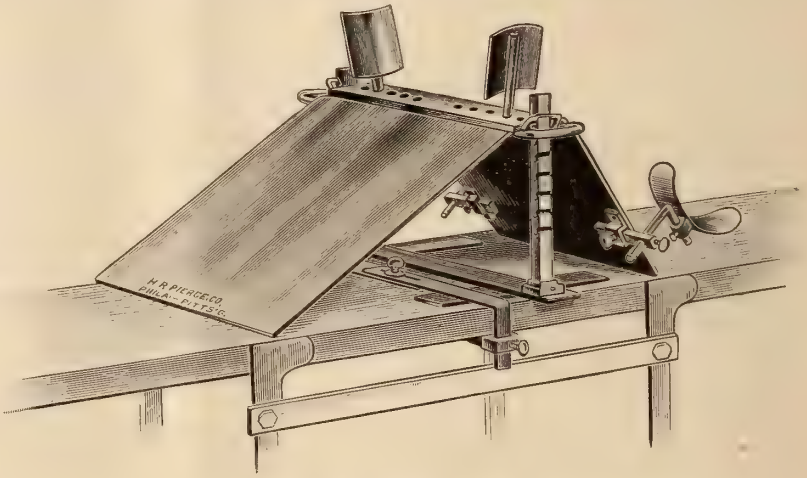

FIG. 1.—Kidney bridge and portable operating table attachment.

The apparatus weighs forty-seven and a half pounds. It can be readily taken apart and carried in a bag for transportation. It consists, as shown in

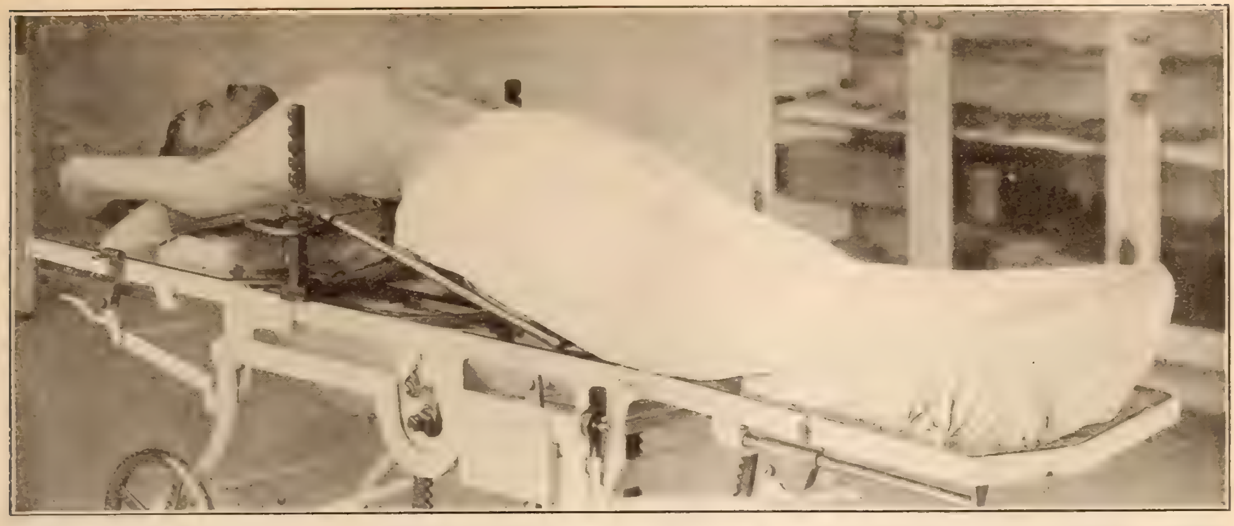

FIG. 2.—Position for upper abdominal surgery.

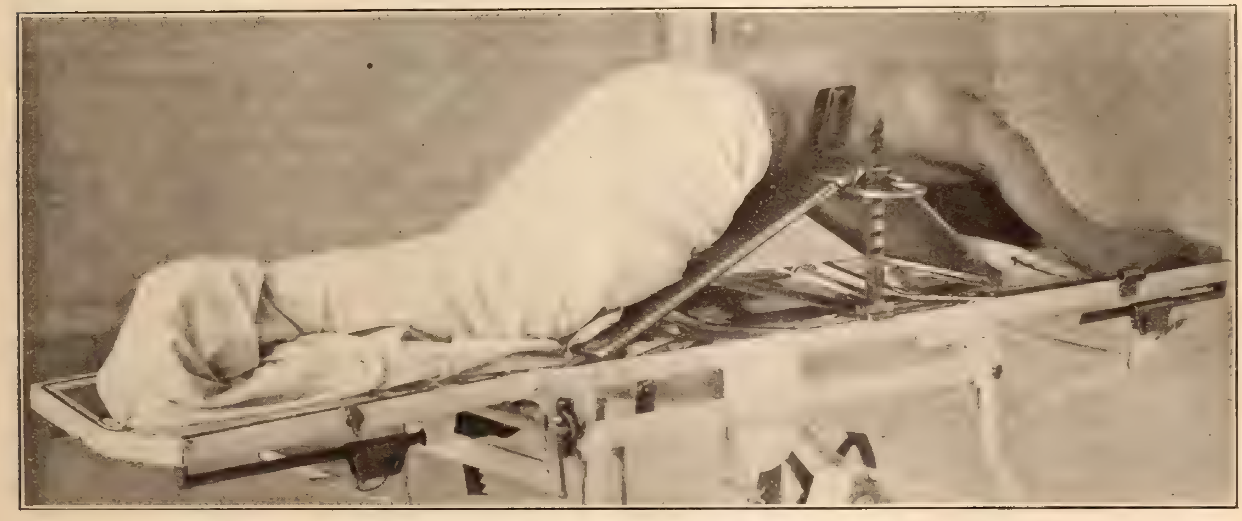

FIG. 3.—Position for spinal surgery and bilateral kidney exploration.

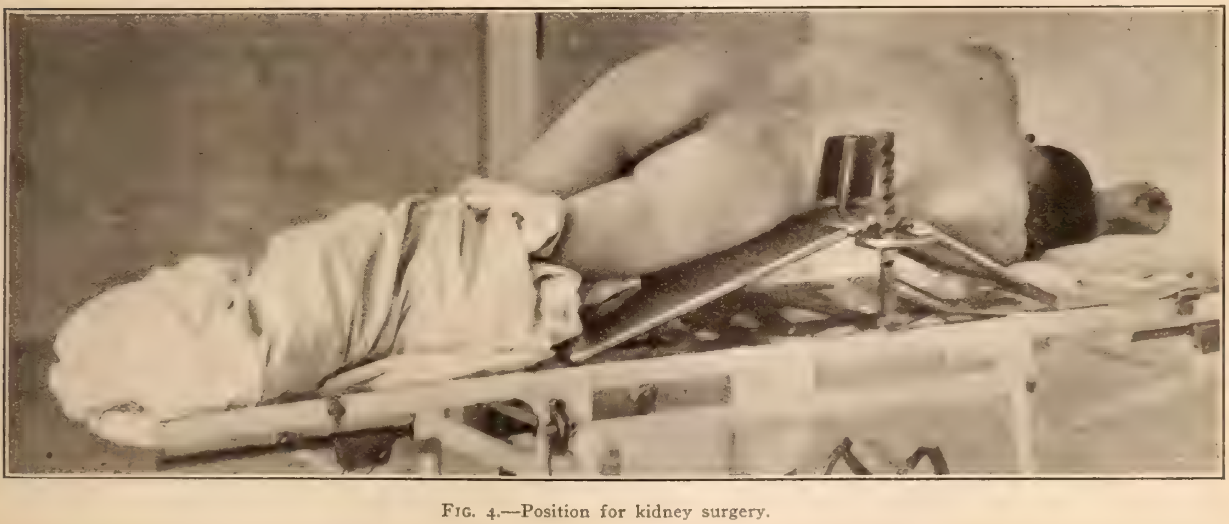

FIG. 4.—Position for kidney surgery.

Fig. 1, of a central bridge, attached to which are two inclined planes that permit its being raised and lowered. The elevating and lowering device is a simple and substantial construction. It consists of two upright, removable, square, notched steel posts. These are socketed into a firm base, the notches so cut as to prevent the locking ring from slipping after it is in position. This can be more readily understood by referring to the cuts. The upright posts are removable to facilitate placing the patient upon the table. These posts from the photograph would seem to be in the way of the operator, but they are not; they can be removed and sterilized or covered by a sterile sheet or covering. The appliance can be lowered for the reception of the patient.

Fig. 2 shows a patient in position for liver or gallbladder surgery. It will be readily seen that by raising or lowering the bridge the liver or gallbladder can be pushed forward, making it more easily reached, and when suturing is begun the lowering of the bridge will relieve tension upon the abdominal parietes. Fig. 3 shows a position for reaching the kidney through the straight incision along the border of the erector spinæ, also for work upon the lower spinal area.

Fig. 4 shows a back view of the patient lying upon his side for reaching the kidney. This position can be altered to give greater space between the iliac crest and the twelfth rib while the patient is in position, thus greatly facilitating delivery of a large kidney. Fig. 5 shows position for cerebellar surgery or cervical cord area. The bridge is equipped with adjustable shoulder lifts that effectually support the chest so as to overcome the curtailment of respiration from the weight of the chest. Some difficulty has been experienced in raising and lowering the appliance because it tended to shift slightly upon the table. This has been overcome by a simple attachment that fastens it to the table. This attachment is adjustable.

The construction is of steel throughout excepting the upper surfaces of the bridge and planes, which have a veneer of monel metal over sheet steel. Several types of raising and lowering devices were given careful consideration, but they proved unsatisfactory and expensive, and would not permit of the range of motion obtained by the one adopted. The bridge makes of the ordinary kitchen table a fairly complete operating table, and in fact in emergency the surgeon could place the patient upon the floor and while kneeling manage to do his work.

It can be readily raised or lowered by the surgeon and his assistant, with the patient *in situ*, by simply grasping the lifting handle on either side and holding the locking ring up. Should the necessity for lowering arise it can be done by first raising the bridge slightly and unlocking the ring and then holding the ring and lowering to the required notch. We believe the ease with which the appliance can be manipulated is most important, for during anesthesia for operation upon the kidney it often greatly assists respiration to lower the patient temporarily. Again, the double inclined plane prevents the strain upon the back and side muscles that is caused by bridges that do not give the inclined plane support. The subject is rigidly held between the supports that are shown in the pictures. These have a broad spatulate bearing surface so devised to prevent bruising, and, should the problem of pressure be a dangerous one, a soft towel or pillow may be inserted beneath them. The pillow or pad can be so placed as to exert pressure upon the kidney that will assist in its delivery. These posts are adjustable and fit into holes upon the dorsum of the bridge.

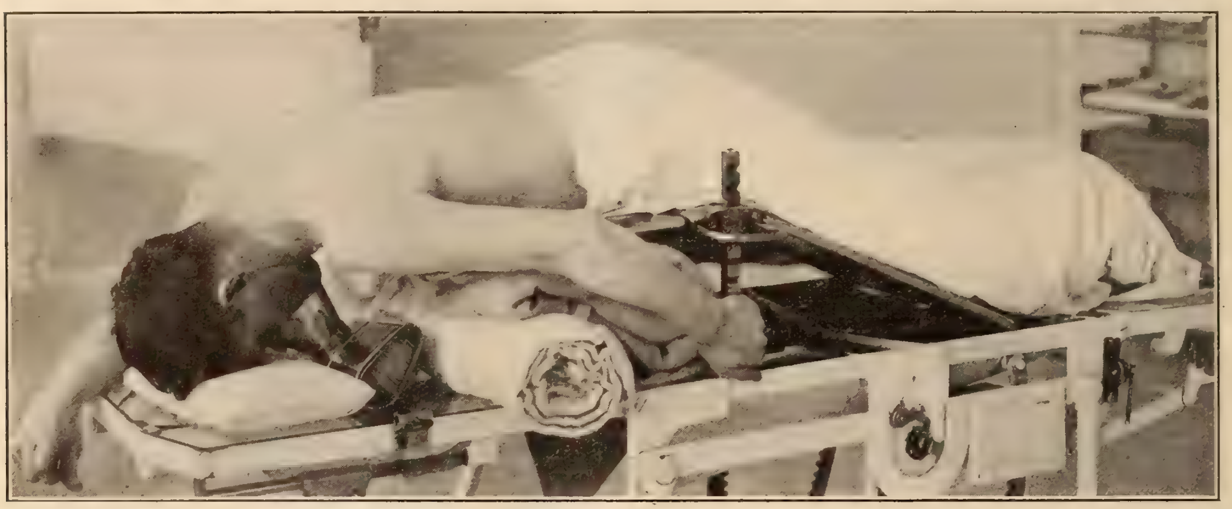

FIG. 5.—Position for cerebellar surgery and upper cervical cord.

1831 CHESTNUT STREET.

A SIMPLE PAINLESS TECHNIC FOR SALVARSAN INTRAVENOUS ADMINISTRATION.

By CHARLES C. MILLER, M. D.,
Chicago.

Many physicians are deterred from administering arsenicals in specific disorders because of lack of acquaintance with a sufficiently uncomplicated technic. Salvarsan outfits usually require more than one attendant for successful manipulation, and as most medical men have no efficient assistant, intravenous injections usually demand a trip to the hospital, which may be distasteful to the patient. Most salvarsan outfits are made to be used with large aspirating needles. These are unnecessarily painful, they frighten patients, and do more damage to vein walls than need be. The technic I am describing calls for the smallest of hypodermic needles. The twenty-seven gauge is perhaps the best, and under no circumstances should it be larger than the twenty-five. A comparatively short needle is also an advantage, one half inch being ample length. For administering the solution, the all glass syringe with ground glass piston is most convenient. The one I use has a capacity of twenty c. c. Somewhat larger ones are available for those who desire more dilution of the injection. The water to be used in the injection should be measured in the syringe, then poured into the sterile bottle with the arsenical, and agitated until the solution is absolutely complete. It should then be poured into the syringe. Before this is done, always attach the needle firmly to the syringe. After the solution has been poured into the syringe, the plunger should be inserted, the needle turned upward, and by pressure upon the plunger all air carefully forced from the syringe.

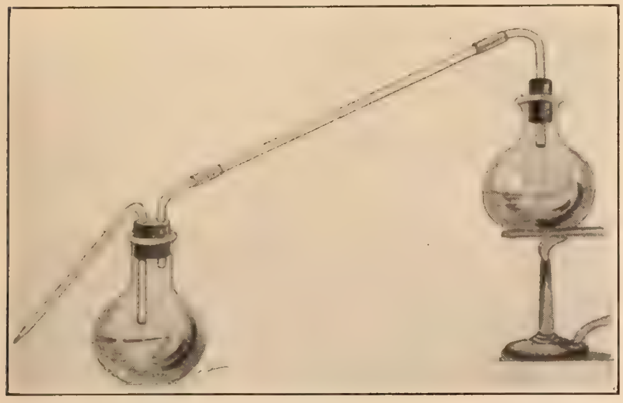

Fig. 1.—Outfit for distilling water. With a simple inexpensive apparatus of this kind the physician need never use water for making intravenous solutions of which he is the least suspicious.

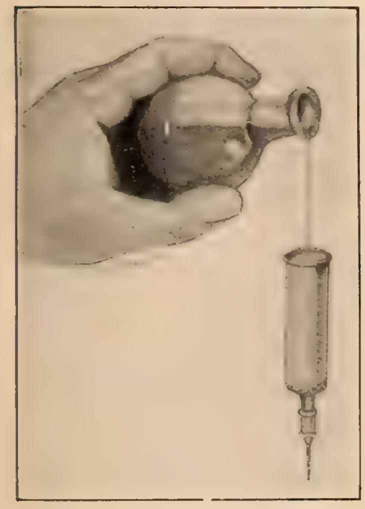

Fig. 2.—When the solution is properly prepared in the sterile bottle it should be poured into the syringe, and the piston inserted. If the process of solution goes on in the syringe the needle will probably become plugged or there will be difficulty in moving the piston owing to fine undissolved particles lodging between the wall of the syringe and the piston.

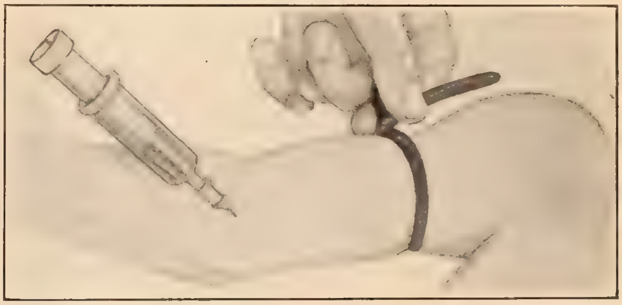

Fig. 3.—Manner of using tourniquet. This can be so placed that the patient can hold it. A single turn of gum tubing should be used and it should be well above the site of the injection.

To make the injection the arm of the patient is exposed well above the elbow. The sleeve should be comparatively free, and no tight band such as a sleeve holder allowed to remain on the arm constricting the veins. The usual antiseptic precautions of scrubbing the arm with soap and water and then with alcohol should be taken. The patient may be seated in an arm chair with the exposed member resting upon the arm of the chair; the veins are then distended with a tourniquet which the patient can understand and handle without difficulty. A most effective tourniquet is a clean, medium sized catheter. Gum tubing long enough to go about the arm one time only and the ends twisted so that the blood flow in the veins is checked is the exact method I use. The patient holds the twisted ends of the tubing and is directed to loosen this without a jerk when told to do so. The operator sits directly in front of the patient or slightly to the side, as is most convenient for holding the syringe so that the needle is on a line with the course of the vein selected for the injection. Usually the largest vein exposed is the best for the injection. The needle should be inserted slowly. If the patient is instructed not to look, he will seldom feel the point pass through the skin. Sometimes the vein will tend to slip away from the point of the needle. The smaller and sharper the needle, the less this tendency. Sometimes the vein can be steadied by the thumb and finger of the disengaged hand of the operator. When the point of the needle appears to be in the lumen of the vein, the piston should be drawn back slightly. If it is, blood will immediately flow into the syringe. As soon as this occurs, the patient is instructed to loosen the tourniquet. This should be done without a jerk. When the tourniquet is entirely free, a slight backward pull of the piston will show a continued flow of blood, indicating that the needle point is still within the vein. The operator now exerts gradual pressure upon the piston, holding the syringe as steadily as possible while so doing. If the patient feels any pain, or moves so that the operator has any doubt whatever as to the needle point being well within the lumen of the vein, the piston should be drawn backward and suction exerted. If the needle point is within the vein, blood will instantly begin to flow into the syringe. This is the most important part of the technic. When in the least doubt in this respect the operator should draw back upon the piston. Blood should show at once at the point of junction of the needle and the syringe. Pressure can then be made with assurance that the contents of the syringe are flowing into the vein. The drawing back of the piston causing the show of blood can be repeated time and again. It should be repeated whenever the operator is in the least doubt in this respect. If blood does not show immediately when suction is made, the point is outside the vein. The suction should be continued and the point moved until the flow of blood appears in the syringe, indicating that the vein has been entered. In fleshy people with small veins and in women suction can be kept up while the point is searching for the lumen of the vein. This will be shown by a flow of blood as soon as the lumen of the vein is entered. The utility of backward traction demonstrating the flow of blood when the needle point is safely in the blood stream should never be forgotten. Salvarsan and neosalvarsan cause burning pain if any is injected into the tissues. The patient should be instructed to inform the physician if pain is felt. Blood drawn into the syringe diffuses but little. Being heavier than the solution injected, it sinks to the bottom of the syringe. The attachment of the needle to the syringe usually remains clear, so that the first show of blood is easily seen by the operator when he exerts backward traction upon the piston of the syringe. Salvarsan and neosalvarsan should be injected rather slowly. As the technic is painless the operator is seldom inclined to hurry. Equipped as I have outlined, the physician with no operative skill should inject these compounds without difficulty.

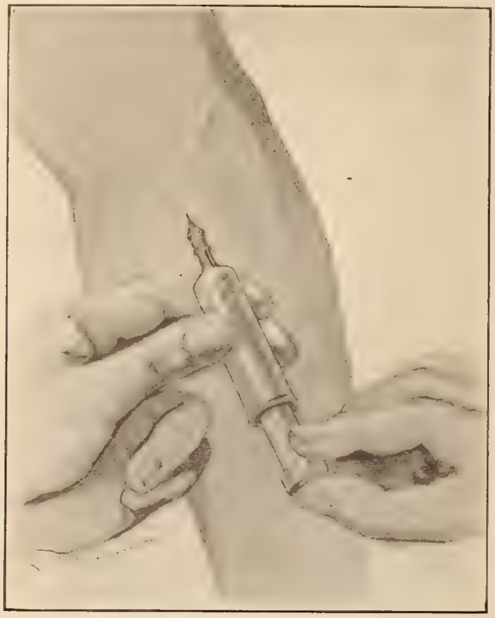

FIG. 4.—With the needle in the lumen of the vein and the tourniquet removed, suction will show whether or not the point is still safely within the cavity of the vein.

For dissolving arsenicals, fresh distilled water should be used. The safest way to obtain this is for the physician to make it himself. The illustration shows an outfit which is entirely satisfactory. It can be made up for not over fifty cents. It consists of two flasks which will stand heat. They should be of 500 or 1,000 c. c. capacity. They are joined as illustrated with glass tubing and rubber corks. The water is boiled in one flask and condensed in the other. The condensing flask can be set beneath a running tap, or, if this is not convenient, it can be immersed in a bowl of cold water. In a few minutes several ounces of water can be distilled. I am in the habit of double distilling all water I use in intravenous work.

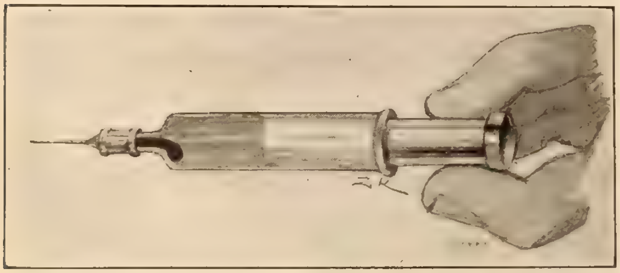

FIG. 5.—Manner in which the blood appears when suction is made and the point is safely within the vein.

Simple technic is not alone an advantage to the physician. It encourages patients to submit to these invaluable injections. With the old technic, where the large needles and cumbersome outfits were used, patients have been intimidated, and many who should have several doses of the arsenicals never bring themselves to submit to a second injection.

33 NORTH STATE STREET.

CIRCUMRUPTION OF PREPUCE IN LIEU OF CIRCUMCISION.

BY FRANCIS KEAN MACMURROUGH, M. D.,
Jersey City, N. J.

With undiminished reverence for the time honored operation of circumcision in the male, I have lately been using a method which I hope will supersede the ancient practice of cutting or amputating the prepuce. Placing the newborn or older child on a table on his back I take my place at his head and reaching down with both hands I seize the penis with thumbs and forefingers. Divulsing backwards toward myself with graduated but all necessary violence I tear through the imperforate or pinhead opening of the foreskin and thus make all way needful for glans and penis. Thus the distressed and confined organ is liberated without cutting or impairing the nerve supply and the lacerating procedure which has obtained from time immemorial is obviated. I especially call the earnest attention of the church authorities of the Hebrew synagogues to this method. While it is not a religious rite with the Christians, it is a healthful measure for all and cannot be too earnestly recommended for adoption and practice.

391 COMMUNIPAW AVENUE.

The Present Status of Vaccine Therapy.—Warren B. Stone (*New York State Journal of Medicine*, August, 1917) discusses the position of this form of treatment and concludes that vaccines are of greater value than other methods of treatment in a limited number of chronic infections, especially those due to staphylococci. Some success has attended the use of colon vaccines, and there is some evidence that certain other chronic infections may be benefited by the careful isolation of the offending organism and the use of an autogenous vaccine. In general favorable results can be expected only from the use of autogenous vaccines, but the discovery of the true infecting organism is a matter of great difficulty in many cases, as even the isolation of an organism in nearly pure culture and the demonstration of agglutinins toward it in the serum of the patient does not necessarily prove that it is the true causative agent. Some promising results have recently been obtained from the use of vaccines in some of the bacteriemias, specially typhoid fever and pertussis, but there is need for more extensive study and careful control of the observations before their value can be accepted in such conditions.

Our Readers' Monthly Prize Discussions

Twenty-five Dollars Is Awarded for the Most Satisfactory Paper

All persons, whether subscribers or not, are invited to compete for the prize of $25 offered for the reply deemed best by the editors to the following questions:

CLXXXVI.—How do you treat varicose veins in the leg? (*Closed.*)

CLXXXVII.—How do you treat tantrums in children? (*Answers due not later than October 15th.*)

CLXXXVIII.—How do you treat frostbite? (*Answers due not later than November 15th.*)

The award will be based solely on the value of the information contained in the answer. No importance will be attached to literary style. Answers should preferably contain not more than six hundred words, and should be written on one side of the paper only. All papers submitted become the property of the JOURNAL, and should bear the full name and address of the author for publication. The prize will not be awarded to the same person more than once within a year.

The prize of $25 for the best answer to Question CLXXXV has been awarded to Dr. Melville A. Hays of New York, whose paper appeared on page 648.

PRIZE QUESTION CLXXXV.

TREATMENT OF ACUTE TONSILLAR INFECTIONS.

(*Concluded from page 650.*)

Dr. Benjamin H. Shuster, of Philadelphia, writes:

Simple tonsillitis which is part of a general pharyngitis will respond to local application of a twenty-five per cent. solution of argyrol and a gargle with an antiseptic alkaline solution.

In acute follicular tonsillitis many remedies are employed, as a twenty per cent. solution of silver nitrate, tincture of iodine, ammoniated tincture of guaiacum and potassium chlorate, and tincture of ferric chloride and glycerin. Reports of the uselessness of each of these are as numerous as the successes reported; so it is evident that none of them is specific. Tincture of iodine has never in my hands given the relief of a strong solution of silver nitrate. When applying silver nitrate I always apply at the same time a twenty-five per cent. solution of argyrol to the throat. I use the silver nitrate solution when the case is seen early, as it seems to relieve the throat symptoms and lessens the duration of the attack. After the case has gone on for three or four days, the silver nitrate does not seem to do more good than twenty-five per cent. argyrol; so I use argyrol exclusively as it is less irritating. The ammoniated tincture of guaiacum in milk or water as a gargle has not been any better than an alkaline gargle or normal salt solution preceded by a dilute solution of peroxide of hydrogen. The tincture of ferric chloride and glycerin mixture is useful in cases where the engorgement of the tonsils and throat is great. Its astringent action gives the patient a little breathing space and removes the sensation of choking. When the engorgement is not so great, it seems to have no influence on the symptoms or course of the disease. A saline purge is beneficial in all of these cases, and an ice bag or cold compress to the neck adds to the comfort of the patient. I refrain from giving internal medication. They are useless and sometimes harmful. For example, quinine, which is often given to combat the fever, frequently causes tinnitus aurium, which only adds to the patient's distress.

In quinsy or peritonsillar abscess the only rational treatment is free incision. The best point to incise is in a line bisecting another line from the last upper molar to the uvula. It is easier to cut toward the uvula. This can be done with very little pain if two applications of a ten per cent. solution of cocaine are made to the area to be incised. A condition simulating quinsy is found occasionally. It is an enlarged tonsil, one side affected, red, swollen, and painful. This tonsil is frequently lanced on the assumption that it is a peritonsillar abscess, but pus is never obtained nor is there any relief from symptoms. It occurs in people subject to rheumatic attacks and responds quickly to large doses of aspirin, fifteen to twenty grains three times a day. Another condition of the tonsil frequently met with is unaffected by local treatment. This is a condition of ulceration and redness and some swelling of the tonsils. It is usually of long duration. The patient complains of having symptoms for three or four weeks. A Wassermann in these cases is always positive, and the patients respond quickly to antisyphilitic treatment.

Dr. H. T. Pessar, of New York, contributes:

The treatment of acute infections of the tonsils may be considered under three headings, depending upon the type of inflammation present. 1. Acute follicular tonsillitis is more amenable to treatment than any other. One application of a fifty to ninety per cent. aqueous solution of nitrate of silver applied locally during the first twenty-four hours of the disease, will in nearly every instance abort the attack. A second application is rarely required. This strength of silver nitrate is not caustic in action; it unites with the mucin so rapidly that its caustic action is greatly diminished before it reaches the mucous membrane. It coagulates the secretion and blanches the mucosa, thereby checking the inflammatory infiltration of the tissues. It also entangles the bacteria in the albuminate of silver and prevents further activity on their part. In applying silver solution to the tonsils the excess of fluid should be squeezed from the cotton wound applicator to prevent it trickling down the larynx where it will produce a violent spasm of the intrinsic muscles. Guaiacol, twenty-five to fifty per cent. in olive oil, is the next most efficient remedy. It should be applied locally two or three times a day for two or three days. Internally, guaiacol carbonate in five grain doses every three hours exerts a beneficial action. Tincture of aconite in drop doses hourly until the physiological effect is noted has many staunch supporters, particularly for children. The tincture of the chloride of iron in eight parts of glycerin given in teaspoonful doses every two hours is another good remedy. Sodium salicylate, benzoate of soda, and the chlorate of potash are also recommended, but the silver solution is so much superior to any of the remedies mentioned that it should be given the preference in nearly all cases. In severe protracted cases, vaccines prepared from the throat cultures may be tried, or failing these, the ordinary antistreptococcic serum.

The function of the tonsil in children and adults is still an open question, and it may still be doubted whether it is good practice to remove tonsils in the wholesale manner now in vogue. However, we know from clinical experience that when a tonsil shows a tendency to become the seat of recurrent inflammations the patient's health and life are conserved by its entire removal. If, therefore, there is a history of the repeated attacks of acute lacunar tonsillitis, the tonsils should be removed by complete dissection during a quiescent period.

2. The diagnosis of Vincent's angina, or ulcerative tonsillitis, once made by the discovery of the typical Vincent's bacteria, the fusiform bacillus and spirillum, local treatment is of most importance. The tincture of iodine applied to the ulcerated area several times a day, the application being limited to the ulcer, is the best local agent for destroying the bacteria and promoting healing. A ten per cent. solution of silver nitrate, and a thirty grains to the ounce solution of zinc sulphate are also recommended. A solution of chlorate of potash as a mouth wash is advantageous. Orthoform in powder or tablet form gives great relief from pain. General tonic treatment is indicated. To prevent infecting others, drinking and eating utensils should be sterilized and kept separate; sputum and mouth discharges should be burned. Following the attack, local disease of the mouth and teeth should be attended to. Operative work had best be postponed until the disappearance of the specific bacteria.

3. In phlegmenous tonsillitis and peritonsillitis, or quinsy, if the case is seen early when only infiltration and redness are present, but no pus, cold applications in the mouth or externally diminish the pain and may abort the attack. Cold may be applied internally by means of iced gargles or by sucking cracked ice. Externally it should be applied with a Leiter coil. Local application of cocaine may also be used to relieve pain. The leucodescent 500 candle power lamp, when available, provides an excellent mode of treatment. The rays should be applied over the neck and angle of the jaw upon the affected side. The lamp should first be moved over the neck a few times at a distance of six inches and then more slowly for ten to thirty minutes at a distance of eighteen inches. Such treatment will relieve the pain and reduce the swelling more readily than cold applications, as they promote the reaction of inflammation and convert the passive into an active hyperemia. Cultures should be taken because the abscess is frequently due to infections of staphylococcus, streptococcus, or pneumococcus. If such is the case, an autogenous or a polyvalent stock vaccine may give good results. When the process is established the evacuation of pus is imperative.

Dr. Joseph A. Mendelson, of Washington, D. C., says:

In acute tonsillitis the patient is ordered to bed and a purge administered in the form of one grain of calomel divided into 0.1 grain doses, repeated every fifteen minutes. This is followed by a saline taken before food the next morning. The pharynx and adjacent structures are first washed with Seiler's solution, which is put up in convenient tablets and when dissolved in a little sterile water is ready for use.

The parts are then sprayed with

℞	Cocaine hydrochloride,	gr. iv;
	Adrenalin hydrochloride,	fʒi;
	Aqua,	q. s. ad fʒss.

The tonsils are thoroughly and energetically painted with the following formula, which will be found far superior to strong silver nitrate or tincture of iodine:

℞	Glycerit. papain,	℥ss;
	Carbolic acid, Pulv. camphor,	āā gr. viii;
	Alcohol,	q. s. ad solve;
	Glycerin,	q. s. ad ℥ii.

Misce terre bene.

This is to be repeated the next day. The posterior nares are sprayed through the nose with a solution containing:

℞	Menthol, Camphor	āā gr. iiss;
	Alcohol,	q. s. ad to solve;
	Oil eucalyptus, Oil pine needle,	āā ♏iii;
	Bland oil,	q. s. ad ℥i.

The use of tincture of ferric chloride and potassium chlorate causes an ugly discoloration of the mouth and teeth and gastric disturbances which are not justifiable in this condition. Cold or preferably hot collar compresses should be applied. A more prompt and efficacious measure of relief is the external use of one of the analgesic ointments containing approximately camphor, menthol, and methyl salicylate in amounts of five per cent. or more; they give much satisfaction when rubbed well over the front of the neck and covered with cotton batting or a strip of flannel. This is more comfortable and not so bothersome as changing compresses. The diet for the first day or two should be restricted to liquids or semisolids.

Eating and drinking utensils should be boiled after use, and friends and relatives kept at a distance until the disease has run its course. Abscess formation should be treated by incision and evacuation; but if the above treatment is carried out this complication will be rare. Later, tonsillectomy, tonsillotomy, treatment with trichloracetic acid, electrocautery, etc., may be advised.

Dr. William Waugh, of Palacios, Texas, writes:

While the initial tonsillar infection may be due to a comparatively innocuous organism, at any time there may be a true diphtheria superadded, the first infection opening the door to the more dangerous invader. No matter how apparently harmless a tonsillar infection may appear, we cannot be sure that it is not the forerunner of rheumatic fever or an endocarditis. Hence the treatment of every tonsillar inflammation should begin at the earliest possible moment. Individuals should be instructed to look out for such attacks and should have at hand a remedy for instant use that is effective and at the same time safe. I have employed chlorine as an antiseptic in the throat for forty years. Put in a four ounce vial a dram of powdered potassium chlorate and add a dram of undilute hydrochloric acid, strictly U. S. P. quality; as the chlorine fumes rise add water to fill the vial. You have then a solution of nascent chlorine, pungent of odor and sour to taste, offering a double warning to the investigating child. Even if he should take a swallow it will do no harm. Whenever burning, itching, redness, or other evidence of infection of the pharyngeal mucosa appears, let the patient swallow a teaspoonful of the chlorine water, undiluted, with no water after it to wash it away too quickly. Out of consideration for the infantile stomach, a drink of water may be taken before each dose. This dose may be repeated every two to four hours. It is unusual for more than three doses to be required, but I have continued it for a week without manifest injury. We have here an application that may be employed while the tests are being made that may show the need of antitoxin. The lateral spread of this infection is prevented. As a matter of course, we administer antitoxin as quickly as possible when satisfied we have a true diphtheria with which to cope. We learned a few things about diphtheria before the day of the priceless discovery of antitoxin. In nasal diphtheria we have not forgotten the remarkable relief following frequent flushing of these cavities with hydrogen peroxide. Another is the arrest of the deadly epistaxis by syringing with chromic acid solutions. Begin with a pale pink solution, in water, and increase the strength as may be necessary. Use it whenever the blood reappears.

We must not neglect the basic principles of all treatment—pure air, sunlight, full nutrition with easily digestible and assimilable food, and the feeding of affected parts with a blood supply not contaminated with fecal toxins. The fact that diphtheria takes root in insanitary domestic conditions, points to the necessity of attention to the local sanitation.

Dr. Hyman Shlaffin, of Newark, N. J., contributes:

In the presence of an acute tonsillar infection put the patient to bed. Give calomel in 0.5 grain doses every ten minutes for eight doses. Follow this by eight ounces of liquor magnesium citrate, after which a high soapsud enema is given. Sponge the patient with equal parts of alcohol and water every four hours. For the accompanying pain in the joints, headache, and general malaise, give

Caffeine citrate,	gr. 2;
Aspirin,	gr. 4;
Sodium bicarbonate,	gr. 3.

This is to be given every three hours, until symptoms are ameliorated. Apply cold to the neck, either ice bag, Leiter coil, or a napkin wrung out of cold water and changed when dry. As a gargle use liquor alkalinus antisepticus diluted with equal parts of water. Diet should consist of milk diluted with limewater, seltzer, or vichy, about four ounces every four hours. The milk thus diluted does not have the tendency to form the thick tenacious mucus that is so annoying to the patient.

The curative treatment, as well as prophylactic, will depend upon the germ causing the infection. Therefore it is advisable to take a culture of every sore throat and in the presence of the Klebs-Loeffler bacillus, isolation should be instituted immediately and kept up until culture is negative.

In quinsy sore throat or peritonsillar infiltration, use the same general and local treatment as in acute parenchymatous tonsillitis. In addition, great relief is afforded and sometimes resolution takes place by continuous irrigation of the affected parts. This is done as follows: Fill a two quart douche bag with water as hot as patient can stand, to which a teaspoonful of equal parts of bicarbonate of soda and plain table salt is added. The patient lies face downward with the head hanging over the edge of the bed; a pipette which is attached to the rubber tubing of the fountain syringe is held in the mouth and the flow of the solution is directed toward the inflamed surfaces. The lip and cheeks of the patient should be well greased with petrolatum or cold cream to prevent scalding the parts. If no resolution takes place and an abscess is formed, spray the throat with a ten per cent. solution of cocaine and incise over the bulging area with a bistoury. Make incision from above downward. On withdrawing the instrument introduce a long, curved, closed artery clamp into the wound. By opening the clamp the wound is laid open and pus will always appear. In very neurotic patients a general anesthetic, nitrous oxide gas or ether, is given.

In Vincent's angina, local treatment consists of painting the tonsils with tincture of iodine three times daily. This is followed by an alkaline mouth wash. To prevent infecting others use separate eating and drinking utensils and destroy the secretions of the upper respiratory tract. General treatment is the same as in simple tonsillitis.

Dr. S. St. J. Wright, of Akron, Ohio, writes:

The proper object in treatment of acute tonsillar infection is the removal of the specific microbes which threaten the integrity of the tonsil. One may thus save from invasion the accessory sinuses and adenoid tissues. The patient may have *furor operativus subjectivus,* but one should not invite pulmonary abscess, pulmonary embolism, nor peritonsillar phlebitis by operative interference during acute infection. Foremost among local sterilizers for tonsils is resorcin in a twenty-five to fifty per cent. solution in water. It should be applied on a cotton wrapped, curbed probe or forceps once a day. One only needs to employ it to see its superiority over iodine, silver nitrate, or boric acid, and sprays and gargles. It can be inserted into folds, packets, and crypts, and behind and above the soft palate. Redness gives place to a pink color; Eustachian swelling shrinks, and the tonsils return to normal appearance and activity.

Interesting papers from Dr. James Stratton Carpenter, of Pottsville, Pa., and Dr. Louis Weiss, of Newark, N. J., were among those received this month, which the editors regret being unable to publish because of lack of space.

Medicine and Surgery in the Army and Navy

THE FIRST NAVAL HOSPITAL UNIT.

An Important and Significant Patriotic Service Rendered by the Young Men's Christian Association.

The Young Men's Christian Association, as an organization and as represented by auxiliaries and individuals, has been doing a splendid part in the war. Valuable as this part is, none of it has been more representative of the association's patriotism than the idea, conceived, carried through, and now concluded, of training a sufficient number of its young men to form the first naval hospital unit.

Some time ago, the Red Cross arranged a two year study course for a sanitary training detachment to be available when needed in times of peace. The plan was not carried out, however, until, in the spring of 1917, the Central Branch of the Young Men's Christian Association of Brooklyn took over the idea and adapted it to a shorter term, so that the instruction was given complete in 144 hours, or eight hours a day for one month. The purpose of this first sanitary training detachment was to fit the men to serve efficiently in first line first aid and the sanitary service of the navy, although their services will undoubtedly be welcomed by the army as well. After receiving this training, it was planned that the surplus members of the class should enlist individually in one of these services, though they were not required to pledge themselves to do so. When called into active service, they will be capable of fulfilling the important duties of handling and caring for the sick and wounded and removing them from the battlefield to the nearest dressing station or emergency hospital, or such other transportation as may be required, applying bandages and splints, administering antidotes and first aid, and assisting in the maintenance of camp hygiene and sanitation.

The first detachment to be trained consists of four officers: a commandant, Dr. William H. Price; two assistant commandants, Dr. Walter R. Izard and Dr. Marcus S. Searle; a quartermaster or drill master, Mr. Fred C. Stechert, and the following subordinate personnel: one pharmacist, five section chiefs, four mechanics, four carpenters, two cooks, and forty privates. The National Headquarters of the American Red Cross at Washington has approved of the selection of the physicians holding the positions of commandant and assistant commandants; carpenters, cooks, and clerks have the title of sergeants and one of them, selected by the commandant, is to act as first sergeant. The mechanics, carpenters, cooks, and clerks have the title and rating of corporal. Regular instruction was given by the commandant, assistant commandants, and pharmacist in first aid to the injured, personal hygiene and sanitation, elementary nursing, drugs in every day use, poisons and antidotes, and camp sanitation and hygiene. Instruction and drill was given by the chief master in arms in accordance with the *Drill Regulations and Service Manual for Sanitary Troops, U. S. Army, 1914,* which included litter drill, improvisation of litters, ambulance preparation, methods of removing wounded without litters and loading of ordinary wagons for transportation of wounded, ceremonies, honors and salutes, tent drill, and field exercises. Instruction was given daily from 9 a. m. to 12 m. and from 2

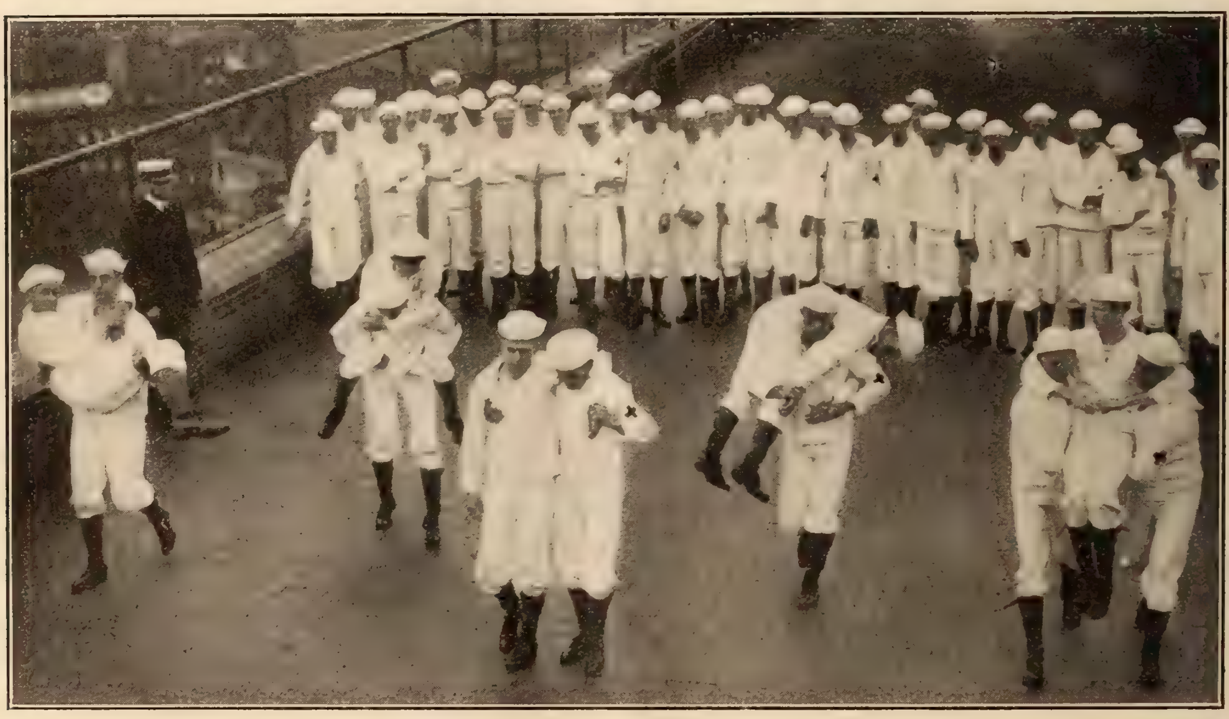

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Fig. 1.—Y. M. C. A. Naval Hospital unit training. Men at practice in methods of carrying the wounded.

to 5 p. m. from Monday, June 11th, to Saturday, July 7th, inclusive, except Sundays. Medical and first aid instruction was given in the morning periods, military and litter drill in the afternoon. Those enrolling attended all periods of instruction and drill. All equipment, including uniforms, was furnished free for the period of instruction, remaining the property of the sanitary training detachment. All applicants for enrollment passed the regular army enlistment examination which was given by the commandant and his staff at the Central Branch Y. M. C. A. the week of June 4th-9th.

This was much more than an ordinary first aid course. In addition to the specified curriculum an extra course in the French language was followed for three weeks. The men were taught the use of the pulmotor and of the lung motor for gas asphyxiation, which is a little different than for water asphyxiation, though instruction was also given for this. Commandant Rainer, of the Life Saving Corps, taught all the holds and breaks of the United States Life Saving Service. A representative of a manufacturer of artificial limbs explained the necessary steps for measurement of the stumps following healing after amputation. A practical demonstration of some of their future duties was given when the class took a two day camp trip, setting up camp, providing for sanitation, cooking, water supply, etc. A representative from a truss company gave instruction regarding the proper use of these appliances. A trip was taken to a hospital to witness operations and the administering of anesthetics. The men were allowed to assist in the taking of x ray pictures and details of the process were explained to them. A naval surgeon gave two lectures on naval discipline, emphasizing points in moral and mental hygiene. Doctor Price and Doctor Izard gave enlightening and sensible addresses regarding venereal disease. The officer in charge of the drills, the physical instructor of the Central Branch of the Y. M. C. A., Mr. Erle V. Painter, was mustered into the army service with the title and rating of chief master in arms for the term of the course and was mustered out at its conclusion. Colonel Keane, in cooperation with the Red Cross, sent his official approval and awarded this temporary commission.

The Red Cross particularly approved this course, for the training detachment of the Red Cross, the army, and the navy need a certain number of trained men; at least five per cent. of the men serving must have been trained. The army and navy will recognize those who were not able to get into the unit, only fifty men, as eligible for the Medical Department. After the receipt of Mr. Painter's commission, Major Brinsmade, the chief of the unit, requested of Rear Admiral Usher, commandant of the Navy Yard, that the Central Branch of the Y. M. C. A. be made a naval training station for the purpose of training men for this proposed naval hospital unit, the first of its kind to go abroad. However, the plan as outlined appealed so much to the young men who heard of it that seventy were enrolled and completed the course. Major Brinsmade selected fifty of the men after they had completed their training and the others were free to enlist on their own responsibility with every possibility of being eagerly accepted for the Medical Department and made noncommissioned officers. The selected fifty were transferred to the Navy Yard, where they continued to receive special training in different naval hospitals as orderlies. They are of course under orders to report for sailing to the port selected

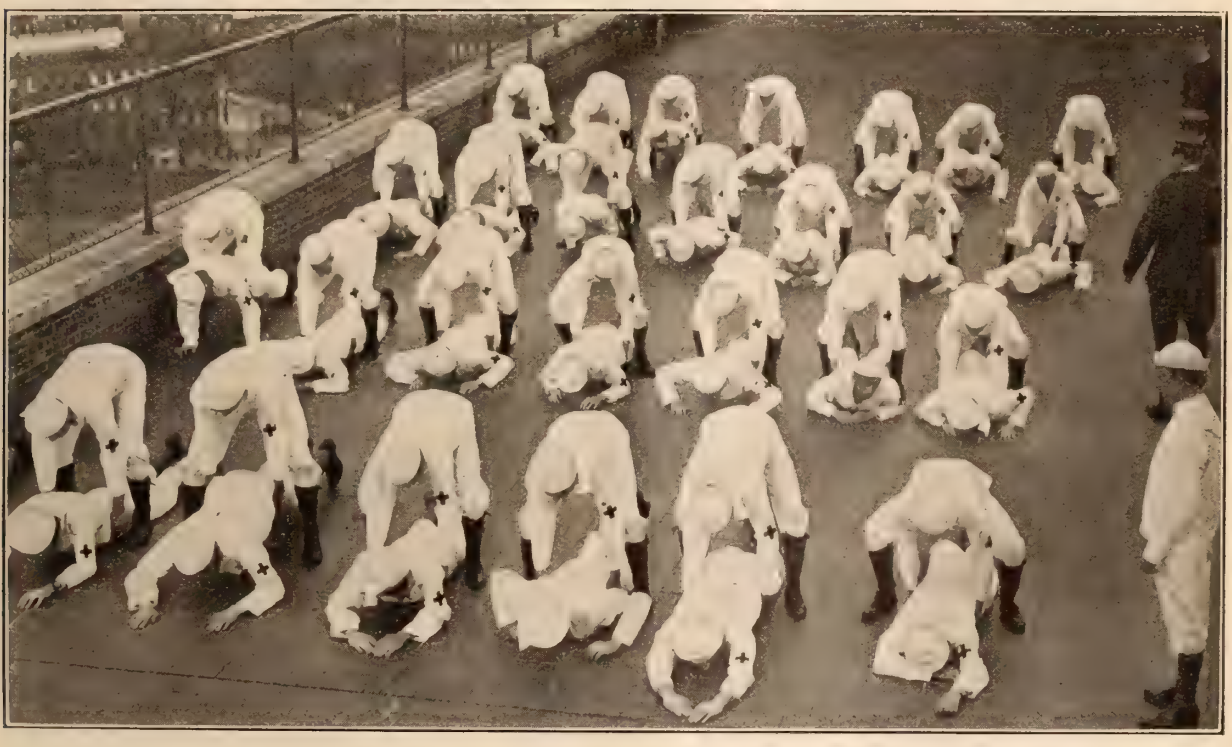

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FIG. 2.—Y. M. C. A. Naval Hospital unit training. Class in resuscitation.

where they will establish a hospital, as the medical units have done, and proceed to do the deeds and acts of trained, efficient aids of the Medical Department of the United States Navy. Very shortly they will go abroad where the naval base hospital will be stationed, probably somewhere near the coast in France. This hospital will care for the sailors, the marines, and civilian patients, if necessary, in the place where they are stationed.

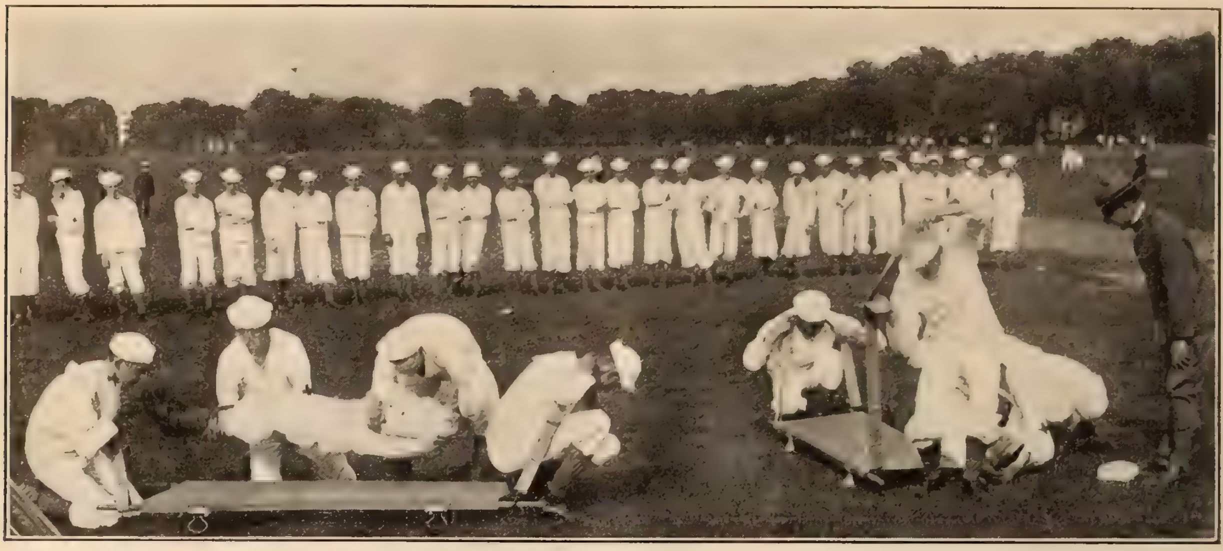

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FIG. 3.—Y. M. C. A. Naval Hospital unit training. Stretcher bearers drilling.

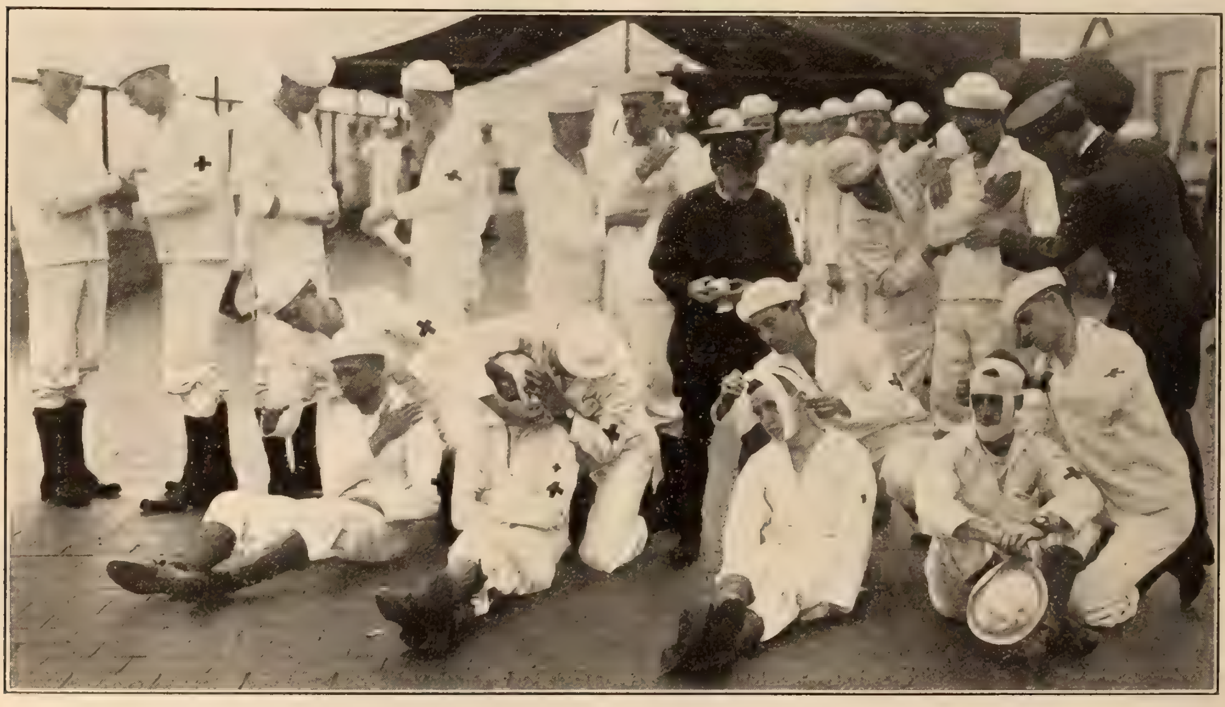

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FIG. 4.—Y. M. C. A. Naval Hospital unit training. Class in bandaging.

They are all young men, the average age being from twenty-five to thirty years; a few are under twenty-five. They are enthusiastic, loyal, splendid fellows. Not the least that can be said of them is that they are worthy representatives of the Young Men's Christian Association. Their religion is not a thing they talk of unduly, but they are anxious to show it in their lives and in the service they perform. As one of them expressed it, "True religion is best expressed in an efficient life." The wounded, the suffering, and perhaps the dying will have cause for gratitude that such as these have been enabled to come to their help and relief and to console and comfort those who are frightened at the imminence of death. The scope of the instruction and the earnestness of the men guarantee a truly efficient and business like unit.

NAVAL HOSPITAL APPRENTICES TRAINED AT NEW YORK COLLEGE OF PHARMACY.

The trustees of the New York College of Pharmacy, Columbia University, tendered to Rear Admiral Braisted, surgeon general of the navy, the use of their institution for the instruction of hospital apprentices during July, August, and September. The offer was accepted and Assistant Surgeon L. R. Stamm, U. S. N., was ordered to the school and in cooperation with Professor George C. Diekman, associate dean, drew up a schedule of instruction along the lines required by the navy. Three hundred apprentices enlisted for four years were ordered from their homes to the school to take the course of instruction. Lectures were given daily from eight in the morning to four in the afternoon after which the men were drilled for two hours in Central Park. Instruction was given by Doctor Stamm and a special faculty composed mainly of the faculty of the College of Pharmacy and of schools connected with Columbia University. The course embraced instruction in anatomy and physiology, first aid and emergency surgery, bandaging, nursing, hygiene and sanitation, pharmacy, materia medica, chemistry, and toxocology. Apprentices who passed a satisfactory examination were promoted at the close of the term to the rank of hospital apprentice, first class. Their duties will be to act as orderlies and nurses.

NAVAL HOSPITAL APPRENTICES AT THE NEW YORK COLLEGE OF PHARMACY.

Three hundred naval hospital apprentices were given a special course of instruction for three months this summer, at the New York College of Pharmacy, the use of which was tendered to the Government free of charge.

MEDICAL NEWS FROM WASHINGTON.

Work and Personnel of the Division of Food.—Promotion for First Lieutenants, Medical Corps.—Status of Dental Officers Raised.—Two Naval Hospital Ships Acquired.—Assignments to Special Duty in the Sanitary Corps.—Special Method of Recording Prevalence of Communicable Diseases.—Major de Schweintz on Special Ophthalmological Work.—Plans for Treatment by Hydrotherapy in the Army.—New Edition of the Medical Compend.

WASHINGTON, *October 9, 1917.*

The division of food, which has been organized in the office of the surgeon general of the army, will carry on its work in cooperation with the Quartermaster Corps, which has to do with the procurement, care, issue, and preparation of food. A food survey of every camp and cantonment is being conducted by specialists in nutrition, and a study is being made of the soldiers' rations and the methods of their preparation. The purpose is to carry the work further than prevention of sickness through improper food. It is to recommend changes to provide more healthful and nutritious food in an appetizing manner. Between fifty and sixty officers will be engaged in making the food surveys, and twice that number of enlisted men to assist in the work. Major John R. Murlin, Sanitary Corps, national army, is at the head of the division and in charge of the work. He is an expert in nutrition, and comes to the Government service from Cornell Medical College, New York. He is assisted in the division by Major Philip Shaffer, Captains Caspar W. Miller, Walter H. Eddy, and Arthur W. Dox, and

First Lieutenants Arthur Thomas and N. R. Blatherwick, all of the Sanitary Corps, national army. Dr. Alonzo E. Taylor, Dr. Graham Lusk, and Dr. Francis G. Benedict, are connected with the division in an advisory capacity.

* * * * *

One of the bills affecting medical officers that passed Congress before adjournment proposed to relieve first lieutenants in the medical services of the regular army and national guard from the restrictions upon promotion. The bill provides that, during the existing emergency, first lieutenants in the regular army and national guard Medical Corps shall be eligible to promotion to captain upon an examination which shall be prescribed by the secretary of war, and that hereafter the Dental Corps shall consist of commissioned officers of the same grades proportionally distributed among such grades as now or hereafter provided for the Medical Corps, who shall have the same rank, pay, and allowance of officers of corresponding grades in the Medical Corps, including the right to retirement as in the case of other officers. It is provided, further, that there shall be one dental officer for every 1,000 of the total strength of the regular army. The bill also provides that all laws relating to the examination of officers of the Medical Corps for promotion shall apply to officers of the Dental Corps.

* * * * *

Upon the recommendation of Surgeon General Braisted, of the navy, the Secretary of the Navy has authorized the acquisition of the merchant liners *Saratoga* and *Savannah* for use as naval hospital ships, and instructions have been given that these vessels shall be specially fitted out for their important function, the work to be done at navy yards.

Each vessel will have a capacity of about 300 beds. The decks will be partitioned off and equipped for use as operating rooms, sterilizing rooms, diet kitchens, x ray room, and laboratory, and complete outfits will be provided for the care of sick and wounded at sea. These vessels will be of the greatest importance in the plans of the naval medical authorities in caring for those who need treatment on the way to hospitals on land. The *Solace,* the present hospital ship, is totally inadequate, of course, for the demands upon such a vessel under present conditions of war. The specially designed hospital ship, authorized by Congress last year and under construction at the Philadelphia navy yard, will not be completed for some time, inasmuch as the work at that yard is mainly applied in other directions that are considered of greater military value. The vessel is still officially known as Hospital Ship No. 1, no name having yet been selected. The naval medical officers appreciate that it would be difficult to get a more suitable name than *Solace,* but among the suggestions advanced are *Hygeia* and *Comfort.* Another suggestion is that the ship be named after Surgeon General Barton, who was the first head of the naval Medical Corps.

* * * * *

The following officers of the Sanitary Corps, national army, who have been on duty at New York in connection with gas defense, have been transferred to Washington for duty in the division of gas defense in the surgeon general's office under Major Bradley Dewey: Captain William S. McKinney, and First Lieutenants Marshall G. Cochran, Arnold C. Dickinson, Henry L. Huenink, John S. Little, Lynn A. Loomis, Oscar L. Mahlman, Raymond V. Puff, Edgar P. Romilly, Edmund J. Shattuck, Ralph W. Thomas, Holland R. Wemple, James S. Wolf, John S. Zinsser, and Hamilton Merrill.

Later Captain McKinney and Lieutenants Cochran and Thomas were sent to Philadelphia for duty to inspect apparatus being made at the works of the Hero Manufacturing Company, and Lieutenant Little to Astoria, N. Y., for similar duty at the Astoria Light, Heat, and Power Company.

* * * * *

In accordance with special plans made by the surgeon general of the navy, special efforts are being made to continue the excellent record attained with the maintenance of health in the naval establishment, and in this connection Surgeon General Braisted has issued a letter to all naval medical officers describing the means for the prevention and control of communicable diseases. The advent of winter makes it imperative to exercise unrelaxing vigilance, and the communication goes into details as to what might be regarded as measures of prevention, such as the provision of sufficient floor space, air space, ventilation, and so on. The sanitary division of the bureau of medicine and surgery lately has amplified its graphic record of prevalent communicable diseases by means of pins with heads of different colors to represent the diseases—green for mumps and blue for measles, for example—so placed as to show the number, character, and location of the ailments and further classified into squares that indicate periods by months. This is applied to every hospital and training station, and the same plan has been adopted to record diseases on board ship. It is possible by this method to ascertain the extent and nature of communicable diseases in the service.

* * * * *

Major George E. de Schweinitz, Medical Reserve Corps of the army, has been placed on duty at Philadelphia, for the purpose of compiling a handbook in ophthalmology for the use of the surgeon general. Upon completion of this duty, he will proceed to Washington for duty in the surgeon general's office in the division of ophthalmology, section of surgery of the head.

* * * * *

Plans have been made for the treatment by hydrotherapy of cases in the army that may require such treatment, and selected officers are being given instruction in the system. Among the first to be placed under instruction are Captains Fred J. Fassett and Ralph R. Morrall from the surgeon general's office at Washington and First Lieutenant George W. Van Gorder from Camp Meade, Annapolis Junction, Md., who have been sent to Robert Brigham Hospital at Boston.

* * * * *

A new edition shortly will be issued by the bureau of medicine and surgery of the Navy Department of the *Medical Compend* for masters of the naval auxiliary service, the former edition having become exhausted. Several chapters, notably those on quarantine and disinfection, have been rewritten. An important addition is a list of quarantine stations.

Editorial Notes and Comments

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EDITORS
CHARLES E. DE M. SAJOUS, M.D., LL.D., Sc.D.,
Philadelphia,
SMITH ELY JELLIFFE, A.M., M.D., Ph.D.,
New York.

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THE RAINBOW DIVISION.

Twenty-seven thousand troops from twenty-seven different States of the Union passed in review before General Mann, commander of the Forty-second Division of the United States Army, on Hempstead Plains on October 7th. This is the largest body of American troops that has been assembled under arms since the days of the Civil War. This one division contains two thousand more men than there were in the entire army of the United States in 1897. These men marched in review with the steadiness and precision of veterans. The assembling of the constitutent forces was done without the slightest confusion or delay, giving evidence of the goods results which have followed the training of the divisions at Camp Mills. The men were in the pink of physical condition, clear eyed, brown of face, alert, and showing that perfect health without which an army is useless. With all this force, there was but one regular army surgeon, the division surgeon, but so well organized was the Medical Department that with the aid of the national guard surgeons, the sick list was reduced to an almost negligible figure.

When we consider the appalling devastations of typhoid fever, smallpox, and other contagious diseases wherever fresh levies of troops have been congregated in previous wars, we realize how much the army owes to medicine. A hundred years ago one half of this command might have been on the sick list from smallpox. Twenty-five years ago, probably twenty-five per cent. of these men would have suffered from typhoid fever, while measles and other contagious diseases would have reduced the total effective force another ten or twenty per cent. With vaccination against smallpox, with prophylactic injections against typhoid fever, with segregation and ventilation as measures against measles and similar contagious diseases, it was possible to gather these men from every section of the United States, subject them to a complete change of diet and environment and to rigorous physical training, and still keep the sick list at a figure far below that which obtains in the average urban population under normal conditions.

The review of the Rainbow Division was not only a testimonial to its efficient military organization, but showed that in its medical aspects the organization of the army has more than kept pace with the improvements in military science. The liberal attitude of Congress toward the Medical Department is amply justified in the results shown in the mobilization of this first draft of the national guard regiments, which is so soon to carry our flag to France.

COLON BACILLUS BRONCHOPNEUMONIA.

As early as 1887, Sevestre pointed out certain instances of bronchopneumonia occurring in children of one or two years of age who had been given a bad diet and presented fetid diarrhea and infectious enteritis. In 1892, Lesage demonstrated that these pulmonary lesions during life depended exclusively on colon bacillus infection, the organism having invaded the lungs. Lesage reported cases in which during life the pulmonary process was accompanied by hypertrophy of the spleen, and other cases in which he obtained pure cultures of the colon bacillus from the pulmonary foci. In some there were suppurating foci in which it was found that Bacterium coli had acquired pyogenic properties which it retained when inoculated in animals, a fact which was substantiated by Cumston [Thesis, Geneva, 1893]. Gaston and Renard have also met with these so called intestinal bronchopneumonias in which they obtained the colon bacillus alone or associated with the Bacillus subtilis, Bacterium termo, and other insufficiently recognized bacteria, by means of capillary puncture of the lung during life. Since these writings these cases have been reported in fairly large numbers. They represent the torpid type of bronchopneumonia with a temperature sometimes ranging between 101.5° and 103.5° F., but usually it is replaced by hypothermy. Death occurs in hypothermy, sometimes of excessive degree, and in algidity, recalling the final act of infantile cholera.

It is probable that a certain proportion of cases of colon bacillus bronchopneumonia are contracted by direct inhalation of the bacillus from soiled dried diapers, a condition of affairs often encountered among the very poor. When infection of the lung is due to the transference of the colon bacillus from the intestine by the circulation, a special variety of the organism is probably in play. Lemaire has shown that there are two varieties of this bacillus, the first of which he distinguishes by A. It is an attenuated form, only killing rabbits at a minimum dose of two c. c. broth culture. This bacillus pullulates in the spot where the injection has been made, such as the pleural cavity, peritoneum, or cellular tissue, and never gives rise to a generalization. It is the local infection which kills. The second variety, which Lemaire designates by V, is very virulent, 0.0001 c. c. killing a rabbit in from eighteen to thirty-six hours. The local reaction is slight, but generalization is such that the blood is actually laden with the organism. These two organisms are without question the colon bacillus as they are typical in cultures and give rise to all the reactions common to this organism and they are both agglutinated by the anticolon bacillus serum of the horse. The type A is only slightly motile, while type V is endowed with very active movements. To explain this difference in generalization, Lemaire concludes from his experimental work that the hepatic cell filters the blood, thus preventing the organism from invading the body. When the bacilli are mildly virulent they are retained in the hepatic parenchyma and do not enter the circulation. On the contrary, when the virulence is excessive, the purification of the blood is incompletely accomplished by the liver and a small quantity of the bacilli continue to circulate in the blood.

That the organism has been grown in pure culture from the fluid withdrawn by capillary puncture of the lungs during life in a number of cases is sufficient to show conclusively that colon bacillus bronchopneumonia is not a myth and it is clear that this bacterium is capable by itself of producing the pulmonary lesions. These colon bacillus bronchopneumonias are relatively frequent and effect a rather special clinical evolution, but it is very probable that in many cases the infection of the lungs takes place by the inhalation of the germ and not by the transference from the intestine by way of the general circulation as has been generally maintained.

TRACHOMA AND THE ARMY.

The menace of trachoma in civil life, with all its baneful effects on the vision of the affected individual and the serious impairment of his earning capacity, is relatively small when compared with the perils that it involves when it invades an army. A warning is sounded by Surgeon John McMullen of the United States Public Health Service [Reprint No. 408 from *Public Health Reports*, July 13, 1917] on the dangers of enlisting recruits affected with the disease. It is very timely and deserves our most earnest consideration. It would seem that a great many cases of the disease have been brought to France by African soldiers and sailors, and though quick isolation and disciplinary measures that can be easily applied in the army succeeded in stemming the tide of the contagion, the disease is evidently spreading among the civil population of the large cities causing a great deal of anxiety to the health authorities.

That we have a great deal of trachoma in this country was proved twenty years ago when through the efforts of the American Ophthalmological Society the surgeon general of the Public Health Service succeeded in having the disease classified as "dangerous contagious" within the meaning of the immigration law of 1891. It would be, however, erroneous to assume that all our trachoma is of foreign importation: the investigations of the surgeons of the United States Public Health Service have proved beyond doubt the prevalence of the disease in the native populations of Minnesota, Kentucky, Indiana, Georgia, the Carolinas, the Virginias, etc., where it runs in school children, adults, mill workers and others, from 0.08 per cent. in the northern counties of Georgia to 7.5 per cent. in the mountain sections of Kentucky; not to speak of the native Indians, who on some reservations give as high a percentage as sixty-eight or even ninety. There is no doubt that the disease is to be found in certain portions of the population practically in every State of the Union. For the last few years the Public Health Service found it necessary to establish six ophthalmological hospitals in the trachoma infected sections of the country for the institution of preventive measures and the treatment of the disease wherever found. It is clear then that the danger of its being carried by new recruits, no matter from what part of the country they may come, is ever present, and this should constantly be kept in mind by examiners.

Unrecognized and untreated trachoma causes some ocular defect in seventy-five to ninety per cent. of its victims, ranging from a partly remediable refractive error to complete blindness. There are indeed few sufferers from chronic eye affections seen both in private practice and in the eye clinic who present a more pathetic sight than those with chronic trachoma, with their corneal pannus, inverted lids and cilia, ulcers of the cornea, and the various degrees of impaired vision. These individuals are terribly handicapped in their struggle for existence, and are never able to keep up with their fellow men in the race of life. The disease is chronic, very stubborn to treatment, and dangerously contagious for a number of years; in fact, even physicians in spite of all care may infect their own eyes. Cuignet, the discoverer of skiagraphy, lost an eye through trachoma. To be sure the clinical diagnosis of trachoma is at times somewhat difficult, especially in the cases where the infection begins so quietly and stealthily as to elude the attention of the patient himself. The more or less advanced cases present no such difficulties, especially in the presence of the characteristic sequelæ, as already pointed out. However, to be on the safe side it should be made incumbent upon all the examiners to evert the eyelids of all the soldiers and applicants for enlistment, including in the eversion the retrotarsal fold, where the trachomatous granules are most frequently encountered. Patients in whom the conjunctiva of the lids is not normally smooth and pink, especially if there is redness or discharge in the retrotarsal fold, should be examined by an expert eye man. Applicants with curable trachoma, instead of being rejected immediately, should be subjected to treatment for a certain length of time, and then reexamined, to determine whether the resulting visual defect is a sufficient cause for rejection. Thus the danger of introducing the contagion is eliminated and probably a good soldier gained.

CIGARETTE SMOKING AND "SOLDIER'S HEART."

"Soldier's heart" or "irritable heart" is the name applied to a condition common in war service. It shows itself in an undue breathlessness on exertion which seriously interferes with military efficiency. It is often accompanied by precordial pain, palpitation, giddiness, and exhaustion. Investigation has been undertaken to ascertain if possible whether cigarette smoking is a potent cause of the condition. Doctor Parkinson, of London, and Doctor Koefod, of Harvard, publish in the *Lancet,* August 18, 1917, the results of such a study. The difficulties of complete control of such an investigation were too great to admit of more than a study of the immediate effect of cigarette smoking upon the circulation and the reaction of these same patients to exertion, comparing these points with the same phenomena in healthy cadets in training. The general results of previous tests gathered from literature agree in the noting of a distinct change in blood pressure and pulse rate produced by smoking, usually an increase.

The present investigation confirms the effect upon blood pressure and pulse rate, showing increase immediately upon smoking in the case of both controls and patients. There was a rise in the diastolic pressure where the systolic pressure rose in all cases but one. It is suggested that a fall in blood pressure, which has been recorded in the past, may be due to toxic conditions which sometimes present themselves, though it is not invariably the rule there. The respiratory rate was but little affected in the controls and showed no change, but breathlessness after exertion was evident to the observers and was sometimes admitted by the subject himself. Thus breathlessness was increased in twelve of the twenty patients on exertion after smoking, while with the controls breathlessness was not at all evident in the exertion tests before smoking but was detected and acknowledged by two of them after smoking. This increase of breathlessness without demonstrable increase in the rate of respiration is due probably to increased amplitude of respiration. The authors conclude therefore, since these effects are observed in both healthy smokers and more plainly in those suffering from "soldier's heart," that excessive cigarette smoking is an important contributory factor in the breathlessness and precordial pain of many of these patients. Several facts exclude it from consideration as an essential cause. First, the history of the case usually furnishes an adequate cause. Then the symptoms in about fifty per cent. of the cases are of several years' standing, or the patients report that they have always been "short winded." The same symptoms are found among nonsmokers and, moreover, it is not found that these patients, as a class, smoke more than the average soldier. Yet the authors in their conviction of the contributory effect of smoking upon these symptoms, and in the incompleteness of knowledge concerning the later effects of excessive smoking, say with Aikman that they would certainly "hesitate to administer any drug having as marked an effect over such periods of time."

VENEREAL DISEASES IN CANADA.

Whether lay and professional attention has for the past three years been more directly leveled on the prevalence of venereal diseases in Canada or whether the incidence of those diseases is actually increased, it is certain that the whole question is under closer scrutiny than ever before in that country. Not only professional men and moralists, but real, live newspaper men have aligned themselves in combat to fight this menace. Something really new and vitally interesting as to how and where these diseases are contracted was presented in the paper of Capt. Gordon Bates, C. A. M. C. (Toronto), prepared in collaboration with Capt. Morris McPhedran and Capt. Donald Frazer and read before the annual meeting of the Canadian Public Health Association in Ottawa, September 27, 1917. In an investigation made within the past few months and extending over a period of four months, some 417 cases were critically analyzed. The report showed that seventy infected men were under twenty years of age; 144 men between twenty-one and twenty-five years; 260 were single men; thirty-six were married men. In 127 cases the woman in the case received no money, and only forty-four of the women were classed as professionals. In the great majority of the cases the women were working in poorly paid vocations; they were domestics, waitresses, theatre ushers, saleswomen, etc., of easy virtue. Alcohol, formerly considered and condemned as a handmaiden of this particular vice, does not appear to have been much in evidence, possibly because prohibition prevails in practically all the Canadian provinces with the exception of Quebec, although no province is absolutely teetotal; in ninety-seven cases, either one or the other, or both, had toyed too freely with the flowing bowl. The girl's boarding house or apartment was responsible for some sixty cases of infection, while in 119 cases, out of doors, public parks, etc., had their appeal. This possibly might mean a greater incidence of infection in the summer months, and points to better police surveillance as a preventive measure.

A particularly striking and outstanding point in this report is what might be called the "respectable" element in the spread of infection. The professional prostitutes appear to be in a decided numerical minority. Professional women might very well be regulated, but they comprise such a limited quota in comparison with the much larger, yet more dangerous, class of "respectables." It is the professional's business to take care of herself; very often the other is altogether innocent as well as ignorant. The finger may be placed upon the latter as the cause of the increased incidence of these diseases. The great and urgent problem, not alone in Canada, but in other countries as well, is the intelligent handling of the wayward and ignorant.

It might be considered expedient to place professionals in quarantine, but that only would be nibbling at the menace. To place "respectables" in quarantine who constitute the larger proportion of the infective sources, seems altogether impracticable by reason of the great numbers. Some system, however, of compulsory notification on the part of the physician in attendance, merely that a public health nurse might be detailed to the infected girl to see that a line of treatment is properly carried out and precautions taken to prevent the spread of further infection, might be considered a rational method of dealing with the female end of the problem. For the man who knowingly infects an innocent girl there should be some punishment. All cases in the male should be reported to the medical officer of health, so that he may be directed to proper professional treatment, if he is not already under that treatment. To quarantine all cases is at present utter nonsense. Too much publicity is not going to check this evil, let alone eradicate it.

NATHAN STRAUS'S ACHIEVEMENT.

There are in medicine few more brilliant examples of cause and effect than in the instance of pasteurization of milk and the reduction of the infant mortality. The credit for the widespread application and popularization of the fact of bacterial destruction in milk is all due to the efforts of Nathan Straus. Somehow there seems to be more in this achievement than philanthropy in its usual connotation. A great, broad humanitarianism directed towards that tenderest form of life, the young baby, must have actuated the undertaking. This, to our mind, is the greatest type of real philanthropy: to take the science of the laboratory and to give to the people a definite, practical application by which they may insure the lives of the new generation. The great war emergency is about to take a heavy toll of the present generation; but in the midst of the horror and destruction all minds turn to the future of peace and security which the results of this war must guarantee. The new lives must be more and more jealously guarded. Long live Nathan Straus and the spirit he embodies and may his milk stations, saving and building up lives, increase!

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News Items.

American Doctors Abroad.—According to a London journal, many American military surgeons arrived in England during the fortnight prior to September 22d, and took up duty in a number of hospitals in London and the provinces, and also in France, to which country about fifty of the seventy-five had been sent. These will only attend the military patients in the institutions to which they have been assigned, and they have been so allotted that a number of doctors may be released for work among the civil population. There are now over 900 American medical men serving with the British forces in Great Britain and France.

Changes of Address.—Dr. Frederic S. Mason to 16 Fifth Avenue, New York.

Medical Association of the Southwest.—The annual meeting will be held in Kansas City, Mo., October 15th, 16th, and 17th, under the presidency of Dr. E. S. Lain, of Oklahoma City, Okla. Dr. Fred H. Clark, of El Reno, Okla., is secretary of the society.

Williamsburgh Physicians Increase Their Fees.—At a meeting of physicians of the Williamsburgh section of Brooklyn, Friday evening, October 5th, it was unanimously decided to abolish the fifty cent fee, and that hereafter $1 will be the minimum fee for office treatment.

Ohio State Medical Society.—The following officers were elected at the annual meeting of this society, held in Dayton on September 27th and 28th: Dr. E. M. Huston, of Dayton, president; Dr. E. L. Braumlin, of Dayton, secretary; Dr. H. C. Hanning, of Dayton, treasurer; Dr. O. O. Masters, of Sidney; Dr. A. C. Messinger, of Xenia, and Dr. H. B. Martin, members of the executive committee.

Indiana State Medical Society.—Dr. Joseph Rilus Eastman, of Indianapolis, was elected president of this society at the recent annual meeting held in Evansville, under the presidency of Dr. John H. Oliver, of Indianapolis. Dr. Ludson Worsham, of Evansville, was elected head of the surgical section and Dr. Charles P. Emerson, of Indianapolis, head of the medical section. Next year's meeting will be held in Indianapolis.

Ophthalmologists Serving in the Council of National Defense.—The members of the Subcommittee on Ophthalmology, General Medical Board, Council of National Defense, are as follows: Dr. W. H. Wilmer, of Washington, D. C.; Dr. George E. de Schweinitz, of Philadelphia; Dr. Allen Greenwood, of Boston; Dr. Walter R. Parker, of Detroit; Dr. Nelson M. Black, of Milwaukee; Dr. James Bordley, Jr., of Baltimore, chairman.

Municipal Pasteurization Plant Proposed for New York.—A municipal pasteurization plant, where the city could prepare all the milk for its institutions, has been proposed by Mayor Mitchel in a communication to the Mayor's Committee on Milk, now investigating the high price of that product. The Mayor went further and asked the Committee to consider the establishment of such a plant for handling all the milk used by the community as a measure to fight the ever increasing cost of milk.

Medical Association of the Greater City of New York.—A stated meeting of this association will be held at the New York City Children's Hospital and Schools, Randall's Island, Monday afternoon, October 15th, at three o'clock. The problem of the feebleminded and epileptics will be discussed. Hon. Henry C. Wright, first deputy commissioner of charities, will introduce the subject. Papers will be read by Dr. L. Pierce Clark and Dr. William Burgess Cornell, which will be discussed by Dr. Charles L. Dana, Dr. Clarence O. Cheney, Dr. George H. Kirby, and Dr. Walter E. Fernald, of Waverley, Mass. The institution is reached by ferry from East 125th Street pier.

American Association of Progressive Medicine.—The following officers were elected at the sixth annual meeting of this association, held recently in Chicago: Dr. A. H. Flower, of Boston, Mass., president; Dr. Charles H. Duncan, of New York, first vice-president; Dr. A. S. Tuchler, of San Francisco, Cal., second vice-president; Dr. A. B. Collins, of Linesville, Pa., third vice-president; Dr. M. Mayer, of Detroit, Mich., fourth vice-president; Dr. L. Ottofy, of St. Louis, Mo., reelected secretary and treasurer; Dr. Alice H. Rice, of Las Vegas, N. M., necrologist.

Red Cross Bureau of Medical Service.—The Red Cross War Council announce the establishment of a Bureau of Medical Service of Foreign Commissions to give prompt and expert attention to the requests for medical and surgical supplies received from American Red Cross commissions now at work in France, Russia, Rumania, Italy and Serbia. Requests for additional doctors and nurses for service with these commissions, particularly in France and Rumania, will also be handled by the new bureau. In cooperation with the Medical Advisory Board, the bureau will also render assistance in the solving of many new pathological problems constantly arising out of the war. Dr. R. M. Pearce, of Philadelphia, professor of research medicine at the University of Pennsylvania, is director of the new Bureau of Medical Service.

Colorado Medical Society.—Dr. Edward Jackson, of Denver, was elected president of this society at the annual meeting held in Colorado Springs, September 26th and 27th, and other officers were elected as follows: Dr. P. O. Manford, of Colorado Springs, first vice-president; Dr. J. H. Brush, of Sterling, second vice-president; Dr. B. B. Blotz, of Rocky Ford, third vice-president; Dr. Charles Trueblood, of Monte Vista, fourth vice-president; Dr. Crum Epler, of Pueblo, reelected secretary; Dr. W. A. Sedgewick, of Denver, treasurer. Next year's meeting will be held in Estes Park.

Civil Service Examination for Resident Physician at Iola Sanatorium.—The New York State Civil Service Commission will hold an examination in the near future for the position of first assistant resident physician at Iola Sanatorium for the Treatment of Tuberculosis, Monroe County, N. Y. The position carries a salary of $1,200 a year and maintenance. The examination is open to men only, who are citizens of the United States and licensed physicians of New York State, and are at least twenty-one years of age. Candidates must file applications in the office of the Civil Service Commission not later than October 24, 1917.

69,000 Men in the Army Medical Corps.—The medical department of the army now has an enlisted personnel of more than 69,000 men, compared with 6,600 just before the war. Nearly 13,000 officers had accepted commissions in the Medical Reserve Corps up to October 1st. The Dental Reserve Corps has more than 2,600 commissioned officers and the Sanitary Corps about 240.

In organizing for war work the Surgeon General's office has added sections in internal medicine; medical officers' training camps; medical military instruction; psychology; neurology and psychiatry; surgery; infectious diseases and laboratories; head, eye, ear, mouth, and brain; military orthopedics; special hospitals and physical reconstruction; gas defense; food; office development and filing system.

Senior Military Medical Association.—Carrying out the plan which has already been mentioned in a previous number of the JOURNAL, an organization has been formed of physicians past the age of fifty-five years, known as the Senior Military Medical Association. Physicians under this age whose hospital or college appointments or whose physical condition prohibits their entry into active service are also eligible for membership. The following officers have been elected: President, Dr. W. W. Keen; vice-presidents, Dr. James M. Anders, Dr. John B. Deaver; secretary-treasurer, Dr. C. H. Longenecker; censors, Dr. S. S. Stryker, Dr. I. R. Strittmatter, Dr. William N. Johnson, Dr. T. H. Carmichael, Dr. E. E. Montgomery, chairman; executive committee, Dr. James M. Anders, Dr. Charles W. Burn, Dr. Judson Daland, Dr. John B. Deaver, Dr. W. W. Keen, Dr. C. B. Longenecker, Dr. Joseph B. Neff, Dr. McCluney Radcliffe, Dr. John B. Roberts, Dr. J. Madison Taylor, Dr. W. B. Van Lennep, Dr. William Duffield Robinson, chairman; Dr. Alexis Dupont Smith, secretary. The dues are one dollar a year.

Personal.—Dr. James C. Egbert, director of the extension teaching and summer sessions departments of Columbia University, was officially installed as president of the Long Island College Hospital, Tuesday, October 16th.

Dr. Herbert C. Moffitt, dean of the medical school of the University of California, has been commissioned a major in the Medical Officers' Reserve Corps and has been assigned to active duty at the Army Hospital at San Antonio, Texas.

First Lieutenant Charles S. Goodwin, Medical Officers' Reserve Corps, is assigned to active duty and will proceed to New York and report in person to Major Leon T. Le Wald, Cornell Medical College, for a course of instruction in military röntgenology.

First Lieutenant Elbert E. Cone, Medical Reserve Corps, is assigned to active duty and will proceed to Fort Riley, Kan., and report in person to the commandant, medical officers' training camp, for a course of instruction.

First Lieutenant Henry A. Fisher, Medical Reserve Corps, is assigned to active duty and will proceed to Camp Upton, Yaphank, Long Island, N. Y., and report in person to the commanding general thereof and to the commanding officer of the base hospital for duty in connection with venereal diseases.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

THE TREATMENT OF BOILS.

By Louis T. de M. Sajous, B. S., M. D.,
Philadelphia.

Inoculation of a hair follicle, sebaceous gland, or possibly a sweat gland with Staphylococcus pyogenes aureus is held to be usually the initial step in the development of a boil. Emphasis has been laid on boils consisting in their early stages of a small superficial pustule which is generally pierced by a hair. Increasing recognition is, however, being given to the fact that the lesion may start in a minute abrasion permitting entrance of microorganisms, without involvement of any of the glandular structures of the skin. It is also admitted that varieties of staphylococcus other than that mentioned, or even different types of organisms, may in a minority of cases constitute the exciting cause. Local traumatism or irritation of the skin, as by a worn, roughened collar at the back of the neck or other articles of clothing capable of chafing the skin, uncleanliness, and occupational irritants such as tar products and paraffin oils are frequently important factors in the development of boils, either so injuring the skin as to facilitate entrance of germs from the exterior, or greatly hastening the extension of the lesion, after infection has occurred, through the reduction of tissue resistance they entail. Exaggerated efforts at absolute cleanliness are by some likewise believed a possible factor, excessively frequent bathing and too vigorous rubbing of the skin apparently acting as a traumatic cause. Heat sufficient to induce sweating, if persistent and combined with local friction, seems markedly to facilitate the implantation and development of bacteria in the skin.

Conditions causing a reduction in the resisting powers of the system as a whole are equally influential in promoting furuncular development, and since they are often less easily eliminated than local factors, are apt to result in successive crops of boils, and may add to the disturbance an unusual element of danger. Among such factors are chronic nephritis, diabetes, anemia, acute febrile infections with debilitating aftereffects, alcoholism, and insufficient food. Overwork or undue stress, physical or mental, is clearly a predisposing influence, the resulting excessive consumption of pabulum apparently undermining the defensive resources of the organism.

In the relatively few instances in which a solitary furuncle is seen by the practitioner in its early stage, i. e., as a small, superficial pustule, one of a wide variety of methods may be applied in an attempt to shorten its course. The old fashioned procedure of using a warm, moist poultice to make the boil mature sooner and bring nearer the appropriate moment for incision cannot be classed with the abortive methods of treatment, and probably favors the inoculation of the surrounding skin. Better results are to be obtained by the immediate use of antiseptics, thus seconding the efforts of the tissues themselves to limit the morbid process. The most direct procedure is manifestly to bring a germicidal agent into immediate contact with the infecting bacteria, thus radically removing the caúse of the boil. Upon this principle are based the various "abortive" methods of cauterization of the centre of the furuncle. Thus, Unna, 1915, considers complete destruction of the invading bacteria and pus with a hot metallic point the best plan of treatment, as there is no subsequent spreading of the infection. As the bacteria causing the boil are apt to collect around a hair follicle in a tubelike formation, he advises that the precise direction of the follicles be ascertained in each case before the hot needle is introduced. Schuele, 1914, asserts that any boil can be aborted within the first two days by passing a red hot needle or platinum cautery tip through its centre. He first injects novocaine beneath and then into the furuncle. Aening has pointed out, however, that the pain attending such cauterization is less than that of incision, and also that when the proper depth has been reached by the cautery, the special pain due to the boil promptly ceases. According to Schubert, 1914, who advocates use of the thermocautery in boils in infants, the procedure is advantageous in that if any pus should subsequently form, it could issue freely, the aperture not closing up too soon as is often the case with a small incision.

For the abortive treatment of a boil through chemical antisepsis, pure phenol has for many years been a favorite resource. Antonewicz, in boils only one or two days old, advised melting a crystal of phenol on the tip of a probe by heat and then pressing it on the furuncle with slight rubbing. In boils of longer standing he did not claim an abortive effect, but held that the procedure would render any subsequent suppuration painless. Probably a more effectual method is to dip a pointed matchstick or needle into liquefied phenol and introduce it deeply into the centre of the furuncle, through the small pustule at its apex. Preferably this pustule should be pricked and its cavity cleaned out with a bit of sterile cotton before the matchstick is passed more deeply into the furuncle. According to Voerner no other treatment gives results as good as this one. It certainly cannot be claimed, however, that this procedure alone will regularly abort the lesion. Probably the chances of securing this result are improved by the added assistance of an antiseptic external dressing.

Recently Willard Bartlett recommended, implying that some cases will be aborted by the treatment, frequent exposure of the boil to the direct rays of the sun or of an ordinary incandescent bulb. Whether the lesion is still in its early stage or has already required incision, he exposes it to a fifteen watt lamp placed sufficiently close to produce an agreeable warmth locally. A green metal household shade is used to protect the surrounding skin from excessive irritation. A vaccination shield or other protective device is also employed to exclude any further harmful traumatism and the macerating effect of a dressing, which promotes reinoculation elsewhere.

An additional form of abortive treatment, in which a chemical disinfection of the central bacterial focus is secured with the aid of an electric current, has been recommended by Marcus. Having sought out the most sensitive follicle, he introduces a fine epilation needle connected with the negative pole of a battery. The initial current of one or two milliamperes is gradually increased to ten milliamperes, and the needle worked in by a rotary movement. Nascent hydrogen is liberated in the boil from the negative pole and bubbles out, carrying with it all free material. After from one to three minutes the needle is taken out, any discharge removed from the affected area, and the needle then reinserted in connection with the positive pole. The current being increased to ten milliamperes, oxygen and ozone are set free from this pole and disinfect the lesion, after which the current is reversed again to generate hydrogen and clean out any remaining débris. The treatment is repeated twice daily, and according to its sponsor procures prompt subsidence and healing.

(*To be continued.*)

Serum Treatment of Epidemic Meningitis.—Simon Flexner (*Journal A. M. A.*, September 8, 1917) says that in practice one should not wait to give the serum until a positive culture or microscopic examination has been secured, but should administer it at once when a turbid fluid is obtained in a case with suggestive clinical symptoms. The initial dose for an adult should not be less than thirty mils. By the end of twenty-four hours the positive bacteriological proof of the nature of the infection can be secured and if the case is one of epidemic meningitis two or three doses more of serum should be given at intervals of twenty-four hours. This should be done quite irrespective of any favorable outlook in order to guard against relapse in cases which respond to the first dose or two. From four to six doses are usually required in the average case. When cases are seen later or when the onset is violent, it is well to repeat the serum at twelve hour intervals during the first day. In such cases, also, the average total number of doses required is higher than in the mild types, averaging from six to ten. In very severe and protracted cases it may be necessary to continue the serum for long periods of time. Doses as high as forty to sixty mils may be administered at one time, and in the rare instances of general blood infection one may give forty to sixty mils intravenously with benefit. The administration of serum intraspinally should be continued until the temperature has remained normal for two days or more. The administration of each dose of serum should be preceded by the withdrawal of cerebrospinal fluid to an amount greater than the dose to be injected. The needle should be inserted in the midline at the space nearest a line connecting the iliac crests and fluid allowed to flow out until it comes at the rate of three or four drops per minute. The serum should then be injected very slowly, after warming to body temperature, by the gravity method with an elevation of only twelve to fifteen inches. From five to ten mils less serum should be given than the bulk of the spinal fluid which was removed. From ten to twenty minutes should be taken for the injection of the dose and one should watch the symptoms carefully, especially the blood pressure and respiration. The injection should be stopped at once if either begins to show signs of failing, and it is often well to remove some of the fluid injected. In some cases it may be necessary to aspirate the lateral ventricle and inject serum directly into it by means of a needle passed through a trephine opening or, in young children, through the fontanelle. Serum disease is quite frequent at about the tenth day of treatment, but it is usually harmless and of short duration. Other accidents are rare and the disease is so grave that the possibility of their occasional occurrence in serious form should not deter one from the use of the serum in every case.

Treatment of Burns by Paraffin.—Lieutenant Colonel A. J. Hull (*Canadian Journal of Medicine and Surgery*, September, 1917) describes the following method: The treatment is begun at the first dressing; exceptionally, in cases of septic burns, hot boric acid fomentations are used for two days after using the paraffin for two days. The burn is washed with sterile water and a dry piece of gauze is placed over it. An electric dryer may be used. The burn is then covered with a layer of paraffin at a temperature of 50° C. The temperature may be estimated by waiting until the wax shows a solidifying film upon the surface. Applying the paraffin with a broad camel's hair brush, sterilized in wax, has been found to be a rapid and efficacious method. If a spray is used a large bored metal one should be employed. A thin layer of cotton wool is placed over the wound after the first layer of paraffin has been applied. This is covered with a second layer of paraffin and the dressing is completed by applying wool and a bandage. The burns are dressed daily in the beginning; later, when the burn is clean and only a small amount of pus is formed, the dressing is changed every forty-eight hours. Blisters are not interfered with at the first dressing, but at the second dressing dead skin is cut away. The separation of sloughs is accelerated by applying a layer of jaconet over the wool and paraffin, beneath the wool and bandage dressing. A good formula is:

Resorcin,	1 per cent.;
Eucalyptus oil,	2 per cent.;
Olive oil,	5 per cent.;
Paraffin molle,	25 per cent.;
Paraffin durum,	67 per cent.

Melt the paraffin durum and add paraffin molle and olive oil. Dissolve the resorcin in absolute alcohol, soluble 2 in 1; add the alcoholic resorcin and, lastly, add the eucalyptus oil when the wax is cooled to about 55° C. Betanaphthol has been substituted for resorcin. It is a cheaper antiseptic and is used in 0.25 per cent. strength. Paraffin has been employed in certain stages of the treatment of trench feet. It has also been applied in frostbite and the results have been equally satisfactory.

Supination by Plaster.—P. J. Verrall (*British Medical Journal,* August 4, 1917) points out the frequent occurrence of cases of fracture of the upper arm in which passive supination from a position midway between pronation and supination is impossible as the result of the maintenance of such a position by the splints which are usually applied. This can be overcome by the application of a splint in the following manner: Two pieces of felt are stitched together around the arm and forearm and plaster is applied over each piece. The upper piece extends from the middle of the arm to the middle of the forearm, the lower from the middle of the forearm to just above the heads of the metacarpals, a hole being provided for the thumb. Two pieces of metal are incorporated in each section of the plaster, on either side of the space between the two sections. The metal strips are three inches long and three quarters inch wide with one end turned up and the long ends notched for better retention in the plaster. One piece of metal is fixed to the radial and another to the ulnar side of each section of plaster. When the dressing is hard the pairs of metal hooks are connected by pieces of rubber which are tightened daily until supination is complete as indicated by the fact that the metal pieces are brought around opposite each other. By reversing the plan, pronation can also be obtained. After supination is complete it should be maintained for three weeks before massage is started.

Present Status of Serum Therapy.—Rufus I. Cole (*New York State Journal of Medicine,* August, 1917) says that there are two points of view prevalent among practitioners—great credulity and great skepticism, often combined in the mind of one man. This arises from the desire not to harm their patients and at the same time not to omit any form of treatment which may possibly be of advantage. The lack of necessary time to analyze carefully the evidence leads many to use agents of the biological type which have little or no established value. This is promoted by the zeal of manufacturers to market their products, which leads them to make claims for them which are often grossly exaggerated and not based upon established facts. Certain biological products have definitely established values, demonstrated by use in many thousands of cases under conditions of adequate control. Among these are diphtheria antitoxin, both as a prophylactic and curative agent, and tetanus antitoxin as a prophylactic. In the case of diphtheria antitoxin the conditions are relatively simple, for the organism is not one with many strains which differ among themselves in their biological characters, hence an antitoxin can be produced which is of constant strength and uniform efficiency. Much has been learned in recent years in this simple matter, however, especially the value of its early use as a curative agent and the possibility of securing more effective and more lasting immunity as a prophylactic when it is given in combination with small doses of diphtheria toxin. In the case of tetanus antitoxin as a curative agent, much still remains to be learned and its position is very uncertain. Various antibacterial serums not depending upon the neutralization of a definite toxin, have been tried but they have not proved of definite therapeutic value in general. Two seem to promise well, namely, the serum for the Type I pneumococcus and truly polyvalent antimeningococcal serum. Both must be given early and in large doses, and in the case of the former the type diagnosis must have been definitely established by isolation and identification of the organism. The variety of strains of meningococci, in the immunological sense, renders it essential that the serum to be generally effective shall be prepared from as many different strains as possible and be of high titre for each. The use of antistreptococcus serum is entirely empirical and its efficacy is very uncertain. The serum from convalescent and recovered patients has proved of some value in the treatment of both scarlet fever and poliomyelitis, but much is yet to be learned before definite statements can be made with safety. Finally the various forms of nonspecific serum therapy, including the new method of Swift and Ellis, and the nonspecific protein reactions are all still in the experimental stage.

Use and Abuse of Bone Grafts.—T. P. McMurray (*British Medical Journal,* August 11, 1917) points out that there is no definite period of time after which one can say that the failure of union in a fracture is nonunion rather than delayed union. The only method of being sure of nonunion is to give the fracture the proper treatment with fixation, venous congestion, and the administration of thyroid extract for at least three months. If at the end of such treatment the bone is not united, the case is one of nonunion, and grafting is to be considered. In no case, however, if there has been a discharging wound from a compound fracture, should grafting be undertaken in less than six months after the discharge has ceased. This is because experience has shown that in a certain proportion of cases of earlier grafting acute sepsis is lighted up again. Wherever a graft is to be used it should be autogenous and should be taken either from the anterior part of one tibia or from one of the ununited fragments. The former is far the better as the latter source yields bone one end of which has undergone osteosclerosis and is therefore unlikely to unite well. The graft should include periosteum, compact bone and marrow, if the best results are to be secured, though the periosteum is not absolutely essential. The graft should be cut not less than two inches longer than the gap to be filled so that its ends can extend beyond the sclerotic ends of each fragment. These ends of the fragments should have grooves cut in them to receive the ends of the graft and the grooves should extend down to the healthy medulla. The graft should be held in place by catgut or small bone pegs, never by any form of metal. The extremity should be put up in a complete plaster cast which extends beyond and immobilizes all joints, movement of which affects the fractured bone. The cast should be applied over the suture line of the graft operation and this can be reached later by cutting out an appropriate piece of the cast. If the union of the graft is not complete when the cast is removed, after two to three months the cast should be replaced or plaster splints applied and venous congestion applied with the administration of thyroid extract.

Röntgen Therapy in Uterine Fibroids without Prejudice to the Ovaries.—G. E. Pfahler and J. A. McGlinn (*American Journal of Obstetrics*, August, 1917), referring to the fact that in the past the effect of the x rays on uterine fibroids has been assumed to be due entirely or almost entirely to their action upon the ovaries, point out that in young women in whom pregnancy is desired or normal menstruation important, a course of x ray treatment thorough enough to produce amenorrhea, which is the aim in fibroid cases, may be objectionable. They report the case of a patient of twenty-four years, anxious for children, in whom an attempt was made, for the first time they believe, to irradiate a fibroid tumor while protecting the ovaries as far as possible. The tumor being in the median line, the x rays were directed exclusively in this line. Four treatments were given at intervals of approximately a month, two to four full doses of the rays being passed through different portals of entry, both anteriorly and posteriorly, at each sitting. Penetrating rays were used corresponding to No. 9 on the Benoist scale, filtered through four millimetres of glass and two millimetres of aluminium with forty milliampere minutes at a distance of eight inches, confining the rays strictly to the area treated. One month after the first treatment the patient reported the first painless menstrual period she had ever had, and six months after the fourth treatment the tumor was gone. Later she was delivered of a normal child at term.

Uses of Solidified Alcohol in War Surgery.—T. Nogier (*Presse médicale*, July 23, 1917) describes solid alcohol as a special form of soap containing considerable alcohol, liquid at 50° C., but constituting a pastelike solid at ordinary temperatures. Hitherto used largely in the trenches as a fuel, the product is also an efficient and rapid cleanser of the surgeon's hands and instruments and of the operative field. When a piece the size of a walnut is placed in the palm of the hand and a few drops of water added, fatty substances are quickly dissolved off, even from hands soiled with grease, and the well known asepticizing effect of alcohol is obtained. Soiled instruments are placed in a dish, a few pieces of the alcohol and a little water added, and the instruments rubbed with the hand or a brush, then rinsed and boiled. For the operative field Nogier deems the use of the alcohol better than any other procedure. Upon slight rubbing with the hand it promptly whitens and asepticizes the most soiled integument. It is neither irritating nor caustic like iodine. In preparing the product, Nogier places 500 c. c. of denatured alcohol in a one litre bottle, adds 150 grams of Marseilles soap, finely scraped and as dry as possible, and then twelve grams of shellac in scale form. After stirring of the mixture the bottle is heated on a water bath and moved about to help solution of the shellac in the alcohol, a dark brown liquid resulting. This fluid is then merely poured into tins, which are at once carefully closed. Four or five drops of oil of lavender, cinnamon, or geranium may be added before the fluid is poured out. These oils reinforce the antiseptic action of the product, but are of no importance in war surgery.

Treatment of the Vomiting of Pregnancy with Ovarian Extract and Corpus Luteum.—P. J. Carter (*New Orleans Medical and Surgical Journal*, September, 1917) reports four cases in which he has employed this treatment with good results. He does not state that this treatment will cure every case, but that it will largely control those of the toxic type. He gives the ovarian extract alone when the vomiting is not incessant and the patient's stomach will tolerate it, as this seems to give the quickest relief. In more serious cases, when the patient vomits everything, corpus luteum is injected with a hypodermic needle, and starts the ovarian extract as soon as the stomach will tolerate it. He looks upon corpus luteum as a lifesaver in grave cases in which vomiting is incessant, and believes that it should be administered as long as the patient is in such a perilous state.

Treatment of Spinal Deformities from Poliomyelitis.—Russell A. Hibbs (*Journal A. M. A.*, September 8, 1917) recommends doing the fusion operation on the spine in serious poliomyelitic deformities, precisely as is done in cases of Pott's disease. He has operated in this way on eight patients with excellent results. The operation includes the curetting of the articulations which lie at the bases of the transverse processes of the vertebræ, the elevation and turning downward of portions of the laminæ, and the partial division and breaking downward of the spines so that the tip of one lies at the base of the other. After these steps have been completed over a sufficient extent of the spine the periosteum should be carefully sutured and the wound closed. The deformity should be corrected by plaster or a steel brace so far as possible and the patient kept in bed for two months. The brace should then be worn for a year before final removal.

Heating Cell for the Seriously Wounded.—Feuillade and Blechmann (*Paris médical*, July 14, 1917) refer to the condition in which some of the wounded are received in the advance hospitals, characterized not only by low blood pressure and a facies expressive of misery, but also by marked loss of body heat, especially in the extremities. This cold condition is observed even in summer and seems greatly to diminish the resistance of the individual to infection and operative shock. Believing a preliminary heating of such subjects before operation an important aid to recovery, the writers are making use of the supplementary surgical cabins of the French army as heating rooms. With their radiators these can usually be heated to 36° C., and in each cabin four patients can be simultaneously dealt with. The patients are also covered with blankets, with their legs in cotton and further heated by hot water bottles. The benefit procured is striking. Some patients require to be kept for several hours in the heating cell. In one case a sojourn of forty-eight hours resulted in an unexpected resurrection. In abdominal wounds in which prompt operation is essential, the period in the heating cell has sometimes to be curtailed. As a rule various preparations for the operation are made in the heating cell, which the authors deem henceforth a necessity in the surgical armamentarium at the front.

Miscellany from Home and Foreign Journals

Electrocardiographic Sign of Myocardial Change.—S. Russell Wells and S. Strickland Goodall (*British Medical Journal,* August 11, 1917) point out that many attempts have been made to devise methods for estimating the condition of the myocardium in regular hearts, each of which undoubtedly has its value. A new sign is brought forth which may possibly prove of some value in such estimations, namely, the height of the second ventricular or T waves in the electrocardiogram. When these are very low or absent it seems to indicate impairment in the muscular function of the ventricles. This suggestion is supported by two cases of syphilitic myocarditis in which these waves were absent from at least two of the leads of the electrocardiogram synchronously with the usual clinical evidences of myocardial insufficiency. They returned and became higher as antisyphilitic treatment brought about improvement in the patient's clinical condition, and at the same time the clinical evidences of myocardial insufficiency showed marked improvement. Other cases studied seem also to harmonize with the findings recorded in these two illustrative ones which could be followed during the course of specific treatment.

Hemothorax from Gunshot Injuries.—John Rose Bradford (*British Medical Journal,* August 4, 1917) discusses this subject in great detail from all aspects, as well as the other results of chest wounds by missiles. The commonest results of nonpenetrating wounds of the chest are pleurisy, dry or with effusion, and empyema, though hemoptysis, hemorrhagic infiltration of the lungs, and septic bronchopneumonia often follow. Massive collapse of the lung on the side opposite the injury is also not uncommon. Penetrating chest wounds cause subcutaneous emphysema, pneumothorax, laceration of the lung, or hemothorax. The hemothorax may be seen in cases not obviously wounded in the chest or on the side opposite to the point of entrance. Hemothorax may also be bilateral or associated with hemopericardium, and contralateral collapse of the opposite lung is very frequent. Hemothorax is the commonest result of perforating chest wounds; it may be sterile or infected and the infection may be early or late. The infection may be diffuse through the fluid or it may be more or less sharply localized as the result of the formation of clots or adhesions. In about one half of the infected cases anaerobic organisms are present, either alone or with cocci. Secondary hemorrhage is rare and septic infection is the commonest cause of death after the third day. The pathology of the condition is that of fluid in the chest, the extensive collapse of the lower lobe of the affected lung, and the formation of thick walls of fibrin on the lung and lining the costal pleura with or without secondary infection which may be anaerobic with the production of gas under more or less pressure. The gas in such cases often forms extraordinarily rapidly and gives rise to intense symptoms. Purulent bronchitis, pneumonia, pleurisy, pericarditis, and massive collapse of the same or opposite lung or of both are the commoner complications. The signs and symptoms are not always easy to interpret. There is initial dyspnea which soon decreases; fever is moderate and the pulse is not very rapid, seldom being above 100. Where there is infection both the pulse and fever may be high and continued. Jaundice is an important sign of infection by anaerobic bacilli. The most typical sign is elevation of the diaphragm on the affected side. There are the signs of fluid with a very well marked and usually rather extensive area of skodaic resonance. When gas is present its characteristic signs are to be found as in pneumothorax. Contralateral collapse usually presents signs similar to those of pneumonia with the characteristic exception of a marked displacement of the heart toward the side of the collapsed lung. The most important feature in diagnosis is the determination of the presence or absence of infection of the fluid, which is to be made mainly by bacteriological examinations of the fluid aspirated. Often it is necessary to aspirate in more than one place or repeatedly in the same and different places to rule out infection.

Malarial Erythema.—H. de Brun (*Paris médical,* August 11, 1917) asserts that malaria is an eruptive disease, having noted an eruption in sixty-two out of 160 cases. The erythema varied in color from a bright pink to a pale pink or light lilac, and sometimes was universal, with the exception of the face, neck, soles, and palms. In its diffuse form it resembles the measles eruption, though generally paler, not involving the face or neck, and never becoming raised to form flattish papules. The macules are usually of the size of a rice grain or small lentil, though often smaller, are irregular in outline, and more or less confluent, being generally so grouped as to form irregularly crescentic figures. On the trunk, the eruption is most marked on the lateral aspects of the thorax and abdomen. Frequently on the anterior and lateral surfaces of the thighs it is more pronounced than on the trunk, and exhibits a distinct violet tint. In its most discreet and most frequent forms the eruption is represented merely by from ten to twenty pale macules, to be found on the flanks, supratrochanteric regions, and less commonly, near the floating ribs and the axillary border of the pectoralis major. Often the eruption grows temporarily more pale when the covers over the patient are drawn back. Very frequently it is much more distinct in the morning than the evening, rest in bed apparently favoring its appearance. In subjects with malarial melanodermia the eruption becomes more or less brownish, and cannot be dissipated by pressure. There is no itching or desquamation. The eruption seems independent of the severity of the disease and of quinine therapy, though in two or three cases it grew fainter temporarily under daily use of three grams of quinine hydrochloride. It apparently may accur at any stage of the disease and may persist a long time; it is characterized by extreme irregularity in advent and disappearance, which may be sudden or gradual.

The Suprarenals in Fatal Superficial Burns.—H. G. Weiskotten (*Journal A. M. A.*, September 8, 1917) says that it is generally accepted that extensive superficial burns are followed by severe fatal toxemia and produce cloudy swelling of the liver and kidneys, focal degeneration of the splenic lymph nodes, and degeneration of the general lymph nodes and those of the intestine. In addition the author finds in uncomplicated fatal superficial burns characteristic changes in the suprarenals, which in his experience are the most prominent and typical of the necropsy findings. The glands are greatly swollen and dark red with marked edema of the periglandular fat. On section there are areas of extensive hemorrhage and others of marked swelling with reddish streaks suggesting vascular congestion. Microscopic examination shows marked congestion with scattered hemorrhages penetrating the parenchyma cells. The glandular cells are pale and swollen and they show hydropic degeneration and necrosis with leucocytic invasion. Such findings are present in cases in which death occurred in two to six days after the burns, and develop apparently solely as the direct result of them. These changes are analogous to those found in the suprarenals of guineapigs after diphtheria toxin and suggest the action of some profound and specific toxin in the cases of the burns as in the guineapigs.

Defective Nutrition in Early Life.—Elias H. Bartley (*New York State Journal of Medicine*, August, 1917) deals solely with the forms of defective nutrition which are encountered during the first ten years of life and emphasizes the fact that the later the condition is recognized and treatment instituted, the more difficult it is to influence. Both the acquired and the hereditary cases can be helped greatly, but more can be done for the former than for the latter. In general, if possible, such children should be sent to live in the country. In many cases it is found that the mother is wholly unfitted to care for such children, owing to her prejudices or unstable nervous temperament. It is then far better to place the child in the care of a judicious nurse or governess. Before attempting correction of the diet all sources of infection in the buccal or nasal cavities must be removed. Aside from the prescription of a liberal and varied diet and the elimination of foods which are proved not to agree with the child, one of the most important measures is to avoid forcing the child to take that which he does not want. One should rather try to induce him to eat a variety of articles by persuasion. Fancies of the mother, born often of her own dislikes, should be corrected in the child. Milk should be prescribed freely and the greatest liberality should be allowed in the range of the farinaceous foods. Monotony must be avoided with the greatest care, especially in the matter of meats. Cheese, meats, the legumes, and eggs are essential and should be given in variety. There is no reason why the salted, cured meats should not be used, even for very young children, and the same is true of fried eggs, fried potatoes or fried mush, against which there is a common prejudice. All foods should be thoroughly and tastily cooked and fats should be encouraged. The last is specially important since most children of this type tend to discard fats as much as possible. These can be supplied as milk, butter, gravies, bacon, etc., and are readily digested. The tolerance for sugar must be studied in each case and this carbohydrate should be used with meals as freely as the tolerance will permit. Care must be taken to balance the amounts of the acid forming foods, such as meat, eggs, cereals, etc., by the alkali forming ones, such as fruits, green vegetables, milk, potatoes and the legumes, so that there is a slight preponderance of alkali formation.

Meningitis in Mumps.—De Massary, Tockmann, and Luce (*Bulletin de l'Académie de médecine*, July 3, 1917), in studies on 635 suspected or known cases of mumps among soldiers, found that the lymphocytic meningeal reaction described in 1904 by Chauffard and Boidin as a complication of mumps is in reality a constant manifestation of this disease, being present in each of fifty-six cases in which the cerebrospinal fluid was examined. In sixteen of the fifty-six meningeal symptoms developed. The number of lymphocytes in the fluid did not parallel the extent of the symptomatic manifestations, the forty cases without symptoms averaging as high in lymphocyte content as the sixteen with symptoms, and the latter occasionally being well marked in the presence of only a few lymphocytes. At the first lumbar puncture, performed on the third or fourth day of the disease, lymphocytosis was already present in forty-nine of the fifty-six cases. After recovery from the disease, the lymphocytes did not return to normal as a rule until the fiftieth day. In addition to the lymphocytosis, the cerebrospinal fluid in mumps generally showed an excess of albumin, very frequently a reduction in chlorides, and almost always an increase of sugar. Permanent nervous sequelæ, such as optic neuritis, deafness, and multiple neuritis, were not observed.

Outbreak of Diphtheritic Wound Infection.—J. G. Fitzgerald and D. E. Robertson (*Journal A. M. A.*, September 8, 1917) discovered a case of diphtheritic infection of an amputation stump in a soldier who was admitted to a base hospital for treatment. In the ensuing three weeks sixty-seven men with suppurating wounds were examined and in thirty-two the wounds were found to be infected with the diphtheria bacillus. In addition a nursing sister who had a slight finger wound was also found to be infected. The source of the outbreak and the mode of transmission of the infection from man to man was not discoverable, but since about one or two per cent. of healthy persons are known to be diphtheria carriers it was thought possible that such may have caused the epidemic. However, only two carriers were found among all the patients and the contacts. No clinical cases of diphtheria of the throat were found during the outbreak. Some of the wounds presented the typical diphtheritic membrane, the others were of the usual types of suppurating lesions. No improvement was noted in such wounds as were thus infected under the usual methods of wound treatment, but all began to clear up very promptly after the injection of antitoxin, although the time required to remove the diphtheria organisms from the wounds varied from one and a half to over six weeks.

Unusual Symptoms in Exophthalmic Goitre.—A. Chauffard and P. Monnot (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris*, March 8, 1917) report a case of exophthalmic goitre, with all the usual symptoms, developing in a girl of twenty-one years as a result of the death of her fiancé on the battlefield. The added atypical symptoms consisted in a puffy infiltration of both the upper and the lower eyelids and a marked symmetrical swelling of the cheeks, especially the lower parts, rendering the face pear shaped. The thickened parts were smooth, elastic, rather firm, and did not pit on pressure. The skin was somewhat pale, but flushed easily from emotion. The swelling of the lids had appeared along with the thyroid enlargement and exophthalmos, while the enlargement of the cheeks had occurred a few months later synchronously with an increase in the congestive and vasomotor disturbances. Mikulicz's disease was excluded by the complete absence of glandular enlargement. That the exophthalmic goitre was passing into myxedema was deemed unlikely as the infiltrated tissues were warm and did not present the waxy gelatinous pallor of myxedema, while the outline of the face was also different from that of myxedema. The writers believe the condition due to a localized vasomotor disturbance causing hyperemia of the hypodermic tissues.

Pulmonary Edema in Pneumonia.—W. A. Bastedo (*Journal A. M. A.*, September 8, 1917) discusses the pathogenesis of this complication of pneumonia with special reference to the treatment of the condition. In the matter of treatment the aims must be to lessen the production of the fluid and increase its absorption, both of which are primarily to be accomplished by improvement in the pulmonary circulation. Cardiac failure, the most important of the causes, demands prompt and energetic treatment by the administration of digitalis or, in urgent cases, of strophanthin intravenously in doses of 0.5 mgm. Nitroglycerin has many advocates, but its use seems illogical since the heart failure is not due to increased blood pressure and since the drug dilates the pulmonary vessels and thereby tends to increase the secretion of fluid. Venesection is probably of some value in reducing venous congestion. For respiratory stimulation atropine is of very little value and it has the disadvantage of counteracting some of the beneficial effects of digitalis. Caffeine is of some value as a respiratory stimulant and there is a possibility that its diuretic action may aid somewhat in the removal of fluid. Strychnine is too feeble a respiratory stimulant to be of any value. The inhalation of oxygen is probably of some value, as it tends to improve the circulation through the lung capillaries, to improve the oxygenation of the blood, and to diminish the acidosis which is a part of the asphyxial condition produced by the edema. Artificial respiration is also of some value for the same reasons and also because the increased respiratory movements aid the pulmonary circulation directly. Tympanites should be relieved by the injection of pituitary extract and other appropriate measures. Counterirritation of the chest by cupping or mustard, etc., is commonly employed and may be of some benefit. Lowering the head to facilitate the escape of fluid from the bronchi may be of some value and should be tried. Finally the acidosis accompanying the condition and tending to increase the edema, should be treated by the administration of sodium bicarbonate orally, or the intravenous injection of not over 400 mils of a ten per cent. solution. Morphine should never be used, and it should be avoided in pneumonia even in the absence of edema, because it depresses respiration, checks expectoration, and favors the development of abdominal distention.

Rôle of Hepatic Tissues in Acute Anaphylactic Shock.—W. H. Manwaring and Harold E. Crowe (*Journal A. M. A.*, September 8, 1917) record the results of a series of experiments on guineapigs which show that after the perfusion of the anaphylactic liver with fifty per cent. anaphylactic blood containing half to one fatal dose of the protein antigen the perfused fluid has lost its power of causing an anaphylactic response in sensitized lungs. Similar perfusion, using normal blood, yields a reduction in the toxicity of the perfused fluid, but not complete loss of activity on the lung. When, however, the perfusion is done with Locke's solution containing the antigen there is no reduction in the toxicity of the perfused fluid. Perfusion of normal livers with any of the three solutions of antigen is without effect on the subsequent toxicity of the fluid for the anaphylactic lung. Precipitin titrations of the perfused fluids show that there is no removal or destruction of the foreign protein by the liver cells. Simultaneously with the loss of the power of the perfused blood and antigen on passage through the sensitized liver there is the explosive production of vasodilator and bronchodilator substances. It is probable that this latter is a constant phenomenon in anaphylaxis in all animals and is an essential feature of acute anaphylactic shock.

Plea for the Noncatheterization of the Urinary Bladder.—Frederic A. Besley (*Journal A. M. A.*, August 25, 1917) expresses the belief that the cause of cystitis, which is often fatal in cases of urinary retention due to injuries of the spinal column, is almost invariably attributable to catheterization. In such injuries the bladder may become greatly distended and remain so for long periods of time without discomfort and without danger to the patient, either from rupture, infection, or damage to the bladder or to renal function. These facts are shown by an analysis of all the records of a 1,500 bed general hospital covering a period of twenty years, during which time there was no case of spontaneous rupture of the bladder from overdistention. The lack of damage to the function of either bladder or kidneys is shown by the fact that cases have been encountered in which there was distention up to the umbilicus for months and when recovery finally took place both bladder and kidneys regained their normal functions with great rapidity. Finally it is almost impossible to catheterize the bladder repeatedly without causing infection and the cystitis and pyelitis thus caused often prove fatal. Noncatheterization can be practised safely in every case except such as have some pathological urethral stricture which prevents overflow.

Proceedings of National and Local Societies

NEW YORK ACADEMY OF MEDICINE.

SECTION IN GENITOURINARY SURGERY.

Regular Meeting Held February 21, 1917.

Dr. Clarence G. Bandler in the Chair.

Traumatic Stricture of the Urethra.—Dr. A. R. Stevens, of New York, said that his patient was a man twenty-nine years of age; he gave a history of having had one attack of gonorrhea at sixteen years of age. In May of last year he was crushed by a street car, sustaining a fracture of the right clavicle and right femur. He was taken to the Volunteer Hospital, bleeding from the urethra and unable to urinate. He was in the Volunteer Hospital for five months and a history was obtained of the course of the case while there. The main point of interest was that the patient suffered from traumatic stricture during his stay in the hospital. During the first three months he was put under an anesthetic six times. They had had particularly bad luck in the course of the treatment, for the man had a laparotomy, a suprapubic cystotomy, three perineal sections, and two internal urethrotomies. A sound was passed from the urethra into the rectum on one occasion. Sounds were passed into the bladder until October 25th; none would enter after that date. On December 5th, Doctor Stevens was asked to see the case. There was a suprapubic sinus. He was not able to pass any instrument nor a filiform beyond six and a half inches. The patient was able to void only slightly, practically only dripping. After that he went into the hospital and was operated upon on January 9th. The suprapubic fistula was excised. An instrument was passed into the bladder through the prostatic urethra as far as it would go into the membranous urethra; a second sound was then passed into the urethra from the front as far as it would go, an inverted V incision was made, and it was easy then to dissect in between the urethra and rectum down to the prostate in spite of the great amount of scar tissue. Then the urethra was cut completely across over the tip of both instruments, coming from within the bladder and from the end of the penis. The intervening three centimetres was excised. The anterior portion of the urethra was freed up from the corpus spongiosum and then easily met the posterior end; an anastomosis was made with a small catheter running along the whole length of the urethra. Four plain catgut submucous sutures were made, and these were reinforced with six or eight fine chromic gut sutures. A suprapubic tube was kept in the bladder, and a small wick of rubber tissue drain was put in the perineal wound. The urethral tube was removed the next morning, and the rubber tissue the following day; then the patient was let alone, having his urine drain suprapubically until the fifteenth day after the operation. A French No. 14 silk catheter was cautiously passed on the thirteenth day; on the fifteenth day the tube was removed. On the sixteenth day sounds were passed to No. 23; the last urine came from the wound on the seventeenth day, and on the twenty-first day, just before the patient went home, a French No. 26 was passed. Two weeks later he came to the hospital and a French No. 27 was passed without difficulty.

Doctor Stevens said that it might not yet be called an operative cure, but the outlook was fairly good. The difference in the man's comfort now as compared with what it was before the operation was very marked; the suprapubic wound was entirely closed, and the man as voiding a large stream at regular periods. Doctor Stevens wished to emphasize the point that after two weeks' rest, a No. 23 followed by a No. 27 sound was passed without obstruction. The reason he had passed only a No. 27 sound was that the meatus would admit none larger. There is a hesitation in cutting across the urethra, for if matters go badly the patient is left worse off than before, but in this instance it was difficult to see how he could be any worse.

Abscess of the Testis.—Dr. Stevens said that this was the first abscess of the testis that he had ever come across. The patient was twenty-two years of age, and came to Doctor Keyes's service at Bellevue complaining of a swelling of one testicle. He denied having had gonorrhea and gave no history of any intestinal trouble. He stated that he had had some pain in that testicle for two months, but that it had been enlarged for only a week and a half. He had a scrotal hypospadias and an undescended testicle; the one that was in the scrotum was very hard and tender, and the skin over it was markedly edematous. The prostate was not large, but was very firm and irregular, apparently having been somewhat inflamed. Wassermann was negative; gonococcus complement fixation test was negative. Under a general anesthetic, an incision was made in the scrotal wall and over an ounce of pus was released from the tunica vaginalis. A finger was inserted and pushed through a honeycomb area at the bottom of the wound. This led into the body of the testicle, and about half an ounce of pus was evacuated from that organ. The parietal tunica was cut away, and to clear up the situation the testicle and epididymis were freed from the scrotal tissues. The epididymis was quite normal and not involved in the abscess formation. The cultures taken gave a pure growth of Bacillus coli communis.

Dr. C. G. Bandler, referring to Dr. Stevens's second case, said that last fall he had seen a young man, with no previous venereal history, who was suffering from an acute orchitis complicating mumps. The testis soon became so acutely inflamed that fluctuation was evident, necessitating incision and drainage. Two thirds of the testis was completely destroyed, but there was no evidence of any involvement of the epididymis, the abscess being confined to the testis exclusively. Culture showed Bacillus coli communis, streptococcus, and staphylococcus. The wound cleared up after prolonged drainage and granulation.

Doctor Beer inquired whether the patient's urine was infected.

Doctor Stevens, replying to Doctor Beer, said that the patient's urine was perfectly clear.

Traumatic Rupture of the Bladder.—This paper was presented by Dr. JOHN F. ERDMANN. The patient, who was thirty-eight years of age, was admitted to Gouverneur Hospital on January 15, 1917, with the history that he had been intoxicated on the preceding day, Sunday, and had been kicked in the abdomen. There was no evidence whatever of any contusion over the abdomen, but it was rigid like that seen in perforated duodenal ulcer. Temperature was 102.5° F.; pulse, 100 to 110. Owing to the fact that he did not speak English and there was no interpreter present very little could be learned of his condition, but knowing that he had been kicked and jumped upon Doctor Erdmann concluded after making an examination, that there was trouble with the bladder. Inquiry as to pathological findings was answered by the house surgeon, who said that three ounces of clear urine had been passed. An incision was made in the left rectus from the umbilicus to within three inches of the pubes. Upon incising the peritoneum there was a gush of blood stained fluid, possibly two quarts. On exploration, a tear in the bladder from the space of Retzius down to the trigone was found. The balance of the fluid was aspirated from the abdomen and the operation was concluded by suturing the rent in three layers, No. 1 chromic catgut being used first in the mucosa, the second layer including the muscular and serous coats and last the serous. A drain was placed in the pelvis and a catheter introduced through the urethra and fixed with a suture through the corpus spongiosum. The patient was placed in bed in the Fowler position with a Murphy drip. The following day the patient was in excellent condition, temperature practically normal. The drain was removed on the third day and the catheter on the night of the fourth. The patient was out of bed and voiding sixteen ounces at a time on the tenth day. Doctor Erdmann stated that in an active service of over twenty-two years varying from six to three months at a time he had seen but four or five ruptured bladders, two of which were operated upon with recovery.

Significance of Ureteral Tubercle Bacilluria.—Dr. EDWIN BEER said that there was very little doubt that tubercle bacilli were found both in the smear and by inoculation test of ureteral specimens when there was no renal tuberculosis. The common cause of ureteral tubercle bacilluria was undoubtedly renal tuberculosis. Tubercle bacilluria of this type, i. e., in the carefully gathered ureteral specimens, might occur as an excretory bacilluria, and as a result of gross contamination, or as the result of a reflux up what appeared to be a normal nonpatulous ureteral opening. Some writers believed that these types of contamination, as well as the excretory bacilluria, were negligible, but the speaker did not agree with that view, as he had had eight cases falling into this group three of which he presented in some detail. The greatest difficulty in interpreting the significance of ureteral tubercle bacilluria occurred in the type of case, in which there was also a genital tuberculosis from which focus tubercle bacilli were thrown into the urinary stream. In Doctor Beer's first case, the patient had a tuberculosis of the testis with urine full of bacilli, numerous pus cells, and a trace of albumin. The specimen from the left kidney showed a few bacilli and a few pus cells in smear. The urine from the catheterized bladder was brilliantly clear and though it held some pus cells and numerous tubercle bacilli it contained no macroscopic sediment on long centrifugalization. There were no symptoms of vesical irritation. The patient was carefully watched for almost a year, and continued in excellent health. With normally functioning kidneys, perfectly clear urine, and no vesical symptoms, the diagnosis of renal tuberculosis did not seem clear, though it could not be excluded. Was the ureteral bacilluria then due to an excretory process, or was it the result of a gross contamination or a reflux up the catheterized left ureter?

In the second case there was an old tuberculosis of the knee. In 1912 the patient had symptoms of vesical irritation with blood and pus and numerous tubercle bacilli in voided urine. Cystoscopy showed a normal bladder and the ureter specimens were negative chemically and in smear except for a small number of pus cells in the left specimen. Inoculation tests on both sides showed tuberculosis. The tuberculin test showed a distinct focus in the prostate. Under hygienic treatment with tuberculin all symptoms cleared up and patient remained well until 1916. Then the original symptoms of vesical irritation began anew and bacilli again appeared in the urine. Cystoscopy made by two different observers about two weeks apart showed normally functioning kidneys, microscopically brilliantly clear urine with more pus cells in the left specimen than four years before; in the smear from this side tubercle bacilli were found. At both examinations guineapigs were inoculated from each side and the three inoculated from the right side acquired tuberculosis, while only two of the three inoculated from the left side acquired tuberculosis. The patient was placed under the best hygienic conditions and gained in weight and felt absolutely well. His bladder urine continued brilliantly clear and was free from albumin. After long centrifugalization there was a minute sediment of pus cells with numerous tubercle bacilli. Had this patient a renal tuberculosis in addition to his prostatic focus? Doctor Beer did not believe that the left kidney was involved though he readily admitted that the evidence of such involvement based on the usual criteria, the finding of a few pus cells and tubercle bacilli in the smear, suggested such a diagnosis. With macroscopically clear and brilliant urine, no vesical irritation, and normally functioning kidneys, tested by indigo carmine and phthalein as well as equal good output of urea, he could not convince himself that the left kidney should be removed. Almost one year had elapsed since the last cystoscopy, making five years since the patient came under observation and he continued symptomless with urine clear and albumin free but containing tubercle bacilli and pus cells. What was the significance of the four positive guineapig tests on the right ureteral specimen? Was this an excretory phenomenon or was it a contamination? If so could the presence of bacilli in the left urine be due to similar causes?

The third case was in many respects similar to the two preceding, but in this case while the specimens were collected the reflux up the ureter was demonstrated by injecting indigo carmine into the bladder and recovering it through the ureteral catheter, showing how readily a contamination could take place. This patient had a genital tuberculosis, with tubercle bacilluria and pyuria. His bladder, as in the two preceding cases, was normal. Tubercle bacilli were found with pus cells in the smear from the left kidney. He also had no vesical symptoms. Could the presence of the bacilli be explained by a reflux, or were we dealing with a tuberculosis of the left kidney, plus a prostatic tuberculosis? The significance of ureteral tubercle bacilluria must be most carefully considered in each case, and only after a diagnosis of renal tuberculosis was absolutely unavoidable was nephrectomy justified.

Doctor **Sondern** said that Doctor Beer's paper again proved how careful one must be in interpreting results from the finding of tubercle bacilli in the urine. Personally, he was more and more convinced that if not in all instances, certainly in a relatively large percentage of cases of renal tuberculosis, even relatively early, the urine itself—not the urine obtained by catheter or at any one passage, but a twenty-four hour specimen of urine—had cardinal characteristics which justified the suspicion of renal tuberculosis. Of course the laboratory observer could not go beyond justifying the suspicion of such a diagnosis. Excretory bacilluria, he said, was a more or less open question. He had seen specimens which contained tubercle bacilli without doubt on direct examination and also on inoculation, but the impression was obtained from the specimen that they did not come from the urinary tract and that the patient had a pronounced tuberculous lesion elsewhere in the body. He was inclined to think that there was such a thing as excretory bacilluria, but that it was far less frequent than the books would have us believe. As for the old question as to the value of the direct examination for tubercle bacilli in comparison with the inoculation method, there was no doubt concerning the absolute value of the inoculation test, but one point in regard to it was brought to his attention early in his laboratory work. He had specimens of urine from a patient in whom frequent searches were made for tubercle bacilli with negative results, while guineapigs which were inoculated died five and a half weeks later and all agreed that the gross picture was that of tuberculosis. Doctor Sondern said that he personally was sceptical at the time. He and others made a careful histological study of what was apparently a tuberculous lesion and it proved to be not tuberculous. On reinoculation of this material in other guineapigs no tuberculous lesions resulted but were miliary abscesses due to another type of infection. The patient recovered completely from her infection and had no tuberculosis today.

Of course it was an advantage to find tubercle bacilli before the inoculation test had time to work out, and a careful and competent man might search for hours, as Doctor Beer had mentioned, with negative results, in cases where the inoculation test might reveal the bacilli. Doctor Sondern's method was not to spend many hours on one specimen, but rather to examine repeated specimens. He had yet to find an instance where one could get a truly positive inoculation test with a specimen of urine, where the presence of tubercle bacilli could not be determined microscopically by looking over a number of specimens.

Doctor **Keyes** said that he had met with a few cases that fell into the doubtful category. One of these patients had a left renal tuberculosis, and in making the diagnosis the urine from the right kidney was examined by Doctor Huntoon, who found one clump of pus cells in a number of slides. He found no tubercle bacilli by smear, but guineapig inoculations from this right kidney urine were positive. That this might have been a contamination seemed unlikely, for the lesion was an early one, the bladder empty when the examination was made, and the last urine drawn was used for the examination. The left kidney was removed and six months later a tuberculous testis was removed. The patient then became clinically well and had remained so for three years, though the urine had not been examined since. The next case was still more puzzling. This patient was a young woman who when about twenty years of age suffered from what to all appearances was a renal tuberculosis, having the usual bloody and frequent urination. Her mother refused to permit her to be cystoscoped. She was then sick for five or six years, and was confined to her bed for a number of months, but finally got clinically well. About a year or two after her clinical recovery she had some disturbing symptoms, and being then in Vienna, her mother consulted Doctor Schlagintweit, who inoculated guineapigs successfully. The mother again refused to permit a cystoscopy. Upon their return to New York, Doctor Keyes finally prevailed upon them to allow him to make a cystoscopy. The patient was very nervous and had an extraordinary polyuria at the end of the cystoscopy. The bladder showed nothing abnormal, except an ulcer just above the right ureter orifice. Phenolsulphonephthalein was injected intravenously. No pus or tubercle bacilli were obtained from either side. The urea was very low. The output of phenolsulphonephthalein was only a trace in ninety minutes. The next day, without cystoscopy, the total phenolsulphonephthalein output was normal. Doctor Keyes said that two types of error had not been referred to by Doctor Beer. No mention had been made of Caspar's celebrated case of three ureters with tuberculosis of only one pole of a kidney and consequent conflicting opinions when the patient was cystoscoped by various urologists, depending upon which ureter they catheterized. The patient in this case went to still another man who found three ureters, one of which gave the bacilli. Another type of error, which of course should not occur yet which did occur, was a mistake on the part of the pathologist. Doctor Keyes then cited an instance in which after obtaining what he considered sufficient evidence he removed a kidney and found what he believed to be a distinct though very slight gross evidence of tuberculosis of the parenchyma. The kidney was submitted to a pathologist who reported no tuberculosis.

It was then taken to another pathologist and a correct picture of tuberculosis was obtained. In another instance, not long ago, he had removed a kidney which he believed to be tuberculous, in which his reason for so believing proved to be erroneous though his conclusions were correct. The pathologist, however, reported that the kidney was not tuberculous. Doctor Keyes insisted that it was, and the pathologist made further sections, and although still declaring that the lesions in the parenchyma which Doctor Keyes had believed to be tuberculous were not so, he was able to find tuberculosis in the kidney pelvis.

Probably all would agree with Doctor Beer that the removal of the kidney for tuberculosis was to be performed for two major purposes: for preventing descending infection of the bladder and ascending infection of the other kidney; and for removal of a large focus of tuberculosis which was poisoning the individual. Since these cases of Doctor Beer's had evidence of extensive bladder lesions, with no evident gross lesion in the kidney, delay seemed justified.

Doctor SCHAPIRA said that about eight years ago a case had come under his obervation where Doctor Beer wanted to remove the right kidney and Doctor Pilcher offered to remove the left kidney for tuberculosis. The patient on cystoscopic examination showed pus and tubercle bacilli coming from both ureters. On the doctors' advice the patient went to the mountains for three months and under general antituberculous treatment gained from thirty-five to forty pounds and all his symptoms cleared up and his urine became absolutely clear and negative on repeated examinations. Doctor Schapira said he saw the patient a few weeks ago in apparently perfect health. Doctor Schapira said that he had just completed the study of the genitourinary tract in 600 cases of pulmonary tuberculosis. He agreed with Doctor Beer that tubercle bacilli from the ureters might not mean tuberculosis of the kidney, and its absence did not necessarily indicate absence of tuberculosis according to his observations.

The experiments were conducted on 360 males and 240 females in the following manner. 1. A twenty-four hour specimen of urine was examined and a special search made for acidfast bacilli. 2. If they were found, the patient was catheterized to eliminate the Smegma bacilli. 3. If tubercle bacilli were found in the catheterized specimen the patient was cystoscoped and if possible the ureters were catheterized. 4. The sediment of the catheterized urine was then inoculated into guineapigs. Of all the 600 patients only seventy-three had genitourinary symptoms; of these seventy-three cases, thirty-seven showed tubercular lesions in the bladder. Out of ninety-one sediments inoculated into guineapigs twenty-three gave positive findings. Twenty-five cases in which negative urines were found on repeated examinations gave positive tuberculosis findings on inoculation. Twenty cases where the urine was negative had tuberculous erosions in the bladder. Associated lesions in the male patients were as follows: Twenty-three cases had tuberculosis of the prostate; eleven cases had tuberculosis of the vesicles; sixteen cases had tuberculosis of the epididymi. From this it could be seen how difficult it was to make a positive diagnosis of tuberculosis of the kidney.

Doctor BEER said that he was much gratified at having brought out so interesting a discussion. Referring to Doctor Sondern's remarks about inoculations, Doctor Beer said that a positive test demanded the demonstration of the tubercle bacilli in the animals' lesions. In the second case of the series presented the question arose: If tubercle bacilli were found even associated with a few pus cells, was nephrectomy justified if there were no vesical symptoms and the urine was clear and brilliant with good equal kidney function? Doctor Beer felt much as Doctor Keyes did, and believed operation should wait.

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Book Reviews.

[*We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.*]

Précis d'anacousie vocale et de labiologie. Méthode orale d'éducation auditive, d'initiation phonétique, et de lecture sur les lèvres. Par G. DE PARREL. Avec 49 figures et 11 tableaux schématiques dans le texte. A Maloine et Fils, Editeurs, 27, Rue de l'Ecole de Médecine, Paris, 1917

The problem of teaching the deaf to hear has claimed the attention of prominent scientists and philanthropists since the sixteenth century. Among these the French occupy a very prominent place. Itard early in the nineteenth century was the first to introduce the oral method in the National Institute for the Deaf Mutes in Paris, where it obtained a permanent footing only in 1880. In the United States we find the names of Alexander Graham Bell, Gordon, Clark, Gallaudet, Currier, Gillespie, and others connected with whatever progress had been made on behalf of the deaf. While the problem concerned itself in the beginning primarily with those born deaf, it gradually, with the aid of advance in otology, embraced also those suffering from acquired deafness. This is of great importance at the present time as well as in the immediate future, as the number of persons affected with war deafness, whether remediable or not, will be great, and it will require all the ingenuity of otologists and teachers of the deaf to meet the emergency. In fact, French otologists have already, with the sanction of the government, organized several schools for the deaf in various mobilization camps.

The two principal methods employed by teachers of the deaf are auricular reeducation, or what our author calls vocal anacousia—from the Greek, *ana*, again, and *akousis*, hearing—and lip reading, or labiology. In this *Manual of Vocal Anacousia and Labiology* the author discusses thoroughly both the theoretical basis and the practical application of the methods of teaching the deaf. An attempt is made to place the entire subject on a scientific foundation as opposed to the prevailing opinion of its empirical character based upon insufficiently established theoretical ground. The author proves that both auricular reeducation and lip reading rest on indisputable physiological principles, such as the excitability of the sensory apparatus by specific stimulation, mechanical, electrical, or chemical, the effect of systematic exercise of the auditory, mental, articular, and muscular functions, the principle of synergic action produced by massaging and setting in motion the muscles, and articulations of the tympanic cavity and the drum through the kinetic forces of the muscles of the face and scalp, etc. The book is divided into three parts: 1, general considerations, mechanism of phonation, essentials of pronunciation, static phonetics, effects of and indication for acoustic exercises, etc.; 2, the technic and the application of the vocal method of education, of the various aids thereto, as well as various phonetic exercises, and so on; 3, the general and technical considerations of lip reading.

To those interested in the subject who read French we heartily recommend this book as one containing a mass of interesting material of scientific as well as purely practical value.

Preventive Medicine and Hygiene. By Milton J. Rosenau, Professor of Preventive Medicine and Hygiene, Harvard; Director of the School for Health Officers of Harvard University and the Massachusetts Institute of Technology; Formerly Director of the Hygienic Laboratory, U. S. Public Health Service, etc. With Chapters on Sewage and Garbage, by George C. Whipple, Professor of Sanitary Engineering, Harvard; Vital Statistics, by John W. Trask, Assistant Surgeon General, U. S. Public Health Service; Mental Hygiene, by Thomas W. Salmon, Medical Director, National Committee for Mental Hygiene, etc. Third Edition, containing a special section on Military Hygiene. New York and London: D. Appleton & Co., 1917. Pp. xxxiv-1374.

The chief interest in this new, the third, edition of this standard work centres around the section on Military Hygiene. The addition, or rather the elaboration of this section was, of course, necessary to maintain the position of this authoritative work, and we note with satisfaction that the material under this head is in every way a valuable complement to the balance of the book. While covering the ground in a general way as adequately as could be expected in a book dealing with such a wide field, the special features and the new problems of military hygiene to which the present war emergency has given rise are discussed in a direct and concise way. While military hygiene, being a special phase of public health and sanitation, is a comparatively new science, the principles are essentially the same as when they were first formulated, but the new conditions, the enormous size of military units, and the terrific extent of operations have made the subject of greater and more vital importance than ever before. The problem of selecting the salient points in this revised science for presentation in a general book on preventive medicine and hygiene has been, we believe, correctly solved in this enlarged section.

Nutrition and Clinical Dietetics. By Herbert S. Carter, M. A., M. D., Associate in Clinical Medicine, Columbia University; Associate Attending Physician to the Presbyterian Hospital; Consulting Physician to the Lincoln Hospital, New York; Paul E. Howe, M. A., Ph. D., Assistant Professor of Biological Chemistry, Columbia University, New York, and Howard M. Mason, A. B., M. D., Instructor in Diseases of Children, Columbia University, New York; Associate Attending Physician to the Presbyterian Hospital; Attending Physician to the Ruptured and Crippled Hospital, New York. Lea & Febiger, Philadelphia and New York, 1917. (Price $5.50).

This book forms a useful compendium of the more important scientific facts in regard to the principles of diet, particularly under special conditions of disease and in infancy and old age. There is a discussion of the general principles of food and nutrition which underlie the normal taking of food, its digestion, absorption, and excretion, including the average requirements in regard to the various constituents of food. Varieties of food are also discussed in their relative values, with reference to selection and preparation. These sections, as well as those on feeding in infancy, in disease, and in old age, seek to set forward the latest results of accurate scientific experiment. The authors recognize, however, that the subject of dietetics presents yet many unsolved problems and refer to the largely modifying factor of the personal equation and variety of outward conditions. The easily available form of many useful data resulting from these latest investigations and observations, together with the extensive tables of food values, "the average chemical composition of American foods," gives the book a definite utility especially in this day of conservation and accurate appropriation of these values. It suggests, however, for further investigation and study, that the food problem in disease and in health is but a part of the broader problem of health and sickness which is too dependent upon the personal equation and the environment in which that equation manifests itself to admit of a complete undestanding or a wise regulation unless a wider and a deeper dynamic point of view is adopted here also.

After Office Hours.

Those of us who were fortunate enough to see Sir Herbert Tree in his recent—and, sadly enough, his last—visit to this country, will be interested in reading an appreciation of the man and his art, written by Frank Harris in *Pearson's* for September.

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Santonin poisoning is the latest form of homicide to be used by that prolific writer of "scientific detective" stories, A. B. Reeve, in his frenzied search for outré material wherewith to keep up the public interest in Craig Kennedy, that combination of Sherlock Holmes, Thomas A. Edison, Alexis Carrel and Hideyo Noguchi. In a story called The Coca Gang, in the October *Cosmopolitan* santonin is the lethal agent employed by the villyun.

* * *

Munsey's for October alluding to the doctor hero in Mary's Ankle says: "What an attraction the atmosphere of medicine appears to possess for the playwright! Possibly the enormous hit of The Boomerang may have something to do with it although the tendency set in before that comedy came to dangle a golden bait of royalties before dramatists who could go and do likewise.

* * *

We find *Munsey's* for September particularly interesting. The Story of the Sun continues the fascinating story of this great newspaper through the Civil War. An article to stimulate patriotism is The Fighting Record of the United States Marines. Not every one knows that the spectacular Barney Baruch is a son of Dr. Simon Baruch, who diagnosed the first recorded case of perforating appendicitis successfully operated upon and is the author of the oft quoted, "If in doubt about appendicitis, operate."

* * *

Burlesques on doctors seem to be considered highly humorous by a certain class of moving picture "comedian." We witnessed a performance lately of a one-reel "screamer" called In Bed—In Bad, in which Victor Moore posed as an involuntary invalid beset by grotesque caricatures of doctors. The idea seems to be to take the greatest nincompoop in the studio, usually a difficult choice, clothe him in a frock coat, silk hat, white gloves, side whiskers, and an air of exaggerated solemnity, and have him perform antics which do not even remotely suggest any of the real activities of a physician.

* * *

In marked contrast to such rot, the best humor we have seen in the picture play is afforded by Mr. and Mrs. Sidney Drew, whose delightful little comedies of domestic life are finding a growing audience. Lately they appeared in The Hypochondriac, in which Mrs. Drew forgets an entirely imaginary fatal illness when her spouse presents as her successor the pretty nurse who had recently been installed to care for the invalid. Needless to say, the physicians who appear in this skit are human beings. An account of how the Drews evolve their comedies, with pictures of their charming home, may be found in the *Photoplay* magazine for September.

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Meetings of Local Medical Societies.

Monday, *October 15th.*—New York Academy of Medicine (Section in Ophthalmology); Yorkville Medical Society; Medical Association of the Greater City of New York; Medical Society of the County of Erie; Elmira Clinical Society; Psychiatric Society of Ward's Island.

Tuesday, *October 16th.*—New York Academy of Medicine (Section in Medicine); Tompkins County Medical Society; Medical Society of the County of Monroe; Tri-Professional Medical Society of New York; Medical Society of the County of Kings; Binghamton Academy of Medicine; Syracuse Academy of Medicine; Ogdensburg Medical Association; Oswego Academy of Medicine; Federation of Medical Economic Leagues of New York.

Wednesday, *October 17th.*—New York Academy of Medicine (Section in Genitourinary Diseases); Alumni Association of City Hospital, New York; Schenectady

Academy of Medicine; Women's Medical Association of New York City (New York Academy of Medicine); Medicolegal Society, New York; Buffalo Medical Club; Northwestern Medical and Surgical Society of New York; Bronx County Medical Society; Dunkirk and Fredonia Medical Society; Buffalo Academy of Medicine (Section in Obstetrics and Gynecology).

Thursday, *October 18th.*—New York Academy of Medicine (stated meeting); Auburn City Medical Society; Geneva Medical Society; German Medical Society, Brooklyn (annual; Aesculapian Club of Buffalo; New York Celtic Medical Society.

Friday, *October 19th.*—New York Academy of Medicine (Section in Orthopedic Surgery); Mount Vernon Medical Society; Clinical Society of the New York Post-Graduate Medical School and Hospital; New York Microscopical Society; Saratoga Springs Medical Society.

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Official News.

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending October 3, 1917:

Clark, T., Surgeon. Directed to attend the meeting of the State Medical Inspectors of North Carolina at Raleigh, October 11, 1917.

Cobb, J. O., Surgeon. Directed to represent the service at the meeting of the Association of Military Surgeons at Indianapolis, Ind., October 8-10, 1917.

Creel, R. H., Assistant Surgeon General. Directed to proceed to Boston, Mass., quarantine station to examine into plans and proper location for additional buildings and improvements.

Galloway, Thomas C., Assistant Surgeon. Granted nineteen days' leave of absence from September 1, 1917.

Glennan, K. R., Scientific Assistant. Directed to proceed to Petersburg, Va., on special temporary duty.

Haralson, M. F., Scientific Assistant. Directed to proceed to Des Moines, Ia., on special temporary duty.

Lanza, A. J., Passed Assistant Surgeon. Directed to proceed to Crow Indian Reservation to investigate prevalence of trachoma.

Magruder, G. M., Senior Surgeon. Directed to proceed to American Lake, Washington, on special temporary duty.

Mathewson, H. S., Surgeon. Granted seven days' leave of absence from October 3, 1917.

Perry, N. V., Constructing Engineer. Directed to proceed to Boston, Mass., quarantine station to examine plans and proper location for additional building and improvements.

Ross, F. B., Scientific Assistant. Directed to proceed to Des Moines, Ia., on special temporary duty.

Rucker, W. C., Assistant Surgeon General. Directed to represent the Service at the meeting of the Association of Military Surgeons at Indianapolis, Ind., October 8-10, 1917.

Safford, M. Victor, Passed Assistant Surgeon. Granted three months and ten days' leave of absence from October 1, 1917.

Stevenson, A. F., Sanitary Chemist. Directed to proceed to Newport News, Va., to make studies of the sanitation of milk supplies.

Streeter, H. W., Sanitary Engineer. Granted five days' leave of absence from September 29, 1917.

Teufel, W. C., Assistant Surgeon. Directed to proceed to Meridian, Miss., for consideration of plan for control of water supply.

Promotion.

Surgeon G. M. Magruder promoted and commissioned as senior surgeon.

Resignations.

Resignation of Passed Assistant Surgeon M. Victor Safford accepted by the President to be effective January 10, 1918.

Resignation of Assistant Surgeon T. C. Galloway accepted by the President, to take effect September 19, 1917.

Births, Marriages, and Deaths.

Born.

Simonson.—In Bridgeport, Conn., on Wednesday, September 19th, to Dr. Louis Simonson and Mrs. Simonson, a son.

Married.

Hambleton-Steadman.—In Roxbury, Mass., on Wednesday, October 3rd, Dr. Holland G. Hambleton, of Brunswick, Me., and Miss Edith W. Steadman.

O'Connor.—In Portland, Me., on Monday, September 24th, Dr. William J. O'Connor, of Augusta, and Miss Marguerite E. Qualey.

Stillman-Chase.—In Waterbury, Conn., on Thursday, October 4th, Dr. Edgar Stillman, of New York, N. Y., and Miss Katherine Chase.

Died.

Albright.—In Salem, O., on Friday, September 21st, Dr. George Albright, of Columbiana, aged sixty-five years.

Allen.—In Carlisle, Pa., on Wednesday, September 26th, Dr. Alfred R. Allen, aged fifty-five years.

Baker.—In Shreveport, La., on Monday, September 24th, Dr. William M. Baker, aged sixty-five years.

Bernstein.—In Scranton, Pa., on Saturday, September 29th, Dr. Arthur S. Bernstein, aged fifty-four years.

Binswanger.—In Portland, Ore., on Tuesday, September 25th, Dr. Otto S. Binswanger, aged sixty-three years.

Blaney.—In Baltimore, Md., on Tuesday, September 25th, Dr. William J. F. Blaney, aged forty-four years.

Bobo.—In Dallas, Tex., on Thursday, September 20th, Dr. Lacy K. Bobo, aged fifty-six years.

Clemens.—In Toronto, Ont., on Sunday, September 23rd, Dr. George H. Clemens, aged sixty-one years.

DeVilbiss.—In Toledo, O., on Monday, October 1st, Dr. Allen DeVilbiss, aged seventy-six years.

Dickson.—In Columbus, O., on Thursday, September 20th, Dr. Fred C. Dickson, aged thirty-six years.

Ellison.—In Altoona, Ala., on Wednesday, September 26th, Dr. John H. Ellison, aged fifty-five years.

Fortner.—In Vinita, Okla., on Monday, September 24th, Dr. Benjamin F. Fortner, aged seventy-two years.

Gardner.—In Portland, Me., on Sunday, October 7th, Dr. Frank H. Gardner, aged sixty-three years.

Garwood.—In Princeton, Ill., on Wednesday, September 19th, Dr. Jessie Pierce Garwood, aged fifty-nine years.

Holbrook.—In East Douglas, Mass., on Tuesday, October 2nd, Dr. Silas P. Holbrook, aged eighty years.

Howe.—In France, on Friday, September 28th, Dr. George P. Howe, of Boston, aged thirty-nine years.

Hughes.—In Milford, Pa., on Saturday, September 29th, Dr. Peter Hughes, of Brooklyn, aged sixty years.

Johnson.—In Amite, La., on Monday, September 24th, Dr. Jesse R. Johnson, aged sixty-two years.

Klopp.—In Philadelphia, Pa., on Saturday, September 29th, Dr. Eli L. Klopp, aged sixty-one years.

Kynett.—In Philadelphia, Pa., on Monday, October 1st, Dr. Harold H. Kynett, aged fifty-five years.

Moore.—In Grenada, Miss., on Sunday, September 23rd, Dr. Moore Moore, aged seventy years.

Norris.—In Boston, Mass., on Tuesday, October 2nd, Dr. Sarah F. Norris.

Ocasek.—In Chicago, Ill., on Thursday, September 27th, Dr. Charles J. Ocasek, aged forty-five years.

Parker.—In Lowell, Mass., on Monday, October 1st, Dr. Moses G. Parker, aged seventy-five years.

Pfefferkorn.—In Weymouth, Mass., on Sunday, September 23, Dr. Charles H. Pfefferkorn, aged sixty-nine years.

Schuhart.—In Rochester, N. Y., on Sunday, September 23nd, Dr. Quinbert C. Shuhart, aged sixty-two years.

Sharp.—In Hot Springs, Ark., on Tuesday, September 25th, Dr. Edwin Sharp, of Argenta, aged sixty-five years.

Stark.—In Indianapolis, Ind., on Sunday, September 30th, Dr. John R. Stark, aged twenty-six years.

Stork.—In Darmstadt, Ill., on Monday, October 1st, Dr. J. Wesley Stork, aged forty-six years.

Wells.—In Annapolis, Md., on Tuesday, September 25th, Dr. George M. Wells, of Wayne, Pa.

Wouters.—In New York, N. Y., on Sunday, September 30th, Dr. John Francis Wouters, aged sixty-five years.

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Original Communications

MENTAL CONDITION OF FEMALE JUVENILE DELINQUENTS.*

By John H. W. Rhein, M. D.,

Philadelphia,

Professor of Diseases of the Mind and Nervous System, Philadelphia Polyclinic and College for Graduates in Medicine; Neurologist, Howard Hospital.

There is a growing impression—how well founded future careful mental examinations will reveal—that the greatest single cause of delinquency is feeblemindedness. Healy (1) believed that twenty to thirty per cent. of the repeated offenders were subnormal mentally. He believed that those who showed three or more years of retardation by the Binet system of tests, those of fifteen years of age or above who failed to pass a twelve year old test, and those who were unable to perform their social duties in their own particular social sphere were feebleminded. He recognized the mentally dull individual who showed the mental capacity of the usual institutional type of moron, and attained at fourteen years of age only the fourth or fifth grade in school but were able to do most of the twelve year old Binet tests during their teens. Ellis and Bingham (2) in 1915 studied 164 cases and found thirty-four per cent. of the feebleminded institutional type and thirty-seven per cent. of the borderline feebleminded type. Ellis believed that the burden of the social evil could not be placed alone on feeblemindedness. Morrison's studies (3) of the juvenile offenders led him to the conclusion that a large proportion of the juvenile offenders are mentally below the average of the general population of the same age and sex. Birkigt (4) found in 124 delinquent boys admitted to the Landes-strafanstalt at Bautzen, Saxony, that 8.9 per cent. were above the medium intelligence. Almost one half, 49.2 per cent., were weakminded, and sixteen per cent. represented all grades of feeblemindedness.

Tanzi (5) divided the great bulk of these cases into, 1, the moral imbecile whose moral sense is entirely lacking but who possesses good mental faculties; 2, those above the normal mentally who were too weak mentally to stand alone but who did well under guidance and needed custodial care; 3, the great mass of female offenders of the low grade, not very intelligent, poorly educated, and untrained. He stated that the moral imbecile and mental defective could be found in any class, but the working class supplied more of those coming in contact with the law owing to the disadvantages of lack of money. Sutherland's (6) experience included 36,710 prisoners, inmates of the Scotland prisons; of 4,700 of these who were recidivists, 2,500 were weakminded or mentally unstable. In 1900-09 there were 259 prisoners who were so feebleminded as to be unfit for prison discipline. In the English prisons it was found that only nineteen per cent. were unable to read or write; seventy-eight per cent. read or wrote imperfectly; 2.4 per cent. read and wrote perfectly, and only 0.08 per cent. had a superior education. On the other hand, Bronner (7), of Columbia University, concluded that one could not lay the blame for delinquency in behavior at the door of poor mental gifts. He studied a group made up of delinquents, another group made up of freshmen and sophomores from Teachers' College, and a third group of girls who were members of clubs in a settlement and a Y. M. C. A. in the same districts of New York in which the delinquents studied largely came. A fourth group was made up of subjects from domestic service. The mental tests employed were made up of easy opposites, hard opposites, tests for memory of words, memory of passages, Eppinghouse's complete tests, and finally the ethical discrimination tests of Fenald. Bronner found that the delinquent and servant class proved to be on a par as far as general intelligence was concerned, and concluded that delinquent tendencies were something more than intellectual status alone.

I investigated the mental conditions of 159 girls referred by the Girls' Aid Society of Philadelphia by the Binet and Simon tests besides a neurological examination of the mental state, and certain interesting facts were revealed. Only forty of this number passed satisfactory or fairly satisfactory tests. The remainder showed various degrees of mental inefficiency and retardation. For example, two were only six years old mentally; one, seven; four, eight; eleven, nine; eight, ten; two, eleven; thirty, twelve; two, thirteen; nine, fourteen; seventeen, fifteen. The greatest retardation, eighteen years, was in two adults aged twenty-seven and thirty-three years, who showed respectively mental age of 8.8 and fifteen years. One of twenty-four years

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*Read before the Girls' Aid Society, November 24, 1916.

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had mental age of eight; one of twenty-five, nine years; and one of twenty-six, twelve years. Three were retarded twelve years; three, eleven years; five, ten years; eight, nine years; eleven, eight years; five, seven years; fourteen, six years; nine, five years; five, four years; ten, three years; nine, two years; and two, one year. Thirty-two others were subnormal or backward or showed mental defects in various ways. One was an epileptic, nine were feebleminded, of the institutional type, two were cases of dementia præcox, a developmental psychosis, and four were well marked examples of major hysteria.

In drawing conclusions from this study I have not been convinced that a moderate degree or even an advanced degree of retardation is indicative of feeblemindedness of the type which needs care in institutions for the feebleminded. It certainly does indicate a mental or educational deficiency, and this is the striking and usual characteristic of these girls. The poor educational tests in a large proportion of the cases is to be attributed to poor mental training rather than to a congenital feeblemindedness. There are many nondelinquents in the better classes who are just as much retarded mentally and who under the conditions obtaining with the delinquent girls would be delinquent themselves; but in the better classes there is the opportunity for protection which they need, they are guarded from publicity, and thus the knowledge of their condition is confined to their immediate circle. If we review the educational history of these cases we do not wonder that they pass on the whole poor educational tests. These girls leave school early, have advanced poorly, are not good students, are truants, are irregular at school for various reasons, and acquire very little education finally.

Of 137 cases in which the age at which the girls left school was studied it was found that two left school at ten years of age; four left school at eleven; seven, at twelve years; eighteen, at thirteen years; sixty, at fourteen years; fourteen, at fifteen years; fifteen, at sixteen years; and four, at seventeen years of age. One went to school until eighteen years of age; two until nineteen; and one till twenty-two. Three had very little schooling and one no schooling at all. These were foreigners from Russian districts where there are no schools. The grades which the girls reached were studied in 115 cases. It was surprising to find that many of the girls left school in the low grades, very few progressed to the eighth grade, and still fewer went as far as the first and second year in high school. Six never went beyond the second grade; eight reached the third grade; fifteen went to the fourth grade; twenty went no further than the fifth grade; sixteen went to the sixth grade; ten to the seventh grade; nineteen to the eighth grade; four went to the first year in high school, and five to the second year in high school. Of forty-seven girls who left school at fourteen years of age, four reached only the second grade; two, the third grade; seven, the fourth; ten, the fifth; six, the sixth; seven, the seventh; and eleven, the eighth. Twenty-eight were below the sixth grade. It is thus apparent that the education of these girls for various reasons is very elementary and their inability to pass good mental tests is not surprising, especially when we consider that their native mental capacity is poor. These girls rarely open a book after leaving school, do not read, do not care to read, and have little resources as to intellectual diversions.

In the study of these cases the influence of other factors besides those of the mental development have been considered. The influence of character itself upon the causation of juvenile delinquents is great. The character of the delinquent when studied shows certain qualities which are more or less characteristic. According to Tonnini (8) the juvenile delinquent is a social imbecile. The female juvenile delinquent in my experience has little or no imagination; she is restless, quick tempered, irritable, obstinate; she is wanting in the power of concentration, lacks interest in school, has poor judgment and power of discernment; her capacity for forming a moral concept is slight; she has little feeling and no sexual honor, and her lack of imagination prevents her picturing the future for which she has no concern. She is immature and ignorant. Her stoicism has been termed by Gervai (9) "*gefühlfremdheit.*" Character, according to Tanzi, may be looked upon as a function of the brain, and as he has pointed out there is no reason why it cannot be altered or its development perverted. These delinquent girls, as far as character alone is concerned, are unfit to enter into competition with others. They succumb in the struggles, fatigue, and difficulties of modern civilization with its complex social relations. According to Gruhler (10) crime among children is related to character and disposition plus social environment, and in his studies a large proportion of the cases of delinquency were caused by environment and disposition.

One of the characteristics conspicuous by its absence in the delinquent girl is altruism. Their whole world centres around their own ego. They rebel against discipline; they have no selfcontrol; they cannot give and take and are uneducated in the art of social adjustment. They are weak morally and are readily led even by their own confession. They are uneducated, untruthful, and generally untrained in the science of living. One of the most potent elements in the development of delinquency is environment. Mönkmüller (11) studied the home conditions in 623 juvenile delinquents and stated that it would have been surprising if the child had led a moral life. Hanna Kent Schoff (12) studied the home conditions of 10,000 children who came to the juvenile court and in a large proportion of these cases home life was unfavorable to wholesome development. The testimony of inmates of prisons of eight States in which this subject was studied confirms this statement. Morrison found that fifty-one per cent. of the inmates of industrial schools were illegitimate children or those who had lost one or both parents by death or desertion or who were the offspring of criminal parents. He stated further that "not more than fifteen per cent. of the juveniles committed to the reformatories and industrial schools come from homes in which they were fairly clothed, fairly fed, and fairly nourished." Gervai places much significance upon the fact that youthful prostitutes are totally ignorant of sexual honor, which is not surprising in view of the social surroundings, as they are not infrequently the witness of the immorality of their parents. Birkigt also called attention to the fact that in the lower or poorer classes conditions were depraved, children neglected, training faulty, and associations evil. According to the studies of Spaulding (13) there were 152 cases of positive history of criminality in the forbears of a thousand cases. Of 161 homes investigated in my study only eleven were fair to good. In fifty-eight of the homes, conditions were poor. By this I mean there was not only evidence of poverty, but poor social conditions. For example, several members of the same family of mixed sexes slept in the same bed or room, stepfather with daughter, girl with stepbrother or uncle, offenses against chastity resulting. Immorality in the mothers and fathers was common. In twenty-nine families alcoholism was present in one or both parents. Divorce, remarriage, and separation of parents were present in ten families. In thirteen cases there was a stepfather or stepmother and often stepbrothers and stepsisters, against whom a rebellious attitude arose. There was a history of abuse at home in some instances.

The influence of work is a factor to be studied. What influence certain occupations have upon the causation of delinquency has been made the subject of some investigations, especially by Mary Conyngton (14), who concluded from a study of the relation between occupation and criminality of women that the widening of the industrial sphere of woman is not accompanied by increase in criminality. Delinquents from the domestic class are those who especially offend against chastity, due to the fact that when too low to be employed elsewhere they can always get positions in that sphere of work. Occupational influences seem, however, to be on the whole nil. The causes were those operative before they entered the industrial world. The occupations of the girls from the Girls' Aid were as follows: The majority of the girls worked in mills or factories. Then in order of frequency the occupations were housework, laundry work, waiting, workers in stores, telephone operators, child's nurses, seamstresses, bookkeepers, manicurists, and dancers. Three had no work and records fail to specify in nine instances the character of work. I have gathered the impression that the most dangerous occupation of girls is laundry work, as far as contamination is concerned. While I cannot prove it, there seems to be evidence that a low moral type are employed in public laundries. Otherwise there seemed to be no relation between delinquency and character of occupations.

Sutherland, in a study of the character of the crimes connected with feeblemindedness in 142 cases, found fifty-nine who were thieves or burglars; thirty who were guilty of violence, murder, and wounding; twenty who were guilty of sexual crime; eighteen of larceny, and fifteen who were forgers and who wrote threatening letters. The most frequent offense among delinquent girls who were referred to the Girls' Aid Society consisted of offenses against chastity. Of these there were ninety-two among 159 in which this was studied. The next most frequent delinquent act was prostitution, of whom there were thirty offenders. There were twenty runaways, fourteen had committed larceny, and tramp tendencies were seen in five girls.

Certain pathological mental conditions appeared in the causation of mental delinquents. In Healy's studies, besides the cases of idiots, imbeciles, morons, and the feebleminded of various grades, he has described hypomania and other psychoses, including drug and alcoholic forms and hysteria. In my own studies a number of cases of delinquency were associated directly with some form of mental disease. In one case of early dementia præcox the girl was guilty of larceny; in another case of dementia præcox the girl was a tramp; one epileptic was suicidal and a runaway; one case of major hysteria was a thief; another hysteric was a runaway; another was suicidal and immoral, while finally another one was simply immoral. Two of the cases coming under my observation proved to be sex degenerates. Three cases of psychosis were studied, two of whom were suicidal. One of the delinquents was a kleptomaniac and suffered from hysteria, and one was a tramp but moral.

The facts that stand out prominently are: 1, bad home conditions; 2, poor characters; 3, lack of education; 4, poor mental gifts; 5, actual feeblemindedness and mental disease in a few cases. The weak character and poor educational gifts of these girls are responsible for the low resistance to temptation which is offered, temptations which by reason of their poor social surroundings are intensely operative in the developmental period of their lives when they are physiologically unstable. The root of the evil is to be found in vicious home influences, bad social education, and insufficient intellectual training. The cure must be sought in attacking the evils of the home.

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1732 Pine Street.

Salicylic Ionization in Rheumatic Paralysis of the Facial Nerve.—M. Fiorini (*Gazzetta degli ospedali e delle cliniche*, June 10, 1917) has had excellent results in the treatment of rheumatic facial paralysis by the ionization of the face with a Bergonie mask under which was placed gauze saturated with a three or four per cent. solution of sodium salicylate. This mask was connected to the negative pole, and the positive pole was attached to a plate of tin which was held in contact with the back of the neck. This treatment was given every two or three days and was of most service when the cases were seen in the first week of the illness.

AN ETIOLOGICAL FACTOR IN GASTROENTEROPTOSIS AND ITS CLINICAL SIGNIFICANCE.

By E. JAY CLEMONS, M. D.,
Los Angeles,
Proctologist, Graves Memorial Clinic, University of California, and Washington Clinic, University of Southern California.

Both physician and surgeon have generally considered gastroenteroptosis only a mechanical condition. This is not a normal state; it predisposes directly and indirectly to gross pathological changes in these parts as well as remote manifestations resulting in grave pathology. Any endeavor to correct these changes mechanically, medicinally, or surgically without recognizing and correcting one important etiological factor to which I shall direct attention cannot help falling short of the full satisfaction anticipated.

The normal shape of the abdominal cavity may be described as a hemisphere whose base is placed in apposition to the base of an inverted cone. It is therefore an elongated cavity with a dome shaped upper extremity and a cone shaped lower extremity. This cavity is fixed on all sides except anteriorly; it is limited above by the diaphragm; below by the crests of the ilia and pubes; posteriorly by the lumbar vertebræ and muscles. Its walls are formed by strong muscles, fascia, and integument laterally and by the elastic abdominal wall anteriorly. The only way the shape of this cavity can be changed from normal, except in the presence of bony structural defects, is for the elastic abdominal wall to relax.

The abdominal viscera are arranged as follows: The false pelvis is occupied for the most part by the pelvic organs, namely, bladder, genitalia, rectum, and sigmoid. Ascending on the left is the descending colon; crossing above the level of the umbilicus is the transverse colon; descending on the right is the ascending colon; extending from the transverse colon as an apron is the great omentum; behind the great omentum lies the small intestines; and attached to the transverse colon above lies the stomach. By this arrangement it is easily seen that pressure within the small intestines, which lie behind the great omentum, in the conical portion of the abdominal cavity, exerts counterpressure to gastric pressure in the dome. At the beginning of embryonic life the alimentary canal is a simple bag, containing the yolk, and is developed from the innermost layer of the blastoderm, the entoderm. As the fetus grows, it closes around the yolk sac constricting it in the middle so as to enclose a portion within the body. This portion within the body of the fetus develops into the intestinal canal. It quickly loses its circular shape and becomes oval. By a continuation of this lengthening process, the ovoid sac becomes a long straight canal, still closed at both extremities. As the fetus increases in size, so does this canal, first becoming bent and eventually convoluted. It is covered with peritoneum which, being mobile, is easily drawn from one point to another and is capable of considerable adjustment. It does not, however, continue to grow at the same rate as the viscera. For this reason the viscera, except at the two fixed portions, have mesenteric attachments. These two fixed portions are the duodenum and the ascending colon. Because the duodenum and ascending colon are fixed they retain their relative positions, as in embryo, and any transposition of viscera that can take place does so in such a manner as not to alter their position. The alimentary canal terminates in cul de sacs, toward either extremity of the fetus. The membranes of the body derived from the outer and middle layers of the blastoderm, ectoderm, and mesoderm, at the mouth and anus become depressed in to form short channels leading into the body, terminating in cul de sacs. The cul de sac of the anus comes in contact with the blind termination of the rectum and by absorption of the two intervening layers the communication between rectum and anus is established. The line of junction is the anorectal line. Above this line the alimentary canal is supplied by the vegetative nervous system; below, the anus is supplied by the systemic nervous system.

The histological area of this pathology is the mucosa of the large bowel. I wish to call particular attention to this mucosa, which consists of simple tubular glands upon a basement membrane of loose areolar tissue, supported by the strong impervious submucosa. Microscopic sections present the goblet cells lining these glands because these cells are continually rupturing and discharging their contents into the lumen of the gut.

The physiology bearing directly upon this factor is that concerning peristalsis. Peristalsis is vermicular motion of the alimentary canal innervated by the sympathetic division acting in opposition to the autonomic or parasympathetic division of the vegetative nervous system. Since this physiological process is innervated by the vegetative nervous system it is automatic. This process being automatic our attention is called to the physiological stimuli keeping up this automatic process. These are as follows: 1, swallowing of salivary secretions together with food and liquid; 2, secretory activities of the alimentary and accessory glands together with the physiological processes of digestion and absorption of food and liquid; 3, intraabdominal pressure maintained by the action of the intestinal bacterial flora producing gaseous distention of the hollow viscera. Gaseous distention of the hollow viscera keeps up intraabdominal pressure by keeping these viscera distended. The viscera being distended makes it possible for peristalsis to move the alimentary contents onward toward the rectum. Peristalsis, therefore, controls the time of passage of food and liquid along the alimentary canal with deposition of excreta in the lower rectum and maintains intraabdominal pressure by governing and distributing intravisceral pressure.

Gastroenteroptosis is the downward displacement of the stomach and transverse colon. In order to be displaced downward the stomach has to dilate. As this is not normal, we are interested in the changes that have taken place. These changes are as follows: The stomach has enlarged at its fundus along its greater curvature, because the smaller curvature was unable to distend as it lay between two fixed portions, the cardiac, fixed by the diaphragm, and the pyloric, fixed by the duodenum. Dragging of this dilated stomach upon the fixed duodenum caused kinking of its first portion. The larger curvature of the stomach being attached to the transverse colon caused downward displacement of that portion of the large intestine. This downward displacement of the transverse colon produced traction on the fixed ascending colon with dragging upon the hepatic flexure. This dragging upon the hepatic flexure produced kinking with hypertrophy of its attachments.

Thus, confronted with gastroenteroptosis, the etiology of this abnormal state is of vital importance. This involves a mechanical transposition of the viscera whereby the normal fixed portions become the suspensory supports, namely, the diaphragmatic attachment of the cardiac end of the stomach, the first portion of the duodenum, and the hepatic flexure of the colon. Because these fixed portions do not normally act as supports, the etiology producing this condition must of necessity deal with the factor bringing about the change whereby the viscera become dependent upon their normal fixed portions for support. This factor is the intraabdominal pressure which is maintained by intravisceral pressure. Intravisceral pressure is regulated and distributed by peristalsis. Gastroenteroptosis results when there is a diminution of pressure within the small intestines in the conical portion of the abdominal cavity behind the great omentum. In order to maintain the normal relative position of viscera in the presence of decreased pressure within the conical portion of the abdominal cavity there would have to be a corresponding decrease of pressure in the dome of the abdominal cavity. Given this mechanical condition the opposite takes place; namely, for every square inch of pressure displaced within the conical portion there is a multiple increase of pressure within the dome resulting in gastroenteroptosis. Intravisceral pressure is automatic because it is regulated and distributed by peristalsis which is innervated by the vegetative nervous system. This being automatic, our attention is directed to the thirty feet of alimentary canal to discover where the nerve supply could be impinged upon in such a way as to interfere with this automatic process, and we find the only place where this could take place, except in presence of hernia, is at the anorectal junction. Above the anorectal line the gut is supplied by the vegetative nervous system; below, the anus by the systemic nervous system. This anorectal line is normally well secured between the two sphincters and cannot be displaced without the presence of pathology. The pathology producing gastroenteroptosis is noninflammatory without pain, heat, redness, or swelling to direct attention to this region.

The etiological factor, to which it is the object of this paper to direct attention, is produced by infiltration of the rectal mucosa. The rectal mucosa becomes infiltrated with mucoid material owing to the fact that the large bowel has been in a previous state of catarrhal inflammation during which the cells lining the simple tubular glands ruptured their basement membrane and deposited their mucoid material into the loose areolar tissue of the mucosa instead of the lumen of the bowel. This material having been deposited in the mucosa is moved forward by peristaltic action to become accumulated in the rectal mucosa. The rectal mucosa, which is supported by the strong impervious submucosa, having become infiltrated with this mucoid material pushes the anorectal line downward within grasp of the external sphincter. This mucosa with its vegetative nerve supply, becoming impinged upon by the external sphincter causes interference with peristalsis, and peristalsis having become interfered with affects that portion most which has the weakest muscular wall, this being the twenty-two feet of small intestine. Peristalsis of the small intestine having become retarded predisposes to pathological changes both adjacent and remote. The adjacent changes are: 1, gastric, which are dilatation, ulceration, and carcinoma; 2, small intestinal, which are duodenitis, duodenal ulceration, and intestinal stasis; 3, large intestinal, which are kinking of the hepatic flexure, hypertrophy of hepatic flexure attachments, and colitis; 4, anorectal, which are brought about from habitual constipation and by mucoid accumulation within the rectal mucosa. The remote changes are: 1, general, giving the symptom complex of a patient below par; 2, nervous manifestations, such as headache, insomnia, and neurasthenia; 3, cardiac disturbances, such as palpitation and dyspnea; 4, renal lesions produced by extra excretory functions being thrown upon the kidneys; 5, skin lesions due to faulty elimination; 6, muscular disturbances brought on by toxemia; 7, joint deposits and arthritis from chronic toxic absorption. All of these changes are the effects of prolonged malnutrition, malassimilation, malelimination, and autotoxemia caused by interference with peristalsis producing intestinal stasis, gastric dilatation, and kinking of the fixed portions of the alimentary canal.

Having patients suffering from this condition we diet, fast, and feed them foodless foods as well as resort to different mechanical, medicinal, and surgical means to overcome the results of pathology. The different mechanical methods employed are supports to the relaxed abdominal wall; exercise and massage to build up a patient below par; posture or "rest cure" because in the recumbent posture the pelvic rectum is more dependent than the anus and any anal infiltration will gravitate to this dependent part, and gravity, as an intraabdominal factor, is greatly removed, while in this posture, thus tending to relieve intestinal stasis. Every druggist recommends and sells anal dilators as a sure cure for constipation, with instructions to be inserted upon retiring; by so doing any anal infiltration is replaced within the rectum where it is maintained by posture during the night. Hydrotherapy is used internally and externally to assist elimination. Liniments and counterirritants are applied to painful muscles and joints.

The different medicinal measures employed are: Giving tonics to overcome a condition below par; the giving of digestive stimulants to increase digestive processes; giving digestants to help digestion; giving antacids to prevent gas in the stomach; giving laxatives of the nature of cholagogues, salines, and purgatives to increase the flow of bile, to increase watery consistency of the lower bowel contents, and to act upon the musculature of the intestinal wall;

giving substances of the nature of agar agar to carry moisture through the alimentary canal; giving indigestible substances of the nature of bran to stimulate peristalsis; giving bacteria, as Bulgarian bacilli, to counteract the action of the normal intestinal bacterial flora, in this way, decreasing gas formation; and giving indigestible liquid petrolatum to lubricate the bowel contents and favor expulsion of feces.

The surgical procedures employed are: Stomach drainage by gastroenterostomy; surgical attack upon the hypertrophied hepatic flexure attachments; short circuiting the large bowel; removal of the large bowel.

I will summarize and conclude by giving the hypothetical case of a patient who has had a previous catarrhal inflammation of the large bowel during which the simple tubular glands lining this bowel ruptured their basement membrane discharging their mucoid material into the loose areolar mucosa instead of the lumen of the gut. This material deposited in the mucosa gravitated to the rectal mucosa which became infiltrated and was pushed within grasp of the external sphincter. This mucosa supplied by the vegetative nervous system, which controls the automatic process of peristalsis, having become impinged upon by the external sphincter causes retardation of this process. Peristalsis becoming retarded becomes most marked in the small intestine where the muscular wall is the weakest. Retardation of peristalsis in the small intestine results in gastroenteroptosis. Gastroenteroptosis is that state of affairs where the fixed portions of the alimentary canal become the suspensory supports of the abdominal viscera because interference with peristalsis in the small intestine produces decreased pressure in the conical portion of the abdominal cavity with corresponding multiple increase pressure in the dome, resulting then in dilatation of the stomach with downward displacement of the transverse colon which in turn results in a drag upon the diaphragmatic attachments of the cardiac end of the stomach, the first portion of the duodenum, and the hepatic flexure of the colon.

With this condition present we may employ for its relief dietary, mechanical, medicinal, or surgical measures, but in order to achieve satisfactory results it is necessary to combine with these a surgical procedure which has the following objects: 1, drainage of the rectal mucosa; 2, elevation of the anorectal line sufficiently to remove the vegetative nerve supply from the external sphincter, and, 3, reconstruction of this region so that this line cannot be forced down again. This procedure is accomplished with minimum risk and maximum satisfaction to both patient and operator under local anesthesia.

528-529 Black Building.

Indications for Tonsillectomy.—D. P. Platt (*Medical Record*, June 30, 1917) considers that the indications for the removal of tonsils are recurrent attacks of tonsillitis, enlarged glands of the neck, excessive cryptic retention, nasal catarrh, diseases of the ear, laryngitis, hypertrophy, chronic follicular tonsillitis, follicular pharyngitis, tuberculous infection, and recurrent acute articular rheumatism.

VENEREAL PROPHYLAXIS.

By Henry J. Millstone, M. D.,
Chicago.

Some time ago (1) I pointed out the value of yellow oxide of mercury ointment in the treatment of acute gonorrhea. If there is any reliability in clinical results and laboratory and test tube findings, this drug has won a place in the treatment of this disease. The same can be said as to its prophylactic properties.

In the present conflict there is probably no other condition which is lowering the efficiency of men more than the venereal diseases. It is therefore the duty of everyone who has worked along these lines to submit to the government such information and suggestions which might be of some help in controlling, if not in completely eradicating, this scourge. I do not claim originality for the suggestions submitted here, but merely plea for for a fuller recognition of the facts presented.

The value of mercury in the prophylaxis and treatment of syphilis is familiar to all. While teaching soldiers of the dangers and detrimental effects of immoral indulgence is of great value, still it must be admitted that this points only appeals to the minority. Regardless of how strongly we may impress the fact that the sexual act is not a necessity for the maintenance of life and good health, it will take more than weeks and months to prove that it is not a necessary evil. In approaching these men we have the same problem to contend with that we have with drug addicts: most of them do not want to be cured. Most of our soldiers do not want to stop "partaking of the bitters." It will take a war greater than the present conflict to eradicate this evil for it is not a war of man for man, but a war within himself that is will power against passion. We may pitch these men's minds to a point where they will swear by all that is holy, "Never again," but no sooner are they thrown into temptation than they again enact the rôle of a "Fool there was." We who are devoting our time to genitourinary work have the facts at hand. One would think after a man had been burnt once that he would know enough to keep his hands out of the fire, and all of us can recall offhand many a patient who has taken upon himself more than one infection. It is reasonable to suppose that while issuing pamphlets denouncing sexual abuses and preaching these lessons is going to do some good, but we fall far short of meeting the problem if we stop at this point.

There is no need to shield the naked truth or clothe these facts in mystery. Kipling says, "As long as man is endowed with the virtue to behold and admire women, so shall women have the power to play upon the strings of his passion." Try as we may we cannot get away from it; we must look at it in this light. There has not been enough preliminary work to hope to solve this problem. It will require a greater enlightment of the subject than heretofore, aided by sex hygeine and eugenic laws—a greater education along these lines, not handed down by experience but begun in the lower grades of school. It will require the abolition of house and street prostitution. It will be the duty of every father and mother to present to their sons and daughters these very important essentials and not keep this information from them as they would a hidden treasure. While many of these ideas have been launched still they have not been in existence long enough to have any bearing on the present situation.

At present there is much controversy among the various factions as to whether or not we should put a deck of cards and smoking tobacco into the soldier's kit. I would suggest that each man should be equipped with a tube of two per cent. of yellow oxide of mercury ointment and can assure you that there will be nothing that he will carry that will be of greater benefit, not only to himself but indirectly to his country. Along with this he should be given a booklet, the contents of which should picture to him the aftermath of these abuses in all their hideousness. Herein at least lies a part of the solution for the control of this great plague. And still it must be remembered that "A man's a man for a' that."

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9119 COMMERCIAL AVENUE.

FURTHER CLINICAL EXPERIENCE WITH CORPUS LUTEUM ORGANOTHERAPY.*

With Special Reference to the Soluble Aqueous Extract.

By WALTER T. DANNREUTHER, M. D.,
New York,
Surgeon, St. Elizabeth's Hospital; Attending Female Urologist, Lutheran Hospital of Manhattan; Instructor in Gynecology, New York Post-Graduate Medical School and Hospital.

In a previous paper (1), the conclusions drawn from my personal experience with the desiccated corpus luteum extract in a series of about eighty patients were summarized as follows: 1. Corpus luteum extracts are superior to similar preparations made from entire ovaries. 2. Suitable cases for corpus luteum organotherapy must be carefully selected. 3. The indications for the administration of a lutean extract are distinct, and its use should be limited to these conditions. 4. The administration of corpus luteum is followed by certain definite phenomena. 5. It is of the utmost importance to use an extract obtained from the ovaries of pregnant animals only. 6. Five grain doses, three times a day, are usually all that are required. 7. There is great necessity for constant supervision of the blood pressure of patients taking corpus luteum; it should not be permitted to fall more than 15 millimetres below the patient's normal pressure, and never below 90 millimetres. 8. Personal experience has demonstrated that corpus luteum organotherapy is of considerable value in clinical practice. 9. In one patient menstruation has been established after complete extirpation of all ovarian tissue, by the use of corpus luteum extract.

More extensive observations in my own practice have verified and justified these contentions, and in large part they have been corroborated by others. Reviewing these statements now, however, certain of them merit emphasis and others may be slightly qualified. For example, the necessity for absolutely restricting corpus luteum organotherapy to cases in which indications are definite cannot be too strongly urged. As often occurs when a new therapeutic agent is introduced, it is frequently employed without a thorough understanding of its indications, contraindications, and limitations; hence it falls into disrepute. To disregard of this cardinal principle alone can a great many of the apparent failures of lutean therapy be ascribed. Again, results are sometimes anticipated too soon and its use is not continued sufficiently long to demonstrate its efficiency. Also, there still exists some diversity of opinion as to the correct dose. One or two writers have advocated the administration of not more than three grains three times a day, and state that the most satisfactory results have followed these small doses, while others still maintain that twenty grains or more are necessary. My own belief is that the proper dose varies more or less with the individual case and no fixed rule can be formulated.

The influence of corpus luteum therapy on the vasomotor and psychasthenic disturbances, as well as on the other organs of the endocrine system, also depends largely upon each patient's inherent peculiarities and physiological status when treatment is instituted. This is particularly noticeable in the depression of blood pressure, since this phenomenon is more pronounced in the natural or induced menopause than in the other types of pathological conditions for which corpus luteum is given. This is due to the fact that the deficiency of the ovarian hormone gives rise to a hyperactivity of the pituitary and adrenal glands, which of course increases arterial tension. Assuming this theory, Culbertson (2) selected a series of cases exhibiting vasomotor disturbances incident to the menopause, and found that corpus luteum invariably controlled the hypertension and associated symptoms. Although under such circumstances this blood pressure depression is of therapeutic advantage, this dictum applies only to climacteric cases. In nearly all others I still deem it wise to prevent a too sudden fall of the systolic pressure, especially in those whose pressure is subnormal in the beginning. Culbertson also has laid great stress on the necessity for constant supervision of the blood pressure: readings should be taken, not occasionally, but at frequent intervals, preferably daily. In addition, there will be found many cases in which the simultaneous administration of thyroid or some other organic extract will enhance the action of the corpus luteum by aiding in the restoration to normal of the general endocrine equilibrium.

Through the courtesy of one of the larger pharmaceutical manufacturers, I was supplied early in 1916 with ampoules of the soluble aqueous extract of corpus luteum, suitable for intramuscular injection. Because of more accurate dose, more definite and complete absorption, and increased potency, it seemed reasonable to assume that such a preparation would prove still more efficient than the desiccated extract. The mode of administration affords a distinct advantage in that the possibility of chemical or other destructive digestive changes is entirely eliminated. The clear solution is composed of the water soluble constituents and contains no appreciable amount of lipoids. The glands are trimmed carefully, and the corpora lutea dissected free of all connective and other extraneous tissue and subjected to the dissolving action of physiological salt solution. The particular elements desired are precipitated out by appropriate chemical reagents, and then redissolved. Chloretone is added for its preserving and local anesthetic effects. The contents of each ampoule, fifteen minims, are equivalent to three grains of the desiccated extract, or eighteen grains of the moist glandular substance. The dose is smaller on account of the route of administration.

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*Read before the Litchfield County Medical Society, Torrington, Conn., October 2, 1917.

I have used the soluble aqueous extract of corpus luteum for more than a year in approximately fifty patients, and believe that such an experience justifies the inferences drawn therefrom. This may seem to be a small and insignificant number of cases from which to make deductions, but to paraphrase Culbertson, it may be said that the majority of patients come to us with more or less genuine pathology, and the extensive exclusion of such cases leaves a surprisingly small number as material upon which to base a study. Almost all my investigations were made in private practice, hence the patients were subjected to more constant observation and personal control than is possible in hospital and dispensary work. Within a short time several striking facts were recognized: 1. The subjective symptoms, particularly vertigo and nausea, so often mentioned by patients ingesting the desiccated extract before establishment of toleration, are seldom noted. 2. Overdosing with the soluble extract is usually manifested by headache. 3. The desired results are more rapidly attained than after the internal administration of the ordinary extract. 4. After the influence of the aqueous extract has become apparent, the desiccated extract will maintain the improvement.

Since the subcutaneous dose of all drugs is generally about half of that given by mouth, it is readily seen that fifteen minims of the aqueous extract, representing three grains of the desiccated substance, is the proper dose. With this uniform dose its effects can be regulated by varying the intervals between injections, and this will be found more practicable than any attempt to modify the doses quantitatively. Rather than to record a large number of complete case histories, which is tiresome and unwarranted, the citation will be limited to one typical illustration of each class of cases in which the soluble aqueous extract has been found of service.

FUNCTIONAL AMENORRHEA.

Young women in whom absent, scanty, or delayed menstruation is the predominant symptom, in spite of negative pelvic findings, comprise a class of cases frequently encountered by the gynecologist. A clinical picture, characteristic of insufficient ovarian activity, is evident in practically all and is manifested by nervousness, weakness, pale skin, anemia, tissue tone below par, and often a tendency to obesity. Numerous other factors may enter into this symptom complex, but these are the more pronounced. Some of these patients improve after marriage because of the circulatory and glandular stimulation produced by coitus, but even then they often remain sterile for a long time. Under corpus luteum therapy such patients as a rule immediately improve. They look better, feel stronger, become less nervous, and lose weight gradually, and a fairly regular menstrual flow is soon established. These points are very well illustrated by the following case record:

Case I.—M. G., married, aged twenty-one years, came under observation in July, 1916. Family history was unimportant. Menstruation had always been normal in her mother and only sister. Previous personal history: She had always enjoyed excellent general health and had never had any serious illness. Her habits were good, and she denied headaches, backaches, indigestion, constipation, and urinary disturbances, but admitted that she had always been quite nervous. The onset of menstruation occurred at the age of ten years, and was quite regular for two years. The intervals then became somewhat prolonged—six to eight weeks—and the flow was accompanied by more or less suprapubic dysmenorrhea. She married at sixteen years of age, and although normal marital relations have been maintained, she has never become pregnant.

Her chief complaints in her present illness were amenorrhea and sterility. She weighed 135 pounds at the time of marriage and now weighed 155, the greater part of which increase was acquired during the past year. Within the past two years she has grown more nervous, listless, mentally depressed, and had anorexia at times. Her last menstruation occurred on November 28, 1915, eight months ago. The preceding flow was in October, 1914, an interval of thirteen months. The one before that was in January, 1914, nine months' interval. Tracing the history backward from that time, the periods of amenorrhea extended over six months, four months, three months, and two months.

The patient's general appearance might best be expressed as "short and dumpy." She looked distinctly too fat and the tissues did not seem to be particularly well nourished. The color of the conjunctivæ and lips was fair, and the tongue clean. Thyroid apparently normal. Pulse 80 and of good rhythm. Systolic blood pressure, 116. Thoracic and abdominal organs were all normal. On pelvic examination the uterus was found to be somewhat underdeveloped, but otherwise the physical findings were negative. Desiccated corpus luteum extract was prescribed and taken faithfully for ten weeks, and during this time negative pole intracervical applications of ten milliamperes of the galvanic current were also made at frequent intervals in an effort to promote circulatory activity and favor uterine development. She soon became less nervous and felt better generally, but no menstruation appeared despite the fact that on several occasions she experienced the associated pelvic discomfort that customarily preceded her periods. On September 7, 1916, she received her first dose of soluble aqueous extract and two days later menstruation began. The bleeding was normal in character and duration and was unaccompanied by pain. Henceforth her treatment consisted of similar intramuscular injections approximating five days apart, with negative galvanism immediately before each expected period. Briefly, the effects were as follows:

Date of Onset of Menstruation	*Duration*	*Interval*
September 23, 1916	4 days	16 days
November 4, 1916	5 days	42 days
December 19, 1916	6 days	45 days
January 13, 1917	5 days	25 days
February 2, 1917	5 days	20 days
March 3, 1917	5 days	29 days
March 29, 1917	5 days	26 days
April 26, 1917	5 days	28 days
May 24, 1917	5 days	28 days

As it became evident that normal menstrual periods were becoming well established, the intervals between the doses were gradually lengthened from five to seven days, and later to ten days. At no time did the patient complain of any toxic symptoms whatever, while the general improvement in her condition was remarkable. She now felt brighter, more energetic, and much less nervous, and the body weight decreased from 155 to 140 pounds, in spite of a better appetite.

This is a fairly typical history of this class of cases, although the manifestations of progressive ovarian incompetency were rather more exaggerated than usual. A large number of such cases have come under my care and in all of them the results of the organotherapy have been equally gratifying.

VICARIOUS MENSTRUATION.

The only two patients in whom a monthly periodical epistaxis replaced the regular uterine bleeding in this series of cases also presented all the manifestations characteristic of those of the functional amenorrhea group, although I have previously seen several instances of vicarious menstruation in which the general economy showed little disturbance. Nevertheless, that this abnormal hemorrhage is due to perversion of the ovarian internal secretion would seem to be proved by the fact that these cases have responded to corpus luteum extract, as the appended history exemplifies:

Case II.—J. D., single, aged seventeen years, consulted me on January 12, 1917. Family history was negative. In early childhood she suffered from "general weakness" for a long time, but never contracted any of the ailments common to this period of life. Menstruation began at the age of ten years. It was regular during the first year, but has been very irregular and accompanied by dysmenorrhea ever since. The flow has always been late, and for the past two years has failed entirely to appear on alternate months. Notwithstanding her freedom from serious illnesses, attacks of weakness and headaches have been frequent during this time. Appetite was good and bowels regular. Her chief complaints in her present illness were epistaxis and amenorrhea. Ten months ago, at the time that menstruation should have occurred, she had a profuse and persistent nosebleed. Six months ago the same experience was repeated. She menstruated normally in September, 1916, but not since. Each time thereafter when uterine bleeding has been expected the annoying epistaxis has returned instead. She became nervous, slept badly, had gained fifty pounds in body weight within the last year, and malaise was marked. Nasal hemorrhage had been almost constant the morning of the consultation. The patient looked extremely heavy for her age and height, but her tissues seemed to be poorly nourished. The color of the conjunctivæ and lips was fairly pink. Thyroid was apparently normal. Pulse 90 and somewhat arrhythmic. Blood pressure, 130. The lungs were clear and heart sounds normal, except for a faint systolic murmur at the apex. The abdomen was obese, but otherwise negative. On rectal examination, the pelvic organs were found to be normal.

After the first intramuscular injection of the aqueous extract of corpus luteum, which was given at once, the epistaxis promptly ceased. Because of her inability to present herself for treatment as often as necessary, she was also given five grain doses of the desiccated extract three times a day. On the eleventh day a normal menstrual flow appeared, lasting seven days. Since then her condition has been controlled with the aqueous extract, menstruation has been regular, and there has been no more nasal bleeding. Her blood pressure decreased slowly to 110 within a month, and then gradually fell to 100, where it remained. Her pulse was now 76, she was less nervous, felt stronger, and had lost fifteen pounds in weight. Small doses of bromides were the sole adjuvant in the treatment of this girl.

HYPEREMESIS OF PREGNANCY.

Hirst employed hypodermic injections of corpus luteum for the control of the nausea and vomiting of pregnancy early in 1916, and published a preliminary report (3) on this phase of the subject after observing the effects of this mode of administration in five cases. His communication does not state the exact nature of the preparation used, but one may infer that it consisted of a solution in water of the desiccated extract. In a subsequent article (4), however, he reports thirty-six cases treated with a soluble aqueous extract, similar in character to the one used by me. In this series the injections were given intramuscularly instead of hypodermically. Definite relief from the patients' nervous symptoms as well as the nausea and vomiting followed in thirty-two of thirty-six cases. The success of this therapeutic measure for the alleviation of hyperemesis in pregnancy has been marked in eight of my own patients, my personal experience coinciding with Hirst's. The history of a typical and especially obstinate case is appended:

Case III.—M. B. H., married, aged thirty years, has been under my care for eleven years. Her father and many of his near relatives died of tuberculosis; her mother was living and well. Her mother's first pregnancy was interrupted by spontaneous abortion at the fourth month, her second terminated in a stillbirth at term, and her third resulted in this patient. The patient had the ordinary diseases of childhood, none of which had serious sequelæ, but had escaped other grave illnesses. She had always been frail and underdeveloped, but "wiry." Menstruation began at thirteen years, was usually late and scanty, and invariably accompanied by dysmenorrhea and backache. Usual weight since puberty, ninety-five pounds. She married in 1912, and although no perceptible physical development followed, her menstruation became more regular and profuse and the dysmenorrhea disappeared. Appetite was good and bowels regular.

In October, 1916, she became pregnant for the first time. Because of her physical deficiency she was referred to an internist for a thorough examination, a pathologist for an examination of the blood, and still another pathologist for a detailed urine examination. All these consultants agreed that pregnancy might be allowed to continue with safety. Her bony pelvic dimensions were ample. The last menstrual flow commenced October 12, 1916, and pregnancy progressed uneventfully until December 5th. She then became extremely nauseated, nervous, and suffered from headaches. These symptoms gradually increased in intensity until December 20th, when she was seized with an extraordinarily severe headache and terrific vomiting, which persisted for twelve hours in spite of heroic treatment. For the previous fifteen days restricted diet, careful hygienic measures, sedatives, cerium oxalate, bismuth, and all the other ordinary remedies for the relief of nausea had been tried without avail. Her stomach rejected everything: kumyss, champagne, peptonoids, jelly, and all other forms of nourishment. She was given daily intramuscular injections of the aqueous extract of corpus luteum, with gradual cessation of the nausea and vomiting, and complete relief after the seventh dose. Her blood pressure dropped from 116 to 104, but regained this loss soon after stopping the injections. Not only was she free from nausea but the neurotic symptoms also cleared up. She was quite comfortable for about a month, although somewhat physically weak, when on January 25, 1917, the nausea and vomiting suddenly recurred, in an even more aggravated form than before. The treatment was repeated with equally as prompt effects, and after February 8th she had no more trouble. It is also significant that during this period of evident toxemia the twenty-four hour urea output varied from 50 to 100 grains below the minimum normal.

POSTOPERATIVE OVARIAN INSUFFICIENCY.

After many pelvic operations in which resection or extirpation of more or less but not all ovarian tissue is necessary the compensatory activity of the remaining glandular substance proves incapable of maintaining normal physiological conditions. This is most often evidenced by a delay or a decrease in the quantity of the subsequent menstrual bleeding, which is frequently accompanied by clots and vague pelvic discomfort. The desiccated extract has been successful in counterbalancing this deficiency in some cases but has failed in others. Since the aqueous extract has been available, however, the results of corpus luteum therapy have been uniformly satisfactory, and normal menstruation has been reestablished in patients to whom the ordinary extract had been given in vain. The following history nicely demonstrates this point:

Case IV.—A. C., married, aged thirty-three years; first seen in March, 1914. Family history was negative. She had never had any serious illness, but had always been "anemic." At one time her hemoglobin was as low as forty per cent. and she had been under medical treatment several times for anemia. Menstruation began at twelve years, and was quite irregular until she was married at the age of twenty-eight years. Since then her periods have been fairly normal in time, duration, and amount, but impregnation has never occurred. Appetite and digestion were good and bowels were regular. The chief complaint in her present illness was pain in the left lower abdomen. About ten years ago she experienced a sensation of discomfort in the left inguinal region. It was slight at first but had gradually increased in intensity. The pain was now constant and uninfluenced by menstruation. For the past two weeks there had also been a sensation of weakness in the sacral region. The patient now seemed fairly well nourished and developed. Weight, 116 pounds; pulse, 80; blood pressure, 120. Examination of the blood shows hemoglobin ninety per cent., and normal red and white cell counts. The only point of interest otherwise elicited is the determination of a large, soft, fluctuating tumor in the left side of the pelvis, diagnosed as an ovarian cyst. A laparotomy performed on April 15, 1914, disclosed several points of interest within the abdomen, but we are not concerned with them here. Suffice it to say that the cystic left ovary was removed *in toto*. The right ovary was normal and not disturbed.

Postoperative history was as follows: The monthly bleeding became more scanty and the intervals more prolonged as time passed after the operation. The patient also complained of malaise, depression, and nervousness. Early in 1915 the desiccated extract of corpus luteum was prescribed and continued until July, 1916. During this period the patient's general condition improved and the menstrual flow became more natural in character and duration, but was still almost always late. Intramuscular injections of the aqueous extract were then begun, and after five doses on alternate days she menstruated on the proper date for the first time since the operation. Since then her flow has been absolutely regular. The intervals between the doses were gradually lengthened, so that two doses a month were enough to maintain her regularity.

INDUCED MENOPAUSE.

This category comprises those cases in which all ovarian tissue has been extirpated in women who have not yet reached the climacteric age. No more brilliant result can be expected than one such as was attained in the patient whose history was outlined in detail in my previous communication on corpus luteum organotherapy, for in that instance not only were all unpleasant sequelæ prevented but the menstrual function was reestablished as well. She is still under observation and menstruating normally. This was accomplished by use of the desiccated extract alone. It has been my experience that if the treatment is begun promptly, corpus luteum extract will forestall all the unpleasant aftersymptoms usually precipitated by these operations. The results from the exhibition of the desiccated extract have been so universally satisfactory that even the aqueous extract can prove of but slightly greater advantage. Its sole point of superiority is its greater rapidity of action. In view of the invariable success of lutean therapy in this group of cases, and the case record submitted in the other paper referred to, further reports are unnecessary.

PHYSIOLOGICAL MENOPAUSE.

The efficiency of the soluble aqueous extract is probably more striking in this type of case than in any of the others. Essentially the same results can be achieved eventually with the desiccated extract, but a much longer time is required. With the aqueous extract improvement is almost immediate, and after five or six injections all the psychoneuroses and vasomotor symptoms disappear entirely. The following two histories illustrate the difference in time consumed in accomplishing the same result:

Case V.—M. S., married, aged forty-one years. Family history was unimportant. Previous personal history was unimportant, except that she had always enjoyed good health, had menstruated regularly since the age of ten years, and has had no miscarriages and four normal labors. Present illness began with abrupt cessation of menstruation three months ago. With its cessation the patient began to have headaches and hot flushes, which increased in severity and frequency. She also complained of nervousness, and paresthesia. Within the last few days she has had attacks of syncope, followed by tonic muscular contractions of the arms and hands. Physical examination showed a woman practically normal in every respect. Pulse, 84; blood pressure, 156; weight, 215 pounds.

This patient was given five grain doses of the desiccated extract three times a day. Three weeks later the hot flushes had decreased in number and intensity, the headaches had lessened, the paresthesia was not noticed, and the blood pressure was 146. Two weeks afterward the headaches and flushes had disappeared entirely, and the blood pressure was 140. Four weeks after this all symptoms had cleared up, and the blood pressure was 120. Time required for complete relief, nine weeks.

Case VI.—S. D., married, aged forty-six years. Family history was unimportant. Previous personal history was unimportant, except that she had always enjoyed good health, had menstruated regularly since the age of fourteen years, and had had no miscarriages and six normal labors. Present illness began with abrupt cessation of menstruation four months ago. With its cessation she began to feel badly. Indefinite headaches and hot flushes were among the first symptoms. The flushes were especially intense and were followed by profuse sweating. She had also become listless, nervous, and mentally irritable. Indefinite headaches, vertigo, and hyperesthesia of the brachial and sciatic regions were also annoying.

Physical examination showed a woman practically normal in every respect. Pulse, 80; blood pressure, 168; weight, 167 pounds. The patient was given fifteen minims of the soluble aqueous extract intramuscularly every other day for six doses. All symptoms had entirely disappeared within this short space of time, and she felt as well as ever. After these six doses the blood pressure was 152, a decrease of sixteen millimetres. She was then given the desiccated extract intermittently for several weeks and there was no return of the disagreeable symptoms. Time required for complete relief, twelve days.

These two case records are graphic examples, and demonstrate the relative potency of the two preparations of corpus luteum extract. The comparatively rapid fall in blood pressure is a desirable consequence in these patients and may be permitted with safety, particularly when the systolic pressure is considerably above normal at the beginning of treatment, providing no untoward byeffects arise. Another precautionary word on such an abrupt decrease in younger women under other circumstances is not amiss however.

APPLICATION, TECHNIC, AND DOSE.

The value of corpus luteum organotherapy, especially in the form of the soluble aqueous extract, in the so called functional disturbances of the ovarian internal secretion is quite evident. Conversely, it has its limitations, and it would be folly to expect success in the presence of gross pathological lesions within the pelvis. Its use should therefore be confined to cases in the foregoing classification and not applied indiscriminately in gynecological practice. In other words, exact diagnosis is the first prerequisite, and the proper selection of suitable cases the second.

The technic of administration is simple. An all glass syringe of the Luer type is best adapted for making the injections, and should always be sterilized by boiling with the needle. To avoid local reactions and insure prompt and complete absorption, the injections are made intramuscularly rather than hypodermically. The most convenient site is the belly of the deltoid muscle, although other regions may be utilized if preferred. If the material is deposited deeply and the surrounding area gently massaged for a few seconds, pain and subsequent tenderness seldom follow. No severe local reactions, general reactions, abscesses, nor anaphylaxis have occurred in any instance.

Control of dosage is exercised rather by shortening or prolonging the intervals between the doses than by varying the quantity given at any one time. No fixed rule can be advanced, and one's judgment must be governed to a large extent by clinical experience and careful observation. In general, it may be said that patients with pernicious vomiting of pregnancy tolerate most frequently repeated doses. Here it may be given daily without apprehension, unless some manifestation of overdosage occurs. For almost all the other conditions wherein it is indicated one dose every other day usually suffices, and the intervals may be lengthened gradually as the symptoms are controlled or the blood pressure decreases.

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2030 BROADWAY.

THE SURGICAL TREATMENT OF GASTRIC ULCER.

A Résumé of the Literature.

By W. Frank Fowler, M. D.,
Rochester, N. Y.

The writer has gathered from the literature papers which have been written by close observers of wide experience. From these papers abstracts have been made in an endeavor to reconcile divergent opinions regarding the various phases of the surgery of gastric ulcer and to draw conclusions therefrom.

The relationship between gastric ulcer and gastric cancer.—As a guide to treatment and prognosis it is of utmost importance to determine first what relationship ulcer and cancer of the stomach bear to each other. In this regard the views of Aschoff, as quoted by Mayo (1), that cancer rarely follows ulcer, is at variance with the opinions of most other observers. Rodman (2), for example, states that in 1900 he advocated the radical treatment of gastric ulcer because several American and foreign surgeons were performing pylorectomy and partial gastrectomy in the belief that their patients were suffering from cancer and therefore required drastric measures. In a personal communication to Rodman, Gerster wrote: "Gastroenterostomy in ulcers yielded very good operative results, but there were a number of clinical failures due to the development of cancer in the ulcers." Lilienthal states: "Gastroenterostomy in its various forms does not give me satisfaction, and in three cases which I happen to remember just now, carcinoma developed at the pylorus years after the gastroenterostomy." W. J. Mayo wrote: "The main field for the Rodman operation as we find it is in an inability at the operating table to tell a carcinoma from an ulcer. In three cases out of four when we remove a suspicious ulcer it proves to be a carcinoma, and a number of cases after gastroenterostomy for supposed ulcer have developed carcinoma so quickly as to make it certain that it had existed at the time of operation." On the other hand, Sherren (3) states that in none of the cases operated in for chronic gastric ulcer by gastrojejunostomy alone, in which he had no doubt of the simple nature of the lesion, has carcinoma developed. Rodman quotes Mayo-Robson as saying in 1904 that in 59.3 per cent. of his gastric ulcer cases carcinoma developed, in several after an interval of two years or more following gastroenterotomy for ulcer. Moynihan stated in 1908 that 72.1 per cent. of his cases of gastric cancer had been preceded by a definite ulcer history. Cheney in a very comprehensive review of the literature concerning gastric cancer quotes Wilson as saying: "When one considers the clinical evidence in relation to a careful histological study of a large series of operative cases of gastric cancer, he is led to the opinion that in all probability very few cases of gastric cancer exist which have not taken their origin at the site of a previous ulcerative lesion of the mucosa; in other words, the pathological findings show that gastric ulcer first develops and cancer is implanted thereon." The statement of Wilson (4) and MacCarty (5), that cancer begins not in the base but in the overhanging margins of an ulcer, is of more than academic interest. Cheney and Ochsner (6), in commenting upon the statement of Friedenwald, that a clinical study of 1,000 cases has convinced him that ulcer preceded cancer in but 7.3 per cent., are agreed that simple analysis of case reports is insufficient evidence. They believe that accurate data can be obtained only from a study of the living pathology. Von Eiselsberg (7) reports a series of 334 gastroenterostomies for ulcer in which thirteen patients subsequently died of gastric carcinoma. Cheney believes that at least half the cases of cancer develop on an ulcer. Ochsner says: "During the past ten years I have personally studied all cases of cancer of the stomach removed in our clinic with a view of determining whether its beginning was in the margin of an ulcer, and in all cases not too far advanced for reliable observation I have been able to find evidence of the previous existence of an ulcer."

The location of the ulcer also determines to a large degree what surgical procedure should be instituted for its cure.

Pyloric ulcer.—Ulcers which occur at or near the pylorus or in the pyloric end of the stomach are called pyloric ulcers. Whether or not an ulcer is located upon the duodenal or gastric side of the pylorus may be determined by its relation to the pyloric veins as emphasized by Mayo.

Referring to gastroenterostomy, Collinson (8) states that there is probably no operation which produces more gratifying results for chronic ulcer of the pylorus, and Mayo believes that simple gastroenterostomy will usually cure ulcers in this location. Von Eiselsberg states that in healed ulcers, particularly with pyloric obstruction, the operation is curative, but in persistent ulcer the results are not so good, nor are they so satisfactory in ulcers remote from the pylorus. The opinions of Gerster and Lilienthal have been previously quoted herein. Sherren is a most ardent advocate of the procedure no matter where the ulcer is located and states that "gastrojejunostomy alone so modifies gastric conditions that ulcers heal, and that only when complications have arisen is excision or partial gastrectomy necessary." Patterson, also, believes that gastroenterostomy cures gastric ulcers irrespective of location.

Ulcers which are situated at or near the pylorus may be best treated by pyloroplasty according to Finney (9). In reviewing the results of 100 operations done by himself he concludes that the procedure has its greatest indication in the relief of pyloric stenosis due to chronic ulcers, situated at or near the pylorus, and on either side of it, or resulting from cicatricial contraction following the healing of such ulcers. It affords opportunity for excision of ulcers in the anterior wall after direct inspection, and the application of treatment to ulcers of the posterior wall. It does not greatly disturb the normal relations between the stomach and intestines. Although partial gastrectomy or gastroenterostomy is the operation of choice in some instances, there is an undoubted field of usefulness for pyloroplasty. Finney reports 88.8 per cent. of satisfactory results from one to twelve years after operation in seventy-eight cases. Turner (10), in 1912, reported the end results of twenty pyloroplasties. He considered simple, uncomplicated pyloric stenosis as an undoubted indication for the operation, but stated that surgeons are called upon nowadays to treat active ulceration rather than the stenosis and dilatation which follows. Mayo states that the pylorectomy of Rodman and partial gastrectomy are admirably adapted to the relief of pyloric ulcers, as it removes the cancer liability and reduces the chances of jejunal ulcer. The mortality is slightly higher than gastroenterostomy. Mayo believes that the Rodman operation should be performed only upon patients who are good surgical risks and those in whom there is an actual probability of cancer.

Rodman bases his chief argument in behalf of pylorectomy upon the liability of ulcer to become carcinomatous. He quotes Gerster, Lilienthal, Mayo, Bevan, Brewer, and Coffey to the effect that excision of the ulcer bearing area may be advisable. Rodman quotes Jeddlicka as saying that all ulcer carcinomas were located in the pyloric end of the stomach and ulcers situated elsewhere were not subject to carcinomatous change. Rodman does not subscribe fully to this dictum but believes that eighty per cent. of all ulcers are found in the pyloric fifth. The operation is not indicated if the duodenum cannot be properly mobilized. Pylorectomy may be performed in two stages if the patient is not a good surgical risk.

Ulcers of the lesser curvature.—Ulcers of the lesser curvature often present a difficult problem. Coffey (11) was an early advocate of excision combined with gastroenterostomy. Mayo reminds us that the point on the greater curvature which is opposite the ulcer may remain permanently crippled, even after excision of the ulcer, with consequent impairment of gastric motility. Gastroenterostomy should always be combined with excision. Collinson concurs in this opinion and states that gastroenterostomy with excision gives best results, gastroenterostomy alone stood next, and simple excision produced the worst results. Rodman, on the other hand, believes that "in some cases it may be wise, though it is not usually so, to supplement excision by gastroenterostomy. It all depends upon the location and size of the ulcer, and whether or not the stomach can presumably carry on its functions without irritating, stretching, or otherwise interfering with the line of suture." Mayo reports that two cases of simple excision ended fatally with hemorrhage due to failure of union in the mucosa. As a result Balfour (12) developed his cautery puncture excision which does not need description.

Scudder and Harvey (13) made an investigation upon dogs with the object of learning whether or not cauterization of the stomach wall was a safe procedure. They concluded that the method is safe and that union is not delayed. The cautery is indicated in the treatment of chronic ulcers upon the lesser curvature which are so remote from the pylorus as to render the removal by excision difficult. Thorough cauterization destroys cancer in the edges of the ulcer. The cautery saves time over excision and approximation is easier. Collinson has employed the Rodman operation for cratered, chronic ulcers upon the lesser curvature which were located from one to two inches from the pylorus. He considers the ultimate results of this procedure to be better than those following any other operation for ulcer in this location. Ulcers of the middle portion of the stomach which are too large for cautery puncture are best treated, according to Mayo, by "sleeve resection," a removal of the gastric segment which bears the ulcer with end to end anastomosis. Mayo notes that gastric motility following this operation is better than after simple excision.

Ulcers of the posterior wall.—Ulcers of the body of the stomach involving the posterior wall are the most serious, according to Mayo. They are usually of large size and involve the pancreas. It is difficult to tell whether or not they are malignant. If these ulcers are not too large Mayo utilizes transgastric excision. The anterior stomach wall is opened, the ulcer excised from within the stomach and the gap sutured from within. If pancreatic tissue forms the base of the ulcer it may be shaved off with a scalpel until the exposed portion of callus has been removed, or it may be destroyed with the actual cautery. Scudder and Harvey also advocate the cautery treatment of these ulcers.

The intercoloepiploic method of approach to the posterior face of the stomach as described by B. Sherwood-Dunn (14) may prove of value in these difficult cases. Sherwood-Dunn states that the gastrohepatic and transmesocolic routes give very limited access and that the cologastric route affords ample working space, but is slow. The new method of Lardennois, Okinezyc, and Pauchet, the intercoloepiploic approach, on the other hand, is rapid and adequate. The great omentum is separated from the transverse colon in an avascular area close to the colon, and the stomach, together with the great omentum, is rotated upward, giving free access to the entire posterior gastric wall.

Mayo states that the more extensive ulcers of the posterior wall may best be treated by a partial gastrectomy, with removal of the entire distal end of the stomach after the method of Pólya (15), in which the opened jejunum is anastomosed directly to the cut end of the stomach. Mayo believes that few cases warrant this procedure.

Hourglass stomach.—The type of gastric deformity which obtains in a given case of hourglass stomach determines, of course, the operative measures which should be undertaken for its relief. The operation of choice might be gastrogastrostomy of the usual type or patterned after the pyloroplasty of Finney, with gastroenterostomy, or a "sleeve resection" plus gastroenterostomy might be indicated. If there are several loculi a Heinke-Mikulicz plastic operation may be done on each pouch combined with gastroenterostomy.

Ulcers near the cardia.—Ulcers of the cardiac end of the stomach are extremely inaccessible and a jejunostomy may be the only practical means of relief according to Collinson, who quotes Robson, Mayo, and Moynihan. Coffey reports an ulcer in this location which he was able to excise through a rather extensive incision along the left rib margin.

Perforated ulcers.—Gibson (16) believes that a gastroenterostomy, either primary or secondary, is unnecessary in the treatment of perforated ulcers. He states that the perforation is, in itself, curative of the ulcer and the only surgical interference required is closure of the perforation. Connors (17) says: "It is easy enough to say that gastroenterostomy adds only a few minutes to the length of the operation, but in my opinion only one who has had great experience is in a position to accomplish the desired result in a short period of time." He believes that a gastroenterostomy may be done secondarily, if indicated, with greater safety to the patient. Petren (18) concludes that "the afterresults of suture of perforations situated in the neighborhood of the pylorus are relatively favorable without gastroenterostomy having been performed." Rovsing (19) believes in performing a quick operation, consisting of closure of the perforation and drainage. Deaver, quoted by Gibson (16), on the other hand, is a strong advocate of primary gastroenterostomy. Collinson states that gastroenterostomy is not essential to the recovery of the patient. It is not indicated if severe peritonitis is present. A good surgeon is justified in performing a primary gastroenterostomy in pyloric ulcer if the perforation is recent and the patient in good condition. "When in doubt don't." Gibson and Connors believe that closure of the perforation seldom causes stenosis.

Sullivan (20) quotes Elliot as presenting the consensus of various authorities to the effect that the operation is not favored as a rule, but depends upon, 1, good condition of the patient; 2, narrowing of the pylorus by closure of the perforation, and, 3, the ulcer being located at or near the pylorus. Sullivan reports twenty cases, in ten of which he did primary gastroenterostomy in addition to closure of the perforation. His personal indications are: 1, good condition of the patient; 2, the perforation occurring not longer than ten hours previously; 3, closure of the perforation apparently narrowing the pylorus unduly; 4, convalescence presumably shortened; 5, the operation presumably preventing subsequent perforation of any coexistent ulcer. Collinson states that probably forty per cent. of cases of pyloric ulcer will have recurrence of symptoms if the perforation is merely closed, but the symptoms appear to be due in a proportion of cases to adhesions rather than to stenosis or recurrent ulceration. Gibson considers drainage unnecessary. Sullivan drains early cases through the original incision only with soft rubber tubes leading to the affected area. He has used counter drainage but once. He utilizes less drainage than formerly, but would not hesitate to use more in late cases. Deaver drains the pelvis, only, with a glass tube. All concur in the opinion that the mortality increases with each hour of delay beyond twelve to fifteen hours after the perforation.

Pyloric occlusion.—The investigations of Cannon and Blake have demonstrated that if the pylorus is patent it will function and the artificial opening of a gastroenterostomy will not. The advisability was thus suggested of combining pyloric occlusion with gastroenterostomy. The unilateral exclusion of von Eiselsberg and the various other ingenious methods devised by Brewer, Strauss, Mayo, and others are familiar. In regard to pyloric exclusion von Eiselsberg states that it offers the greatest security in dealing with ulcer and its complications, especially when the ulcer is fresh and causing pain. Sherren believes that pyloric exclusion is unnecessary. Mayo says that blocking the pylorus does not add anything of value to the operation. According to Gibson the whole question of the necessity, value, and efficiency of pyloric exclusion is still in doubt. McGuire (21) experimented with dogs by removing enough of the duodenal wall near the pylorus to admit only the finest probe after restoration of the lumen by suture. McGuire concludes from this investigation that it is probably impossible to produce obstruction to any tubular passage excepting by the contraction of scar tissue or adhesion outside of the lumen. Lilienthal in a communication to Rodman stated that he did not approve of the various exclusion methods and could prove by x ray studies that in many cases patency was reestablished. Hamburger and Leach (22) conclude as a result of postoperative x ray investigation that "operative procedures on stomachs with delayed motility and hypersecretion usually reduce motility to normal [but not beyond], and lower hyperacidity. This is particularly true if the pylorus is closed. If the pylorus is left patent, vicious circle, stasis in the duodenum, spasm, or secondary contracture of the opening is liable to continue the abnormal gastric function or to increase it."

CONCLUSIONS.

1. In a large but indefinite proportion of cases gastric cancer develops upon gastric ulcer.
2. Pyloric ulcers are usually cured by simple gastroenterostomy. The liability to cancer suggests the advisability of removal of the ulcer bearing area.
3. The value of pyloric occlusion has not been definitely determined.
4. Ulcers of the lesser curvature, if not too large, are best treated by excision or cautery puncture combined with gastroenterostomy. The "sleeve resection" may be indicated for large ulcers.
5. Ulcers of the posterior wall may be treated by transgastric excision, by some method of extra gastric approach to the posterior stomach wall, or by partial gastrectomy of the usual type or after the method of Pólya.
6. The type of deformity in a given case of hour glass stomach determines the operative procedure which should be undertaken for its relief.
7. Ulcers of the cardia should be excised if practicable. Jejunostomy may be the operation of choice.
8. Perforated ulcers recover after closure of the perforation, with and without gastroenterostomy, and with and without drainage. The mortality rises rapidly with each hour of delay beyond twelve to fifteen hours after perforation.

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183 Alexander Street.

THE TREATMENT OF PULMONARY HEMORRHAGE.*

By Dwight Clifford Martin, M. D.,
New York.

Although pulmonary hemorrhage may be a clinical manifestation of a number of diseases of the lungs, among the most frequent of which are bronchiectasis, pneumonia, active and passive congestion, abscess, and gangrene, it is in a large majority of cases caused by that most frequent of all diseases, pulmonary tuberculosis. This is true to such an extent that when confronted with this symptom in a patient whose past history is unknown, the physician's attention is almost invariably directed to this disease as an explanation for its occurrence. It is well to bear in mind, however, the distinction between pulmonary hemorrhage and hemoptysis, for many of the pathological conditions of the mouth and nasopharynx are etiological factors in the latter. The importance of determining this is apparent, for should the hemorrhage become uncontrollable, surgical intervention may be possible in one case and wholly unavailable in the other.

It is generally agreed that the factors chiefly concerned in the arrest of hemorrhage are increased coagulability of the blood, a reduction of its volume, and a diminished rapidity of its flow. The most rational therapy, therefore, will be that which favorably influences these basic principles. Pulmonary hemorrhage varies in extent from blood tinged sputum to copious hemorrhage. Regardless of the amount, however, it is a symptom which should always receive careful attention. The frequency with which apparently trivial hemorrhages are followed by others serious enough to terminate rapidly in death demonstrates beyond question the advisability of placing the patient in every instance under close observation. The conditions associated with the treatment of pulmonary hemorrhage are different from those usually attached to the presence of any other grave symptom, inasmuch as it is generally impossible to obtain at the time definite knowledge concerning the underlying pathological condition. This, of course, is due to the fact that the absolute rest required in such an emergency prohibits the intensive physical examination necessary to obtain such information. At first thought this might seem to deprive the physician of knowledge considered imperative for the intelligent treatment of the case. Its importance, however, is not so great, for the clinical manifestations aid in determining the extent of the bleeding rather than knowledge of the etiological factor. It is important that full information be obtained concerning the rate and quality of the pulse, the temperature, the presence or absence of dyspnea, and signs of impending collapse. It is generally recognized that the majority of cases of pulmonary hemorrhage call for little or no intensive treatment. It is the symptom in its graver aspects to which I desire to direct attention in the discussion of the remedial measures most helpful in its control. Such treatment may be presented under the following headings: 1, general management; 2, administration of drugs; 3, use of special methods.

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*Read before the Medical Association of the Greater City of New York, March 19, 1917.

GENERAL MANAGEMENT.

Under general management may be mentioned careful attention to the patient's environment. Except in the severer forms of hemorrhage, attention to hygienic details and the total exclusion of drug therapy will result in a complete arrest of the bleeding in most instances. The personal influence of the physician in controlling the psychical depression commonly met with is of great importance. While there is considerable difference in the mental condition of patients suffering from pulmonary hemorrhage, many of them regard it with such consternation that they become almost panicstricken. To calm their fears and allay their apprehension will materially assist in the management of these cases. The patient should be immediately placed in bed. The most desirable posture is still a mooted question. Some authorities advocate the recumbent, others the semirecumbent, while still others prefer placing the patient on the affected side. Various advantages, perhaps more theoretical than real, are claimed for each of these positions. If full recumbency is chosen, it is of advantage to raise the head of the bed slightly in order that the force of gravity may aid in drawing the blood from the pulmonary vessels to those of the abdomen and lower extremities. If there is severe dyspnea, further elevation of the head and shoulders will be helpful. Avoidance of all muscular effort is essential. Speaking by the patient above a whisper should be interdicted. The expectorated blood should be received upon gauze handkerchiefs or in a basin conveniently placed. Unnecessary visits from relatives or friends and other disturbing conditions should be guarded against. The sickroom must be kept at a cool and equable temperature. An efficient nurse will prove invaluable. The bowels must receive careful attention, for constipation has justly been regarded a predisposing cause for pulmonary hemorrhage. A daily evacuation, if possible without straining at stool which has frequently resulted in the hemorrhage becoming uncontrollable, is a necessity and can best be secured by the use of enemas. It is not intended to discourage the use of laxatives in all cases, but the frequent nauseating effects of these drugs is fraught with danger. Nothing is more disturbing to the physician than to be confronted by retching and vomiting during the manifestation of an acute hemorrhage, and anything tending to excite this symptom must, for the time at least, be avoided. Blood may be swallowed and vomited. This is beyond our control. We can only exercise care in the avoidance of any form of medication that is at all likely to excite this condition. Needless to say, the use of the bed pan should be insisted on. Small pellets of ice may be given with advantage, as they relieve the dryness of the mouth, allay nausea, and, in the opinion of some, favorably influence the hemorrhage itself. The diet should be liquid or at least semisolid, as mastication is to be avoided. It should be administered in small quantities at frequent intervals and always cold. All nourishment should be given either with a spoon or through a drinking cup or tube.

DRUG THERAPY.

The late Austin Flint once said, in reference to the drugs then employed in the treatment of pulmonary hemorrhage: "After a pretty large experience with these remedies, I find it difficult to form any positive opinion as to their value. They often seem to have no effect as hemostatics, and when hemorrhages cease under their use, there is always room for the supposition that the cessation is due to an intrinsic tendency thereto, rather than to the remedies." Although this statement was made years ago before the time when many of the drugs now so extensively employed came into use, it is almost as true today as it was then. In fact, it is doubtful whether there has been at any time in the past greater diversity of opinion regarding the relative merits of the drugs prescribed for this symptom than at present. Unfortunately, the efforts of experimental workers to throw light on the problem have so far only resulted in creating further confusion. This has been due to the impossibility of correlating the results obtained from laboratory experiments and clinical practice. It has been not a little discouraging to find that certain remedies which enjoyed a favorable reputation as a result of empirical use, were proved to be wholly devoid of value when subjected to scientific tests. To add to the uncertainty, experimental work on a given drug in the hands of different men has led to varying opinions concerning its action. This, however, can be accounted for to a certain extent by the indirect methods of experimentation employed and also by the difficulty of distinguishing between the effects produced on the general, from those on the pulmonary, circulation. When it is remembered that the existence of a pulmonary vasomotor supply is still a much discussed question, the difficulties encountered in arriving at a uniform opinion will be readily appreciated.

At the present time drugs are prescribed in the treatment of pulmonary hemorrhage because of their supposed influence in causing either an increase in the coagulability of the blood, a lowering of the pulmonary tension, or a diminished amount of blood in the pulmonary vessels. In an effort to control the hemorrhage by increasing the coagulability, calcium lactate, as well as other calcium salts, has been extensively used, but experimental study has not fulfilled the hopes raised. The have been found to be of no avail in an emergency. If prescribed, their administration should be interrupted after a few days, as their long continued use experimentally is said to diminish, rather than to increase, blood coagulability.

Gelatin has, likewise, in the opinion of most clinicians, but little material value. As in the use of the salts of calcium, no ill effects, when administered by mouth, have been observed from its use. The practice of injecting it in solution subcutaneously has sometimes resulted in a rising temperature, arthralgia, the appearance of an urticarial rash, and a painful infiltration at the site of injection. Furthermore, the possibility of transmitting tetanus must be borne in mind. Gelatin is best given by mouth in the form of jelly suitably flavored. In the large amounts generally given, from quarter to half an ounce of the commercial product daily, patients frequently acquire a marked distaste for it.

Horse serum has perhaps awakened a greater interest in the profession than any of the other coagulants. Personally, I believe it possesses real merit. I have frequently seen cessation of bleeding following its injection, in patients whose hemorrhage had apparently been uninfluenced by other treatment. It should be given subcutaneously in fifteen to thirty c. c. doses, and repeated if needed. Its use should not be prolonged over a period of ten days because of the danger of anaphylaxis. Contraindications for its use are a history of diphtheria treated with antitoxin, administration of the serum itself for previous hemorrhages, and cases of so called "horse asthma." If symptoms of anaphylaxis develop soon after its administration, its use may be still further safeguarded by injecting a few drops at first, to be followed by the full dose provided no danger signs develop. It is essential that the serum be fresh. If it is not available, diphtheria antitoxin may be used. The type of hemorrhages mostly benefited by the use of serum is the so called "weeping" hemorrhages. In these cases, where the loss of blood is at no time excessive but is protracted over a period of several days, its helpful effect has been more noticeable.

The use of salt was formerly regarded with considerable favor. After a time, however, it fell into disuse, although clinically it seemed to act favorably in many instances. Experimentally a few years ago it was found that in doses of five to fifteen grams, the coagulability of the blood was markedly increased within a few minutes. Its action, however, was not very long sustained. As the effect of sodium bromide was found to be quite similar, it is sometimes given in preference if a sedative effect is desired. A solution of sodium chloride has recently been extensively employed intravenously. Five c. c. of a ten per cent. solution in normal saline is given once or twice a day, care being taken that none of the solution is injected into surrounding tissues. It is essential that the solution be prepared from freshly distilled water and properly heated. Those who have used this treatment most extensively report favorably concerning it.

Emetine is another of the more recent remedies prescribed for hemorrhage. Its favorable reputation rests at present chiefly on clinical results, although favorable laboratory reports have appeared concerning it, for it has been found that it causes a constriction of the pulmonary arteries to some degree. There exists considerable doubt as to whether it possesses the power of increasing the coagulability of the blood, a property claimed for it by many of its supporters. It is said to be effective chiefly in cases where the amount of blood lost is comparatively small and where high tension exists. My own acquaintance with it has been limited to approximately fifteen cases, a number too small to warrant a definite expression concerning it.

The nitrites have long enjoyed popular favor, and their use perhaps rests upon firmer scientific grounds than any other drug prescribed at the present time for the control of this symptom. This is based on the result of laboratory studies which have shown that associated with their well known vasodilator action on the peripheral and splanchnic vessels is a vasoconstrictor effect on the pulmonary arteries. This dual action makes them theoretically ideal drugs for the treatment of pulmonary hemorrhage. In cases accompanied by hypertension almost all are agreed as to their value. Hypotension, as would be expected, contraindicates their use. At the onset of the hemorrhage, the more rapid effect of amylnitrite is often taken advantage of; it is given by inhalation. As its action is most transitory, it is followed by sodium nitrite or nitroglycerin, which, although slower, are much more prolonged in their action. Erythrotetranitrate, possessing still slower but more protracted action, is sometimes also given. Many clinicians prescribe the nitrites only when their action can be controlled by blood pressure readings, made at two or three hour intervals. The pressure should be confined between 100 and 120 millimetres of mercury.

When it was stated that adrenalin experimentally increased the coagulability of the blood fifty per cent. and that it caused a marked constriction of the pulmonary arteries, it was eagerly adopted. I believe that it is the consensus at the present time that it has failed to justify the high hopes previously entertained regarding it. The marked effect of this drug as a cardiac stimulant and vasoconstrictor nullifies whatever other advantages it may possess. It is rapidly falling into disfavor. Pituitrin, as a result of a published laboratory study a few years ago, was for a time extensively used, but, like adrenalin, bedside observation failed to substantiate the claims made for it. It is employed now much less than formerly.

Whether morphine possessed any real value in the treatment of this symptom has always been considerably discussed. While its supporters state that its use is beneficial because of its action in allaying nervous excitement, slowing respirations, and diminishing cough, they admit that it should be given with considerable caution. Those who oppose its administration base their arguments principally upon the fact that a larger percentage of pneumonias develop after its use, a complication caused by its depressing effect on the cough, thus interfering with the expectoration of effused blood and clots. Although there is some truth in such an assertion, morphine, when given in well selected doses, seems many times to have proved of the greatest value, especially when the hemorrhage has been of a serious nature. An initial dose is always helpful if the patient is unduly apprehensive or the cough troublesome. Its sedative effect is best continued by the use of sodium bromide. Ergot has been shown experimentally to increase the blood pressure in the lesser circulation. When this was demonstrated it rapidly fell into disfavor. Atropine, in doses of 0.02 grain, is highly recommended by some physicians. It seems especially valuable in the severer forms of hemorrhage.

SPECIAL METHODS.

Of the special methods in use, artificial pneumothorax is extensively employed. If the hemorrhage is profuse, or other recognized methods of treatment have failed, recourse should be had to it without delay. One of its principal limitations is the occasional difficulty in determining from which lung the bleeding arises. Hemorrhages severe enough to warrant its use are usually seen only in tuberculosis cases sufficiently far advanced to have a bilateral involvement. As it has been frequently found post mortem that the origin of the bleeding was from the side least involved, the relative extent of the lesion in the two lungs cannot always be relied upon as indicating the side to be injected. Furthermore, the blood, in the severe cases especially, frequently enters the bronchi of the opposite side, producing physical signs extremely deceptive. Consequently it is not infrequent that mistakes are made, sometimes with unfortunate results. Artificial pneumothorax is usually resorted to only in cases deemed quite desperate; therefore, slight doubt should in no way prevent its employment if not otherwise indicated. Many times it will prove unavailing, perhaps the most frequent cause being the impossibility of collapsing that portion of the lung from which the hemorrhage arises, the obstacle being firm pleuritic adhesions. For hemorrhage cases, a fairly high degree of interpleural pressure should be produced.

Strapping the chest, either unilaterally by adhesive strips extending from the sternum to the spine or on both sides of a broad encircling band, has often been employed. Those advocating this procedure believe that by restricting the respiratory movement, clot formation is hastened. While of questionable value, it is a harmless procedure provided the straps can be applied without unduly disturbing the patient. This can be more easily done when a single broad strap is applied to the chest as a whole, rather than to the affected side alone. For the purpose of diminishing the amount of blood in the lungs, ligation of the extremities may be resorted to if the hemorrhage is severe. Pressure should be so applied as to shut off the venous but not the arterial flow. A soft pad can be placed over the large nerve trunks to prevent their injury by the compression. The constricting bands should be removed after an hour or two, although occasionally they may be left on longer. If too long retained, paralysis of the limbs may occur. They should be removed one at a time with some degree of caution to prevent a return of the hemorrhage.

The local application of cold over the supposed site of the hemorrhage is a common practice. The ice bag possesses greater advantages for this purpose. It is lighter than the lead coil, requires less attention, and allows a closer application to the chest wall in emaciated patients with sunken interspaces. To quiet an overacting heart, if present, another is applied directly over the precordium.

In cases associated with high blood pressure, pulmonary edema, cyanosis, and coma some authorities advocate venesection, "believing that it is safer to bleed from the arm than from the lungs," as they express it. Although it is a procedure which would be usually undertaken with reluctance, its supporters assert that, when indicated, marked benefit has followed its employment. Hypodermoclysis and saline intravenous infusions have a lesser field of usefulness in the pulmonary forms of hemorrhage than in most others. The latter procedure especially should be resorted to only when there are indications that death is imminent from rapid exsanguination, at which time active stimulation, the application of heat, and other measures in the treatment of collapse should be applied to prolong the heart's action until clots form at the site of hemorrhage.

550 RIVERSIDE DRIVE.

THE WIGHT FRACTURE CLAMP.

By J. SHERMAN WIGHT, B. S., M. D.,
New York.

This clamp was designed for use in the forcible reduction of the fragments of a fracture. It holds them in place while a drill makes a hole and a screw is inserted through the opening *A* in the jaw *C*. The diagrams show a side view of the clamp, a top view of the perforated jaw *C*, and the jaws grasping bone fragments with the screw *B* inserted. The power screw is shown in the handles of the clamp in the side view. Shortening is overcome on a fracture table. The usual linear osteotomy is done. The fragments are replaced with the aid of the clamp. A drill hole is made through the opening *A* and the screw *B* is inserted. The screw penetrates till it touches the other jaw which protects the surrounding tissues. It is frequently necessary to use another small incision for the screw. This screw is left projecting in the tissues so that it can be easily reached and removed in three weeks. Without this clamp a screw will force the fragments apart especially in condyle or T fractures.

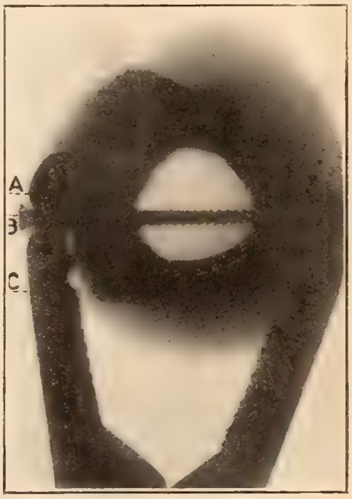

FIG. 1.—Forceps holding fragments with screw in place.

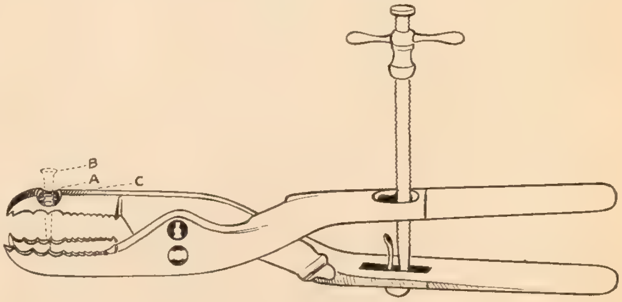

FIG. 2.—Side view with perforated jaw.

30 SCHERMERHORN STREET, BROOKLYN.

THE RELATION OF HEMORRHOIDAL DISEASE TO THE HEALTH BALANCE.*

By WILLIAM M. BEACH, A. M., M. D., F. A. C. S.,
Pittsburgh, Pa.

Health balance is maintained by the perfect coordination of the animal and vegetative functions of the body. The central nervous system controls and marshals the forces that appropriate as well as the factors that have to do with elimination. Fluctuation in this physiological coordination is a manifestation of disease at some sector of the mechanism and ushers in a train of symptoms peculiar to the part affected.

Symptoms complex are expressed through the bloodstream in near or remote areas from the focal infection, or they arise reflexly from a diseased part which irritates the nerve supply. For example, pyorrhea and diseased tonsils are well known causes of joint pains and myalgia. Cholecystitis, colitis, and appendicitis are likewise generators of symptoms that are sometimes obscure in origin. On the other hand, in order that certain symptoms may be analyzed, we must seek the origin of transfer by means of reflex action. A renal or ureteral calculus refers discomfort in the rectum and genitalia; hip joint disease will give pain in the knee, and lesions in the rectum will be reflected in the adjacent structure as well as remotely in the stomach and upper and lower extremities. Perhaps in no other region are so many sensory or motor aberrations manifest as in diseases of the anal rectum. Indeed, defecation and micturition are analyzed as reflex physiological phenomena.

For convenience, the consideration of hemorrhoidal disease in its relation to health fluctuations will take three angles: 1, the mental attitude; 2, the reflexes arising; 3, the mechanical relations and those affecting the vegetative processes. In whatever form or location they may appear, hemorrhoids occur more frequently than any other disease in the anal rectum. To many victims the varices seem only an inconvenience; so tolerant are they of their presence that they do not associate relative deflections arising as indigestion, constipation, and neurotic changes covering a period of thirty or forty years in not a few cases. But when certain complications occur, as inflammation, strangulation, fissure, hemorrhage, prolapse, etc., they are sufficiently convinced of the importance of the local ailment to seek advice. We would, therefore, record our first consideration of hemorrhoidal disease in relation to health to be

1. The mental attitude of the victim.—Fortunately, the majority of people are sufficiently concerned for their wellbeing not to neglect the slightest ailment of any part of the gastrointestinal tract. Several conditions of mind are determinative factors in the patient suffering from piles. In some, the factors are inhibitive, in others, impelling toward the importance of correcting the diseased condition. Fear is perhaps the most potent force directing his volitional impulses to seek relief or to procrastinate. Fear is based upon knowledge of previous injury, real or imaginary. The individual who has experienced a real injury is apt to be more tolerant, if not determined in character, to submit to corrective measures, than the one whose previous experience is largely based on impulse and imagination. Hence the type of patients the proctologist sees comes under one of these heads. Though the patient approaches you with a selfmade diagnosis of piles, he has fears of a more serious condition, until your verdict dissipates his anxiety. Others are more reluctant for advice on this account. The fear of a possible operation itself deters many, not so much perhaps the operation itself as the inconvenience of a general anesthetic so frequently used by general surgeons. The severe postoperative pain due to poor technic is deterrent, as is also the knowledge conveyed by patients who record failures and recurrences.

There is no class of patients that require more diplomacy and gentle handling than do those with hemorrhoids, since in the majority of cases surgery is the most effective agency to cure, but at all times dreaded. In connection with this, the writer relates the following as one of the many like experiences to overcome the patient's aversion to "cutting," as they express it.

CASE.—A patient, with preconceived notions, entered my office, weak and anemic from bleeding piles of several weeks' duration. He first protested vigorously against any operative procedure. He wished me to cure him *jucunde*. On inspection, large protruding ulcerated internal hemorrhoids with spurting vessels presented. Advising him that the bleeding should be checked at once, he allowed me to proceed to that end, as I wished. Under local anesthesia by infiltration, I removed all the hemorrhoids, which surprised him very much subsequently. He was so pleased that he was willing to reside in the hospital for a few days for convalescence. The ordeal of an operation passed, his mental complacency was established.

2. The relation of hemorrhoidal disease to general health.—This consideration involves the effect on the nervous system and the effect on the digestive tract. There is such a thing as a hemorrhoidal condition without any well defined tumors in the hemorrhoidal inch. The structures show engorgement, hypertrophied columns, sensitive papillæ, or the small mulberry type of piles which bleed easily. Consonant with this condition is an hypertrophied sphincter in a state of contraction, a factor contributing to constipation, as well as favoring infection in the anorectal line, a local cause of pruritus ani. The reflexes generated by hemorrhoidal disease are extensive. Rectophobia is a term applied by Kelsey, describing a sense of impending evil which is so common in rectal troubles. He states: "There is hardly any kind of pain or functional nervous disease that I have not cured by the simple removal of hemorrhoids and this applies as often to men as women." Tuttle says: "There is no doubt that hemorrhoids and any other form of rectal irritation may produce a profound impression upon the nervous system." Bodenhamer reported a case of insanity cured by the removal of hemorrhoids. Other reflexes known to be concurrent with ulcerated piles are pain in the loins and legs and in the postcervical region, gastric disturbance, asthma, and tachycardia. Undoubted changes in the adrenals occur through the emotions of fear and anxiety incident to rectal disease, thereby increasing the amount of blood sugar and influencing metabolism. Removal of hemorrhoids in many instances eliminates such adjacent deflections as irritable bladder, metrorrhagia, and vague pelvic pains.

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*Read before the American Proctologic Society, June 4, 1917.

The relation of hemorrhoidal disease to the vegetative processes should receive some consideration. Diseases of the heart, liver, and kidneys as causal factors must be reckoned with in the evolution of rectal varices. Valvular insufficiency of the right side of the heart has some influence in producing piles by the backward pressure which it causes in the liver, and the feeble *vis a tergo* induces them from lack of power to drive the stagnant blood through the vessels. Of course such mechanical complications as retroversion, anteversion, procidentia, cystitis, prostatitis, urethritis, etc., are additional causes of impediment to the blood current.

Patients who suffer from hepatic disease and hemorrhoids often feel buoyant and comfortable after a marked hemorrhoidal flux, and but for this periodic blood letting or spontaneous venesection they would become morose, depressed, and dyspeptic. This is a contraindication for a hemorrhoidectomy, since stopping the outlet of an engorged or cirrhotic liver would emphasize the dyspeptic symptoms and tend to develop anasarca and speedy death. In acute congestion of the lungs or kidneys, hemorrhoidal disease may be concomitant, and a hemorrhage may be beneficial in its incipiency, but loss of the vital fluid later would cause serious depression.

Hemorrhoids, for the most part, are concurrent with constipation rather than its cause, and operations upon them for complete relief of constipation are likely to result in disappointment, although the writer records that most of his cases show improvement of colon activity. In these days of surgical furore complementing fluoroscopic interpretations of alleged intestinal malpositions leading to stasis, the profession is apt to ignore the more common causes of constipation in rectal diseases, with hemorrhoids leading the list. We must not forget that the history of the hemorrhoid formation is synchronous with the first bilious headache and intestinal inertia, but that its development is so insidious that the victim is unaware of the repeated congestions until there is proctorrhagia with dyschezia and irregular stools.

Therefore we argue that while hemorrhoidal disease is not a constant factor in causing constipation, but rather a coincidence to hepatic congestion, it surely offers a mechanical obstruction to the free passage of feces and thereby aggravates the colon stasis. We are mindful at this point of the few cases of stasis due to intramural and extramural disease together with angulations and adhesions. We would, however, recommend that piles be removed where there is constipation, except in cirrhosis of the liver, but that caution be exercised in promises to cure constipation by the procedure. Hemorrhoidal disease may be the precursor of malignant manifestation in the rectum. Neglected cases of ulcerated piles, or it may be faulty technic in their removal, may be antecedent to cancer; and this possibility, expressed or not, should not be ignored by the attendant. Anemia may be the result of occult or visible hemorrhage from the hemorrhoidal mass, which can readily be differentiated from bleeding points higher up. The patient grows weak, languid, and irritable. In a recent case the patient failed to resist a moderate daily hemorrhage by several fainting spells which became rather serious, as the blood count showed, but recovery soon followed the excision of the ulcerated hemorrhoids. This disease is no respecter of age or sex; it incapacitates for work, prevents buoyancy of life, counteracts efficiency, and adds weight to years.

Finally, we would register the relations of hemorrhoidal disease to health balance to be:

1. The deleterious effect upon the patient's mind by increasing his irritability and making him anxious and morose.
2. The many reflexes coincident with ulcerated large or small type of hemorrhoids.
3. The influence upon the so called vegetative functions of the body and intimate association with diseases of the heart, lungs, liver, and kidneys.
4. The refractory or retroactive relationship in most cases of constipation.
5. The tendency of neglected cases toward anemia and cancer.
6. Ulcerated hemorrhoids are a source of infection to be reckoned with.

901 Bessemer Building.

COLON BACILLUS PYELITIS.*

By Joseph Kaufman, M. D.,
New York.

The term pyelitis is used to designate an inflammation of the mucous membrane of the pelvis and calyces of the kidney. Acute colon bacillus pyelitis does not exist as a clean cut, pathological entity. All cases of so called acute pyelitis are associated with varying degrees of pyelonephritis. In the subacute and chronic forms, the involvement of the tubules subsides and it is then that we may have an almost pure pyelitis (1). In the presence of obstruction and the advent of other bacteria, abscess formation may ensue and thus convert the kidney into a pyonephrotic sac.

Much controversy has arisen as to the mode or avenue of infection. The consensus is fixed on the hematogenous route in the great majority of cases. It is a well established fact that bacteria are to be found in the bloodstream during disease, as well as when the individual is apparently in good health. Foci of low grade infection may exist in the large intestine, vagina, urethra, and uterus with the patient apparently healthy and with but poorly defined pathological lesions in those organs. Bacteria from these foci circulate in the blood. A large number of the organisms are carried to the liver, where they are destroyed by the cells and endothelium and are then excreted in the bile, while bacteria which enter the general blood circulation reach the kidney and are excreted in the urine. Microorganisms may pass through the kidney for an indefinite period without causing any demonstrable lesion in that organ (2). When for some definite reason there is a lowering of the resistance in the kidney, pathological lesions may develop. This may be caused by the constant irritation of the excreted bacteria and their toxins. Urinary stasis is also an important factor in furnishing this *locus resistentiæ minoris.* Calculi, prolapse of the kidney, pressure on the ureter by a pregnant uterus, prostatic hypertrophy, and stricture at or below the vesical neck are the most common causes of urinary stasis. Following the lowering of the resistance in the kidney, the bacteria are arrested in that organ with the rapid elaboration of pathological lesions.

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*Read before the Clinical Society of the People's Hospital, New York, June 13, 1917.

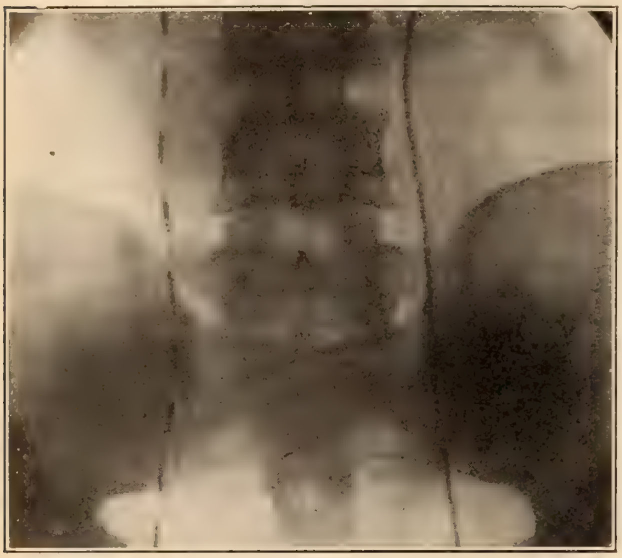

FIG. 1.—Case I, J. M.

Ascending renal infections, i. e., from the bladder directly through the lumen of the ureter to the renal pelvis, was the accepted theory until the work on renal tuberculosis and the work of Brewer (3) on *Acute Hematogenous Renal Infections* pointed out its fallacy. Draper and Braasch (4) proved conclusively that ascending renal infection could not occur unless there was definite damage to the ureterovesical outlet. When the orifice has been injured and urinary stasis exists as a result of obstruction, reverse ureteral peristalsis may occur and so add infectious material from the bladder to that already deposited in the kidney by the bloodstream. Infection through the lymphatic system also has many adherents, but when one considers the anatomical and experimental evidence it is difficult to concede the plausibility of the theory. The general direction of the lymphatic flow is away from and not toward the ureter and kidney. Further, the lymphatics, as elsewhere in the body, follow the bloodvessels. The lymphatics of the ureter are highly segmented, as are the bloodvessels of that structure, and at the points of segmentation there are well marked lymph nodes. It hardly seems reasonable to believe that bacteria will be able to travel contrary to the general direction of the lymphatic flow, to withstand the action of the lymph nodes, and then to enter directly into the kidney. If bacteria are taken up by the lymphatics, they undoubtedly reach the thoracic duct through the natural lymph channels, enter the bloodstream at the junction of the duct with the left subclavian vein, and in this manner finally enter the kidney. Thiele and Embleton (6), experimenting on peritoneal infections, have shown that bacteria can be demonstrated in the blood before they are to be found in the urine. If the thoracic duct is opened so that the organisms can escape before they enter the bloodstream, they are not to be found in the urine. These facts would seem to show that lymphogenous, renal infections do not occur.

Pathology.—The bacteria enter the kidney through the large renal vessels, pass to the cortex, and escape through the glomeruli to the collecting tubules and thence to the papillæ and the renal pelvis. The collecting tubules are filled with bacteria and leucocytes, the lining epithelium is in a state of fatty degeneration or even necrosis. The papillæ and pelvis become congested and small punctate hemorrhages may take place. At this point it may be noted that coccus infections usually produce lesions in the cortex, while the colon bacillus infections, as pointed out above, produce lesions in the medulla and pelvis. Abscess formation is usually dependent upon mixed infection. Cabot and Crabtree (5) divide these cases into two main groups: 1, the nonpyogenic type, the pure colon bacillus infection, which develops in the kidney which has been previously sound; 2, the pyogenic or suppurative type, which develops in a kidney which has been previously unsound. These are usually cases of renal or ureteral calculi, obstruction, tumor, or chronic nephritis, and are usually mixed infections.

Symptoms.—It is a noteworthy fact that almost all of these patients seek relief primarily from bladder symptoms. Frequency of urination, nocturnal and diurnal, tenesmus, dysuria, and pain in one or both lumbar regions are the most prominent symptoms. In the more severe infections, elevation of temperature, with remissions, headaches, nausea, and vomiting—signs of renal incompetence—may be marked. The phenolsulphonephthalein estima-

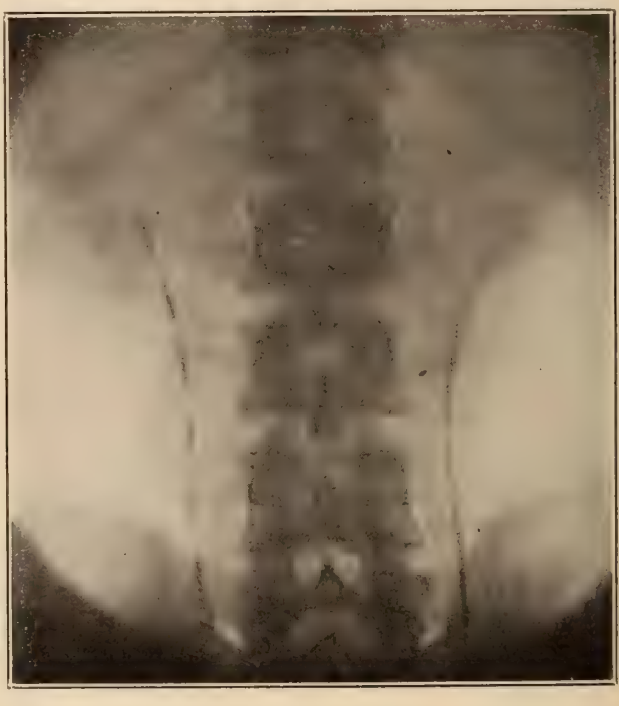

FIG. 2.—Case I, J. M.

tion reveals the degree of functional impairment. If the urine is examined, one finds pus, occasionally red blood cells, tubular and pelvic epithelium, and hyaline, granular, and sometimes waxy and epithelial casts. Colon bacilli are found in great numbers and often in pure culture. Occasionally other bacteria may be found associated with the colon bacilli.

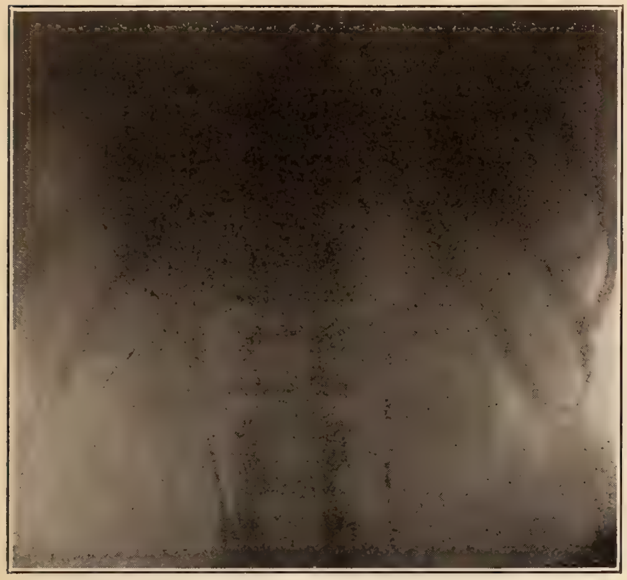
Fig. 3.—Case II. Mrs. I.

Diagnosis.—It is of paramount importance that a complete and careful examination be made in every case, as the information obtained will indicate the proper therapeutic measures. Cystoscopy, with ureteral catheterization, microscopic and cultural study of the separated urines, phenolsulphonephthalein estimation, and x ray examination of the entire urinary tract with opaque catheters in the ureters combined with pyelography, when that is indicated, are the steps in the diagnostic routine.

Treatment.—All cases falling in Group 1 are to be placed under medical treatment. Urinary and intestinal antiseptics, salt free and meatless diet, the ingestion of large quantities of water, and rest in bed are the main features of such therapy. It is my custom in addition to irrigate the bladder and then to instill one of the silver albuminate preparations. Relief is usually very prompt, but the permanency of relief depends upon adequate correction of the underlying factors. Infected and thrombotic hemorrhoids, rectal ulcerations, and uterine and urethral disorders must be treated. When the measures outlined above are insufficient to effect a cure, lavage of the renal pelvis is indicated. For this purpose silver nitrate, 0.5 to two per cent., is used. If the pus in the pelvis is thick and abundant, it is well to irrigate first with boric acid. The lavage may be repeated within five or six days, as indicated. Usually but few irrigations have to be performed in order to effect a clinical and bacteriological cure. In addition one must not neglect to treat the cystitis which is invariably present. As pointed out by Kretschmer and Gaarde (7) failure to do this undoubtedly accounts for many relapses, even after the urine from the kidney is sterile. The technic of pelvic lavage is simply that of ureteral catheterization plus the irrigation. Small sized catheters are used, so that there may be a free flow of solution around the catheter tip and down the ureter. Overdistention is often avoided in this way. The irrigating solution should not be forcibly injected, the liquid being allowed to run in by the force of gravity. The lavages should always be performed in the hospital, as distention of the pelvis may occur and give rise to severe pain and colic, if not actual damage to kidney structure. After twelve to twenty-four hours the patient may leave his bed.

The treatment of cases falling under Group 2 is purely surgical. Urinary stasis is to be overcome, calculi removed, hypertrophied prostates enucleated, strictures dilated, etc. The surgical indications in each case are to be met in a manner which best suits the individual case. The following case reports are illustrative of some of the various types of affections encountered:

Case I.—J. M., thirty-eight years old, laborer; referred by Dr. J. Gubner. Previous history: Patient had some form of dysentery while on service in the Russo-Japanese War. He had gonorrhea eight years ago. Present history began about ten days ago, with dysuria, frequency of urination, and terminal hematuria. Urine examination revealed pus and blood cells, granular and epithelial casts, and tubular and pelvic epithelium. The kidneys were not palpably enlarged, but fist percussion evoked distinct pain on both sides. The patient was placed in bed, given urotropin and an alkaline diuretic mixture. Bladder irrigations with boric acid were followed by instillations of argyrol. In a few days cystoscopy was possible when the bladder was found to be intensely congested, especially around the internal sphincter. The ureters were easily catheterized and urine withdrawn for examination. The laboratory reported pus and red blood cells, hyaline and waxy casts, renal epithelium, and innumerable colon bacilli in both specimens. The treatment as outlined above was

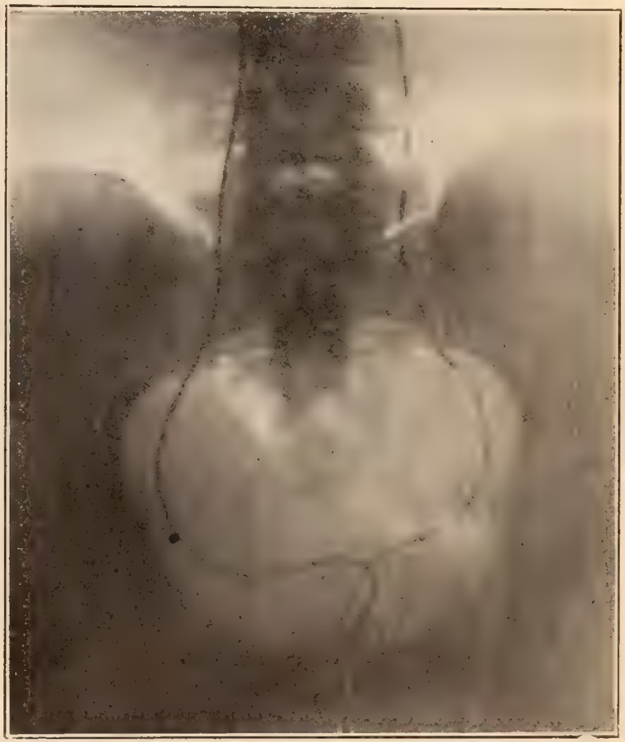
Fig. 4.—Case II, Mrs. I.

continued for one week, intestinal antiseptics being added to the medicinal agents. After several weeks of good health the patient returned with the same symptoms. X ray examination, with opaque catheters in the ureters, failed to disclose any calculi. (Figs. 1 and 2.) Both renal pelves were then irrigated with silver nitrate, 0.5 per cent., using about six c. c. for each side. There was an immediate improvement, and one week later the lavage was repeated. Urine examination showed the presence of a few pus cells, but there were no bacilli. The patient was given instructions as to diet and the care of the bowels and was seen weekly for several months. The urine remained clear and free from bacilli. The bacilli probably originally made their entrance into the bloodstream from an ulcer in the rectum in this case.

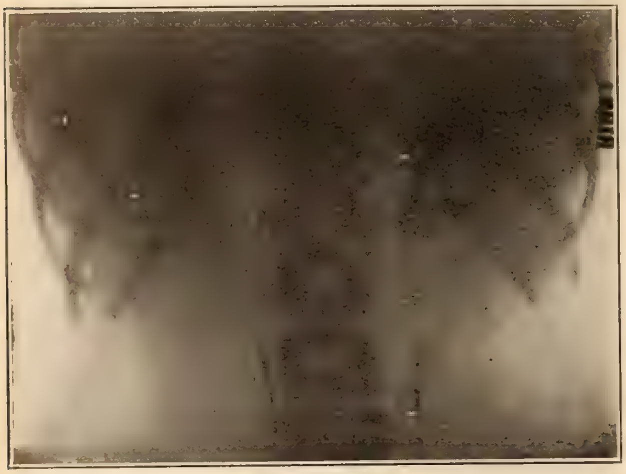

Fig. 5.—Case II. Pyelogram of right kidney.

Case II.—Mrs. I., thirty-four years old, referred by Dr. J. E. Braunstein. Previous history was negative, except for constipation. Present history: For the past five months the patient has noticed a frequency of urination, nocturnal and diurnal, accompanied by slight dysuria and tenesmus. There has been a constant dull ache in the right lumbar region, referred to the right inguinal region, which at times has become quite severe. Urine examination showed pus cells and bladder epithelium, hyaline casts, and colon bacilli. Palpation failed to reveal any renal enlargement. Fist percussion evoked distinct pain over the right side. Cystoscopy revealed a congested bladder neck, but otherwise no marked changes in the mucosa or ureteral orifices. Catheters passed easily and examination of the separate urines showed pus cells, tubular epithelium and colon bacilli from the right side and negative urine, with the exception of a few pus cells, from the left side. X ray examination did not reveal any calculi (Figs. 3 and 4) and a pyelogram (Fig. 5) of the right side disclosed a normal pelvis, although several of the calyces were slightly enlarged. The patient was placed on urinary and intestinal antiseptics, salt free and meatless diet, and large quantities of water, and the bladder was irrigated. Within a few weeks there was marked improvement and the last report stated that the patient's condition was normal.

Case III.—I am indebted to Doctor Wolper for the privilege of reporting this case. Mrs. R., twenty-six years old, married four years. Previous history: The patient had scarlet fever and diphtheria when a child and was operated on for acute appendicitis about twelve years ago. While pregnant four years ago—4 months—she had an attack of severe pain in the right lumbar region referred to right groin and was in bed for several weeks at the time. Delivery five months later was attended by great difficulty, although there were no apparent renal complications. For the past few years, frequency of urination and slight tenesmus and constant pain in the right lumbar region have been prominent symptoms. Present history: One week previous to entrance to People's Hospital the patient had severe cramplike pain in the right lumbar region, radiating to the right inguinal region. There was a slight temperature rise and severe headache. Urine examination disclosed pus and blood cells and casts, hyaline and waxy. The right kidney on palpation was slightly enlarged and very tender on pressure. Cystoscopy showed a very highly congested bladder. The right ureteral orifice was dilated while the left appeared normal. Catheters passed easily to both pelves. The urine from the right kidney contained pus, blood, epithelial, waxy, and granular casts, and innumerable colon bacilli. The left side revealed a few pus cells, no casts, and no bacilli. X ray examination, with catheters in place and pyelography (Fig 6) showed a stone in the pelvis of the right kidney with several smaller shadows evidently in the medulla. The pyelogram of the left side showed that the kidney was evidently normal in size, and no dilatation of the pelvis or any of the calyces. There were no calculi on this side. Phenolsulphonephthalein estimation showed that the left kidney was functioning normally. At operation the right kidney was found enlarged and the pelvis extremely dilated, tense, and filled with pus, the calculus resting at the ureteropelvic junction. The smaller stones were most probably washed out with the pus. It was decided to leave the kidney. Drainage was instituted and the patient made an apparently uneventful recovery.

CONCLUSIONS.

1. Colon bacillus pyelitis is quite common and is often overlooked. 2. The vesical symptoms are often the first indication of the condition. 3. The infection is hematogenous, except where there is obstruction, when reverse peristalsis may carry infectious material upward through the ureter to an already infected pelvis. 4. Cases falling under Group 1 are to be placed on medical treatment, not neglecting to treat the bladder. 5. Pelvic lavage is to be employed when the medical treatment is seen to be inadequate. 6. Surgical measures are indicated in cases falling under Group 2. 7. The original focus of infection must be found and eradicated.

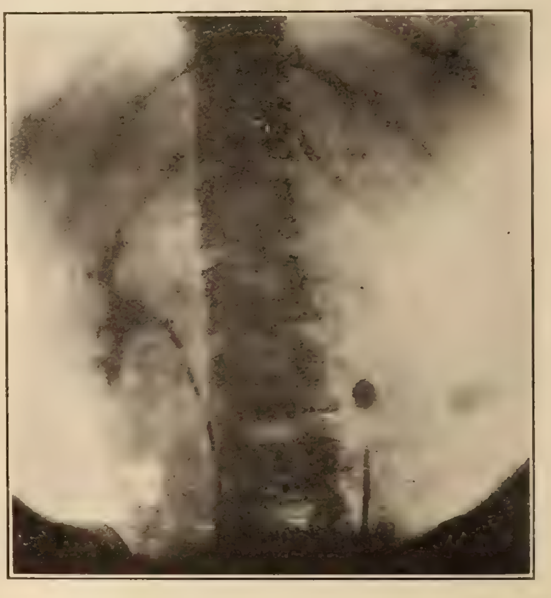

Fig. 6.—Case III, normal left kidney. Shadows in right kidney.

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122 East Thirty-fourth Street.

Medicine and Surgery in the Army and Navy

MEDICAL SERVICE WITH THE RAINBOW DIVISION.

Low Sick Rate and Excellent Physical Condition of the Troops—Organization of the Sanitary Train—Duties of the Medical Officer in Camp.

At five-thirty, the first call rang out loud and clear to be echoed from one command to another as the buglers followed each other in awakening the members of their respective commands. Fifteen minutes later the reveille sounded from regiment to regiment and a lively babble of voices on the frosty air gave notice that the men were falling in for roll call. Even the "War Correspondent" in his tent at division headquarters was compelled to forsake the warm comfort of his sleeping bag under the stimulus of the sharp, crisp tones of the top sergeant as he called the roll of the headquarters troop, a Louisiana cavalry troop. The military day had begun. Next came mess call. The bugle sounded

Porky, porky, pork,
Without a streak of lean;
Soupy, soupy, soup,
Without a single bean.

At all the company kitchens, the men lined up with plate and cup for the pint of coffee and the breakfast of stewed fruit, cereal, eggs, or bacon, each man taking his food to the most convenient spot, but not to his tent, where he finished up his breakfast and returning to the kitchen, washed and rinsed his dishes in hot water provided for the purpose.

On the left, Lieutenant Colonel Jay W. Grissinger, M. C., division surgeon. On the right, Major D. S. Fairchild, Iowa N. G., division sanitary inspector. Offices of the Rainbow Division headquarters.

SICK CALL.

Next came sick call, the first function at which the medical man takes an official part. When sick call is sounded all the ailing men in each company are gathered by a noncommissioned officer of the company, who marches them to the dispensary of the regiment. Since the Rainbow Division at Camp Mills, near Hempstead, Long Island, was under canvas, and not in cantonments, these dispensaries are also under canvas and outfitted with the simplicity of equipment befitting an army in the field.

When the "War Correspondent" of the New York Medical Journal visited the dispensary of the 166th Regiment, Fourth Ohio National Guard, last week, he found three surgeons, two sergeants, a corporal, and several privates of the Medical Department at work. Outside the dispensary tent were gathered forty or fifty enlisted men and noncommissioned officers. Down the centre of the dispensary tent was a broad board resting on stakes about waist high. On this board were lined up the medicaments most used, compound cathartic pills, quinine pills, quinine and acetphenetidine pills, brown mixture tablets, and other tablets in four ounce black tin boxes with friction covers, a flask of tincture of iodine, a tin of castor oil, a quart can of alcohol, a pound can of vaseline, absorbent cotton, etc. Two surgeons stood at one side of the table, one on the other, each with an enlisted man of the Medical Department at his elbow, while at the end of the rough table sat a corporal with a blotter in which he entered the names of the men excused from duty. In front of him was a tray containing the register cards of all men excused from duty whose cases were still under the supervision of the regimental surgeons. Each assistant surgeon has charge of one battalion of the regiment. Taking from the company noncommissioned officer the company commander's record book, the surgeon called out the names of the patients in the order there set down. The men stepped forward, answered the questions put, generally received in the open hand a few tablets of one kind or the other, and the curt instructions "Return to duty," "Quarters," or in some cases "Report at my tent after sick call." Most of the patients had minor ailments, a headache, a cold, a strain, a bruise, or a cut. As each case was disposed of an entry was made in the company commander's record book by the surgeon. When all of the sick of one com-

Typical row of company kitchens, roofed with tar paper and with netting walls.

pany had been seen the surgeon handed this book to the dispensary clerk, who transcribed in the dispensary blotter any notes required. Wherever the patient was excused from duty either by being ordered to quarters or sent to the hospital, a note was made of the fact in the blotter and a register card filled out and placed in the proper location in the filing tray. The register card contains the diagnosis, information as to whether the trouble was incurred in line of duty or not, and other data necessary to a complete record of the case. Regulations deprive men of pay who are excused from duty on account of venereal disease unless, as rarely happens, the infection was incurred innocently. Men with syphilis in the infectious stages are sent to the general hospital or recommended for discharge. Nearly an hour was required to clear up the patients able to report. The dispensary clerk then gave each surgeon a memorandum of such of his cases as were in quarters, ordinarily two or three, and the surgeon called to look at these patients in their tents. One of these, the only one in Lieutenant Christopher's battalion, who was sick in quarters, was a lad who had been excused from duty on account of an eczema between the toes. Through a misunderstanding he had been returned to duty by another officer, his foot had become infected, and he had been laid up for several days. Under the rest and treatment the infection had subsided and the foot was rapidly regaining its normal size and appearance.

THE DENTIST AT WORK.

In the tent adjoining the dispensary was the dental office of the regiment, and here the dental surgeon with a full dental equipment, including an excellent chair and dental engine, was engaged in filling the teeth of the men who had reported for this purpose. The dental surgeon said that he treated from fifteen to twenty cases a day, that some time would be required to get the teeth of the command into good condition, and afterward the work would be somewhat lighter. The fillings were made of amalgam, cement, or porcelain. No gold work was done. The equipment, he said, was excellent and the materials supplied satisfactory both as to quantity and to quality. The army tables call for one dentist for each thousand men, which would give a total of twenty-seven for the division, but presumably to fill out deficiencies in troops already in France, forty-eight dentists were attached to the Forty-second Division. Each dentist had a complete dental outfit.

At the conclusion of the sick call, the regimental surgeon, Major Angus MacIvor, made the rounds of the kitchens of his regiment to see that they were clean and in order. By that time, drill was sounded and the regiment was turned out for a four hour drill in the field. No horses were taken to Camp Mills, consequently even the regimental officers were on foot, which in the case of one of the line majors seemed little short of cruel and unusual punishment in view of his rotundity, though he seemed fully equal to any emergency. He had gone through the rigors of the Mexican border service without losing a pound in weight or an inch in girth.

The schedule for the week of August 12th, which

On sunny days tents are mushroomed so that ground, clothing, and bedding are exposed to sun and air. This is the surest preventive of disease. Captain Thomas F. Burcham, Iowa N. G., assistant sanitary inspector.

is given below, will give an idea of the work of a regimental sanitary detail while at Camp Mills. This particular schedule was followed by the 168th Infantry, formerly the Third Iowa, and fairly represents the character of the drill and instruction, though the routine work such as sick call is not put down on this schedule.

For the purposes of inspection, the chief sanitary officer of the division, Major D. S. Fairchild, of the Iowa National Guard, had divided the division into four sections. One of these embraced the infantry regiments, one the artillery regiments and the machine gun battalions, a third the supply train, the ammunition train, and the engineer regiment, and the camp hospital, while Major Fairchild himself acted as inspector of the sanitary train, composed of four ambulance companies and four field hospitals.

Type of company kitchen at Camp Mills. Until the cool weather set in the sides consisted of wire screens; they are now covered with building paper. All the refuse of the company is cremated in the incinerator and the slops evaporated to dryness in galvanized pans. Hot water for dishes is provided by running the elbow of a pipe into the incinerator and connecting it with a barrel of water.

Schedule for Week of August 12, 1917, of the Sanitary Detail of the 168th Infantry (3rd Iowa), at Camp Mills, N. Y.

	Monday.	Tuesday	Wednesday	Thursday	Friday	Saturday
7:30-8:30	Practice march (Fox)	Same	Same	Same	Same	Prepare for inspection
9:00-10:00	Drill (VanMeter)	Drill (Jennings)	Same	Shelter tent (VanMeter)	Drill (VanMeter)	Inspection
10:30-11:30	Single and double bearer work (VanMeter)	Litter drill (VanMeter)	First aid (VanMeter)	Drill (VanMeter)	Litter drill (VanMeter)	Map work (Stewart)
1:00-2:00	Pharmacy (Bongers)	Mason Hand Book (Williams)	Pharmacy (Jennings)	Mason Hand Book (Williams)	Medicine (Williams)	
2:30-3:30	Army Reg. (Conkling)	Semaphore (Magee)	Same	Same	Same	
4:00-5:00	Mason Hand Book (Williams)	Hygiene (Williams)	Mason Hand Book (Williams)	Hygiene (Williams)	Mason Hand Book (Williams)	

Through the courtesy of Major Fairchild, the writer made the rounds of the camp with the major himself, with Captain Burcham or with other members of his staff. With Major Fairchild he inspected the sanitary train. These commands are from an administrative point of view treated exactly as a regiment of the line would be. Each field hospital and each ambulance company has its company street with tentage for enlisted men and its company kitchen. Each field hospital, whether motor or animal drawn, has eighty-three men. Each motor drawn ambulance company has 122 men. Each animal drawn ambulance company has 153 men. Each field hospital has six medical officers. Each ambulance company has five medical officers. There is an officers' row at the head of the company streets just as there is in the regimental camps, and at the other end of the street is the row of latrines.

In making his tour of inspection the sanitary officer went through the kitchens one after the other, inspecting them both inside and out, and where occasion required, making caustic comments, giving mild admonitions, or complimenting where conditions warranted. The tables in the kitchens are made of movable boards and each of these boards is scrubbed every day on all four faces. The inspection does not take place until after 9 a. m., so as to give time for straightening up. In one kitchen the edges of the table boards had evidently not been scrubbed. The helper in charge endeavored to shift the blame to the chief cook, who was absent. That person appeared, and in turn endeavored to shift the responsibility to the assistant in charge. Both received a curt reprimand with promise of condign punishment should such negligence occur again. In one kitchen, the cook was ordered to clear off one table completely and scrub it thoroughly; in another, he was admonished to adjust the screen door so that it would close properly and keep out flies. In no case was any serious dereliction observed even though the inspector examined the individual knives and forks and opened the ice chests and bread boxes. In one case, however, the incinerator had been filled up with liquid, extinguishing the fire, and another was being constructed, while in another case the water had been allowed to overflow the waste bucket at the hydrant. Both these offenses gave occasion for a reprimand. An inspection of canned corned beef which was being opened to make corned beef and cabbage involved the tasting of it and disclosed that it was of excellent quality. The ample supplies of fresh beef were of the very best quality, and the bacon was above criticism. Several quarters of beef, however, had been condemned and the contractors who furnished it properly reprimanded by the commanding general himself.

Line of company latrines, the sides of which are covered with burlap to the height of seven feet.

INCINERATORS.

Behind each company kitchen is built, or rather dug, a field incinerator, in which all the garbage of the company is burned and all the slops evaporated. Owing to the temporary nature of this camp, the incinerators were not of the generally used Guthrie type, but were more or less improvised, simulating conditions as they would be met in actual field service. They did their work, however, very satisfactorily and disposed of all solid and liquid garbage. These incinerators vary slightly, but the type in most general use consisted of a hole in the ground about three feet wide and six feet long, sloping from the ground level at one end to a depth of three and one half feet at the other. These were lined with cobblestones roughly laid, though in a few instances they were built of brick and cement, and in the latter case the walls rose a foot above the ground. Above the deep end of this was placed a galvanized iron evaporating pan about one foot deep, and three and one half feet square. A fire was kept going in the incinerator nearly all day, and all refuse from the kitchen and litter from the streets was burned in this and all dishwater and slops evaporated. A supply of wood was delivered by the quartermaster of each kitchen daily. All the tin cans, and they were many, were burned in the incinerators so as to destroy any remnants of food which might have made them a breeding place for flies. Holes were punched in the bottoms so that they could not hold water and the burned cans were gathered daily by the quartermasters' wagons and hauled off to a dumping ground remote from the camp. Since no organic matter was thrown into this dump, it was entirely free of odor, and quite sanitary. In the kitchen, wood was burned in ingenious portable sheet steel stoves.

DISPOSAL OF EXCRETA.

At the opposite end of the company street from the kitchens ran a row of latrines and bath houses, one of each for each company. The bath house consists of a platform about twenty feet square with benches around the outer edge surrounded by a screen of burlap of open weave which admits the passage of air, but furnishes privacy. In this were galvanized iron pipes supplying the water for half a dozen showers. The bathroom has no cover, so that it dries out readily.

Each latrine consisted of a trench about eight feet deep, two feet wide, and twenty feet long, provided with a light proof box cover, which was set on a wooden platform. Each of the ten seats was provided with a cover so constructed that it closed automatically when not in use.

The regulation method of burning out with fifteen pounds of hay and a gallon of oil daily was followed as a rule, but a trial was being made in several commands of the method originated by Major Montgomery, of the New York National Guard. This method consists of spraying the pit and its contents and the interior of the latrine box daily with a mixture of half a pound of lampblack to a gallon of kerosene, or light crude oil. This deposits a black coat of oil all over the inside of the latrine box, the sides of the pit and its contents. So far this has proved satisfactory as to the exclusion of flies and is almost, or quite, as good as the burning method in keeping down the offensive odor. It is less expensive and troublesome than the burning method. The urinal consisted of a v shaped wooden trough painted daily with crude petroleum and lampblack. This drained into a pipe which in turn drained into the latrine pit. The open gravel foundation afforded opportunity for the liquid excreta to drain off with the result that there has been no trouble whatever with the sanitary arrangements. If the camp remains long enough, the latrines might become filled, in which case they will be filled in with earth and new trenches dug. The seats are scrubbed daily with soap and water, and twice weekly with a cresol solution; and the latrines are entirely odorless. These, like the bath houses, are screened with burlap, but, unlike the bath houses, are roofed in.

When the latrines are filled with excreta to within two feet of the top, new ones are dug. The old one is then filled with earth to within six inches of the top. A layer of burlap soaked in crude oil is then placed over this earth extending three feet beyond the edges of the pit. The pit is then completely filled and marked "Old latrine."

HEADQUARTERS MESS.

The morning's round with the sanitary officer, Major Fairchild, developed an appetite which enabled one to appreciate the simple but ample meal provided for the officers at division headquarters, who enjoyed the luxury of a floored mess hall, with screened sides. Each member of the mess contributed toward its equipment and paid his share into the mess fund from which the cook and waiters were paid, as well as the bills for food.

Officers of field hospital section, 117th Sanitary Train, Rainbow Division, rear rank, left to right: Lieutenant Earl B. Erskine, 166th (Nebraska); Lieutenant Claude A. Selby, 166th (Nebraska); Lieutenant Charles Frost, 167th (Oregon); Lieutenant Roy D. Bryson, 166th (Nebraska); Lieutenant Eldred B. Waffle, 167th (Oregon); Lieutenant Jasper W. Coghlan, M. R. C., assistant director (Newark, N. J.); Lieutenant Arthur L. Murray, 165th (District of Columbia); Lieutenant Thomas H. Powick, 165th (District of Columbia); Lieutenant James D. Plamondon, 167th (Oregon); Captain Henry F. Sawtelle, 165th (District of Columbia); Lieutenant G. W. Bancroft, 168th (Colorado); Lieutenant Joseph F. Snedec, 168th (Colorado); Lieutenant Jeffrey N. Elder, 167th (Oregon). Front rank: Lieutenant Carl O. Reed, 166th (Nebraska); Major John F. Spealman, commanding 166th Nebraska); Major Charles O. Boswell, director, commanding field hospital section (New York); Major Edwin W. Lazell, commander 168th (Colorado); Major Herbert C. Bryson, commander 165th (District of Columbia); Major James P. Graham, commander 167th (Oregon); Captain Alfred J. Campbell, 168th (Colorado); Mascot Jim, 166th (Lincoln, Neb.)

THE CAMP HOSPITAL.

The camp hospital, which is under command of Captain G. P. Coopernail, M.R.C., of Bedford, Westchester County, N. Y., consists of two ward buildings, which accommodate the offices of the commanding officer; a surgical ward; a medical ward; eight isolation rooms with two beds in each, for the use of patients suffering from contagious diseases; and a store room. Only the seriously sick are kept in the ward buildings, other patients being kept in tents. There are in addition, seventy-five hospital tents, each with a capacity of from six to eight patients, eight medical supply tents, which are used by the division medical supply officer, and the tentage for the personnel of the hospital. This at present consists of eighteen medical officers, 100 enlisted men, and twenty-five women nurses, who, however, are quartered at Hempstead. There is also a diet kitchen tent, and two kitchens and a store room, operating room, hospital office, and room for eye, ear, and throat clinics, built of wood. The camp hospital will remain after the Forty-second Division has sailed, not only to take care of such patients as are unable to move, but to take care of such troops as may be ordered to Camp Mills in the future.

The details of this camp hospital are so interesting as to deserve a special article, which will be published at a later date.

THE SANITARY TRAIN.

When the troops first arrived at Camp Mills, Field Hospital No. 1., was used as a camp hospital until the camp hospital had been erected and equipped. As soon as this hospital was able to take over the patients the field hospital equipment was boxed for shipping and the sanitary train has since devoted its time to instruction and drill.

The sanitary train of the Forty-second Division is known as No. 117, and is composed of two sections, the field hospital section and the ambulance company section. Following is a list of the officers of the field hospital section: Director, Major Charles O. Boswell, New York N. G.; Assistant Director, Lieutenant Jaspar W. Coghlan, M. R. C., Newark, N. J.; Captain W. B. Hudson. Field Hospital 165, District of Columbia, N. G.: Commander, Major H. C. Bryson, Captain Henry F. Sawtelle, Lieutenants Arthur L. Murray and Thomas H. Powick. Field

Hospital 166, Nebraska, N. G., Commander, Major John F. Spealman, Lieutenants J. H. Elder, Carl O. Reed, Roy D. Bryson, and Claude A. Selby. Field Hospital 167, Oregon, N. G.: Commander, Major James P. Graham, Lieutenants James D. Plamondon, Eldred S. Waffle, and Charles E. Frost. Field Hospital 168, Colorado, N. G.: Commander, Major Edward W. Lazell, Captain Alfred J. Campbell. Lieutenants Robert C. Cook, Joseph F. Snedec, and G. W. Bancroft.

The ambulance section of the sanitary train was under the command of Captain Dunning S. Wilson, of Kentucky, with Lieutenant Henry A. Wallhauser, of New Jersey, as adjutant, and second Lieutenant Orville C. McKim, of New York, as veterinarian. The officers of the four ambulance companies are No. 165, New Jersey N. G.: Captain Peter Rafferty, Lieutenants James J. Rowland, Harry B. Chatham, and William P. Chalfonte. No. 166, Tennessee, N. G.: Captain Percy A. Perkins, Lieutenants Morris D. Hartman, John R. Drake, Lyndsay W. Newlands, and James L. Bowne. No. 167, Oklahoma, N. G.: Captain Hector G. Larueau, Lieutenants Moses J. Ferguson, Fred J. Capps, Joseph J. Nathan, and Samuel J. Bradstreet. No. 168, Michigan N. G.: Captains Robert J. Baskerville and Frederick W. McAfee, Lieutenants John D. Buck, Carl Hanna, and Arlington F. Lechlidey.

Officers ambulance company section, 117th Sanitary Train, Rainbow Division. Rear rank: Second Lieutenant O. E. McKim, V. R. C. (New York); Lieutenant M. J. Ferguson, 167th (Oklahoma); Lieutenant James D. Bick, 168th (Michigan); Lieutenant Carl Hanna, 168th (Michigan); Lieutenant Lindsay W. Newland, 166th (Tennessee); Lieutenant John R. Drake, 166th (Tennessee); Lieutenant Arlington Lechlidey, 168th (Michigan); Lieutenant John R. Capps, 167th (Oklahoma); Lieutenant Henry A. Wallhauser, 165th (New Jersey); Lieutenant Harry B. Chalfonte, 165th (New Jersey). Front rank: Captain Percy A. Perkins, commander 166th (Tennessee); Captain H. G. Larueau, commander 167th (Oklahoma); Captain Peter P. Rafferty, commander 165th (New Jersey); Captain Dunning S. Wilson, director, commanding ambulance section (Kentucky); Captain Robert J. Baskerville, commander 168th (Michigan); Captain C. A. McAfee, 168th (Michigan); Lieutenant L. Bowne, 166th (Tennessee).

Through the courtesy of the director we present below a typical week's schedule of the field hospitals while at Camp Mills:

SCHEDULE OF INSTRUCTION FOR FIELD HOSPITAL SECTION, 117TH SANITARY TRAIN, 42D DIVISION, WEEK OCTOBER 15, 1917.

First call for drill........................... 7:50 a. m.
Assembly for drill........................... 8:00 a. m.
Recall from drill.............................10:00 a.m.
First hour of drill period:
  First fifteen minutes: Setting up exercises.
  Second fifteen minutes: School of the soldier.
  Third fifteen minutes: School of the company.
Second hour of drill:
  Monday and Wednesday: Carrying without litter and with improvised litters.
  Tuesday and Thursday: Shelter tent drill, full field equipment.
  Friday: Practice march.
Practical first aid.........................10:00 to 11:00 a. m.
Officers' conference...........................1:00 p. m.
Officers' school.........................2:00 to 3:00 p. m.
Noncommissioned officers' school: Monday, nursing and symptoms; Tuesday, ward management; Thursday, nursing and symptoms; Friday, prevention of infectious diseases; Saturday, 9:00 a. m., inspection, heavy marching equipment, shelter tents.

THE DISPENSARY.

The dispensary for the sanitary trains was a model both in respect to its arrangements and its operation. It boasted the advantages of a good floor, and neat shelving on either side. The medical supplies were arranged with an orderly knowledge which betrayed the careful pharmaceutical training of the sergeant, who came into the service from the National Guard, of the District of Columbia. A rail was placed at the entrance so as to prevent crowding at sick call. The patients stepped in one at a time, were examined by the surgeon in charge who, when medicine was required, wrote a prescription which the patient handed to the dispenser who filled the prescription, placed it on file for reference, and delivered the medicine ordered in neat folding cartons.

THE MEDICAL SUPPLY SERVICE.

Under the regulations establishing a sanitary corps in the Medical Department it became possible for the first time to give commissions in the Medical Department to men who are not graduates in medicine. Among the first to receive such a commission was Lieutenant George C. Van Sickle, a retired sergeant of the Medical Department, who was called back into service by the war. Lieutenant Van Sickle was assigned to duty as medical supply officer for the Forty-second Division, where his long service in the Medical Department and his intimate knowledge of the service regulations made him of great value. As soon as a command reached Camp Mills Lieutenant Van Sickle conferred with its medical officer concerning the medical supplies brought with it. In most cases these were deficient in some direction or were so old as to be untrustworthy. In such cases all the deficiencies were listed and requisitions forwarded to Washington by Lieutenant Van Sickle through division headquarters. These requisitions were invariably honored promptly and on arrival the supplies were distributed to the several commands where needed. In his work as medical supply officer, Lieutenant Van Sickle had the assistance of four privates detailed for this service and was one of the busiest officers in camp. Not only was it necessary for him to obtain supplies for immediate use, but to provide such quantities as would be needed when the division joined the American Expeditionary Force.

DIVISION HEADQUARTERS.

All the medical and sanitary work of the division is directed from headquarters by the division surgeon, Lieutenant Colonel Jay W. Grissinger, M. C., the only medical officer of the regular army with the command. In common with other staff officers Colonel Grissinger had a comfortable, floored tent in officers' row at division headquarters. His office consisted of a room about twenty-one feet square in a one story cantonment, about 150 feet long, which housed the administrative offices of the division headquarters. Colonel Grissinger shared his office with the division signal officer. His own desk was a plain deal table built against the wall with a bench attached. Next to him at the same table sat his sergeant, an old noncommissioned officer in the Medical Department thoroughly familiar with the routine of the Medical Department, and an accomplished operator on the typewriting machine. In front of the sergeant was a regulation field desk with a stock of official blanks of all sorts. On a wooden shelf against the wall were stacked the following books furnished to the division surgeon by the medical department which constitute his official library: La Garde's *Gunshot Injuries*, Mason's *Hospital Corps Handbook*, Havard's *Hygiene*, Potter's *Materia Medica, Therapeutics and Pharmacy*, Straub's *Medical Service in Campaign*, Hughes's *Practice of Medicine*, Binnie's *Surgery*, Stewart's *Surgery*, and Morrisson and Munson's *Troop Leading and Management of the Sanitary Service in War*.

At another table were two other clerks busy in filling out reports and writing letters, etc., dictated by Colonel Grissinger or his staff. There is no eight hour law in the army, and Colonel Grissinger and his staff were busy from early morning until late at night in the task of making, revising, and forwarding reports and orders. The division surgeons day begins immediately after breakfast, which is served in the mess hall at seven o'clock. On arriving at his office he finds a bunch of papers ready for his inspection. The members of his staff will be present to receive any special instruction required by the developments of the night. The telephone makes frequent calls upon the division surgeon's time and saves many hours in the transmission of orders and advice. Reports arrive from every section of the camp by messengers, each of which is given immediate attention by the division surgeon. Near noontime, and just before supper, Colonel Grissinger makes it a rule to freshen up with a little medicine ball exercise, in which he is joined by several members of the division staff. This rule is probably accountable to a large extent for his immense capacity for work. After luncheon or rather dinner, for dinner is served in the middle of the day, the division surgeon returns to his routine of office duty unless some condition has been reported by the sanitary inspector which he deems it desirable to investigate personally. In this case he summons one of the orderlies provided with Indian motorcycles and side cars, a half dozen of whom are constantly on call in front of the headquarters offices, and mounting the side car is quickly conveyed to any part of the camp. Ordinarily, however, personal visits are not necessary. At two o'clock sergeants from the different commands report with enlisted men who have been recommended by the regimental surgeons or by the general board for a surgeon's certificate of disability. These patients assemble at a hospital tent adjoining the headquarters dispensary, and each is personally examined by the division surgeon. The men step into the tent one at a time, each with his papers in his hand, and the division surgeon glancing through the papers, sees the character of the disability claimed. He makes a brief inspection, endorses his conclusions in pencil on the paper, and either orders the men to return to their commands and await instructions, or, in a few cases, to report to the camp hospital. Syphilitic patients are sent to United States Hospital No. 1 (Columbia War Hospital) for treatment. Cases recommended for discharge by the general board on account of heart or lung trouble are sent to the special board of experts for further examination. Major Lewis Conner, M. R. C., is at the head of this special board, as president.

Corner of office of division surgeon, Rainbow Division, showing field desks.

In addition there is a special board for tuberculosis and cardiovascular diseases and a board for nervous and mental diseases which examined every man in the division. All cases found by them physically unfit were recommended for discharge for disability. Such cases were finally passed on and appropriate action taken by the Division Surgeon. Every person joining the command is vaccinated and given triple antityphoid inoculation if needed.

The Medical Department was represented at headquarters by Lieutenant Colonel Jay W. Grissinger, M. C., Division Surgeon; Major D. S. Fairchild, Iowa, N. G., Sanitary Inspector; Captain Edouard J. Dubois, M. R. C.; Captain Thomas A. Burcham, M. R. C., and Lieutenant Morton H. Lane, M. R. C., Assistant Sanitary Inspectors; Lieutenant William F. Satchell, M. R. C., medical officer for the headquarters personnel, who rendered the writer every assistance; Lieutenant George C. Van Sickle, Sanitary Corps, Medical Division Supply Officer, and Lieutenant R. M. MacDowell, Dental Corps, Dental Supply Officer.

Every effort is made to weed out the physically unfit so as not to take men abroad who are likely to be ill. Notwithstanding this careful examination the surgeons of the divisions estimate that not more than four hundred men will be rejected from the twenty-seven thousand in the division. Up to October 11th, 325 men had been recommended for discharge on a surgeon's certificate of disability.

Colonel Grissinger, to whom the writer is indebted for many courtesies, expressed himself as highly pleased with the effective work being done by the surgeons of the National Guard and Medical Reserve Corps, and by the special boards of medical officers to whom recommendations for discharge had been referred. He also specially commended the excellent work done by the sanitary inspectors, stating that the slightest laxness on their part would have undoubtedly shown immediate effect in the increase in the sick lists.

One of the regiments had an epidemic of measles, which necessitated the quarantining of the regiment. Under a rigorous application of quarantine and more ventilation this was soon overcome. In commenting on the occurrence of measles and mumps in the same regiment Colonel Grissinger said that diseases of childhood were much more apt to gain a foothold in regiments recruited from rural districts than those from the cities. City children nearly all go through the diseases of childhood in early youth, while the country boys frequently escape until manhood owing to lack of exposure to contagion. The Nassau County Hospital on account of its proximity has been utilized for the most serious cases and the authorities have shown every courtesy and have cooperated in every possible way. Cases of lobar pneumonia have been sent to the hospital of the Rockefeller Institute for treatment at the request of that institution. In commenting on the excellent record made, Colonel Grissinger said, "I have rarely seen a cleaner camp, as a whole, than Camp Mills, even of regulars. The men are clean personally, are amenable to discipline, and obey orders. The officers are alert, intelligent, and efficient. The medical officers are in earnest, many of them have had many years' experience in the National Guard or Medical Reserve Corps, and all of them have cooperated with me in the most cordial manner in my efforts to make Camp Mills a model from a sanitary point of view. And we have made a record for the camp of which the whole medical staff may feel proud. Our work here has been most valuable in developing the organization of the medical department of the division, and I feel confident, that, when called to France, its record will be equally satisfactory."

MEDICAL NOTES FROM THE FRONT.

Late Complications of Trench Foot.—Secondary Hemorrhage in War Wounds.

Geneva, *September 10, 1917.*

The etiology of trench foot is now known to be due to a parasite which is found in the soil, straw, manure, etc., and is brought in contact with the feet by the mud in the trenches. The onychomycomes penetrates the integuments through excoriations resulting from friction or by way of the matrix of the nails. The prophylaxis and treatment are naturally thorough cleansing of the feet with soap and alkaline solutions, or better still, borated or camphorated solutions. The local drop in temperature resulting from stagnation of the water in the trenches favors the implantation of the onychomycomes in the integuments because this parasite has its maximum of development between 25° and 30° C. With proper treatment recovery takes place in from two to three weeks in sixty per cent. of cases of average intensity, but one must always remember that the condition may recur rapidly and then the process will be far more serious than the initial one. Therefore, it is well to adopt the rule issued by the French Health Service Department, dated January 23, 1915, which states that all men after recovery, returning to their companies, should be utilized in general work and must not be sent back to the trenches until after a period of convalescence, which is to be fixed by the regimental surgeon. All cases do not recover so easily, however, and I would like to refer in this letter to the late complications of trench foot, as they are not generally known except by those who have had large experience in the treatment of the affection, which raged during the winter of 1914-15 and to a less extent in the winter of 1915-16. For example, I know death has occurred from tetanus and erysipelas and in one instance of the former process, which was very acute, the patient died in five days. Therefore, these trench foot cases should receive a prophylactic tetanic injection.

Let me now direct your attention to the late sequelæ which may arise. Besides the loss of toes or even the entire foot, there is a long series of very serious trophic disturbances involving the future functioning of the limb. In the first place, frequently the painful manifestations of neuritis continue very long after the phlyctenæ, edema, and patches of local gangrene have cleared up. This neuritis may occur in mild cases of the affection and is very rebellious to treatment. A plantar hyperesthesia may remain as the only sequel of the trouble, causing great difficulty in walking, sometimes to such an extent that men have been deformed on account of it. The edema itself may pass to the chronic type, even with most careful treatment. It is of the rosy type and hard as wood and little improvement takes place after long rest in bed. The occurrence of chronic edema is often associated with symptoms of sciatic neuritis.

Another common complication is muscular atrophy, even as an isolated trophic disturbance without any correlated sensitive disturbances. In some cases a true fatty degeneration has been known to occur, resulting in the symptom complex of Duchenne's pseudohypertrophic paralysis. Over the former areas of superficial sloughing, the skin becomes thickened. It is white and resembles cartilage, suggesting what is seen in old ulcers. It adheres to the underlying structures and occasionally the former sloughing area is transformed into a chronic ulcer. The joints near the areas of gangrene are often the seat of an intense organization of fibrous tissue, with disappearance of the ligaments which are replaced by yellow adipose tissue. The articular cartilages may disappear; sometimes they ossify and no trace of the synovia can be detected. The bones may remain unchanged or offer points of rarefying osteitis, with fistulæ. All this goes to show how prudent one should be in making a prognosis in trench foot.

In the case of edema, the prognosis is purely functional and is based upon the intensity and localization of the pain. When the pain has become systematized along the course of a nerve trunk, one should always fear its transformation into a chronic process and the formation of a neuritis with all that it involves. During the period of phlyctenæ, the prognosis should be guarded because in about sixty-six per cent. of the cases the blisters will result in sloughing. The gangrene manifests its approach in the first place by the fluid in the blisters becoming cloudy, sometimes frankly purulent, while the sloughing begins a day or two after the appearance of the phlyctenæ, frequently preceded by a recrudescence of the pain. A rapid extension of the phlyctenæ should be looked upon with suspicion, especially when this spreading occurs over the back of the foot and around the toes. Finally, when the phylctenæ burst or dry up it is of utmost importance to follow the anatomical evolution of the underlying skin. If this is fissured, dry, or riddled with bloody rhagades, the circulation is poorly reestablished and if elimination is not carefully watched and treated. atonic ulcers which rapidly pass to chronicity will develop with all their consequences.

In the phase of gangrene the prognosis *quoad vitam* is all important. Fortunately, moist gangrene is infinitely less common than the dry form, but it is much more serious and I know of one hospital where twenty-two cases of this complication of trench foot occurred and only two patients recovered, and they had been amputated at the thigh! Dry gangrene offers a serious functional prognosis and it indicates almost certain loss of that portion of the limb involved. There have been some cases where appreciable partial regeneration has taken place so that the ultimate outcome as far as functions were concerned turned out better than was at first hoped. In spite of the rapid evolution and danger inherent to gangrene, it is, I believe, the consensus to temporize as long as is consistent with safety before resorting to surgical measures. Amputation is only admissible when there is sloughing of the limb, but it is absolutely necessary to watch almost hourly the condition of these patients who are always under the menace of some septic complication.

* * * * *

The subject of secondary hemorrhage in wounds of warfare is important for those of the profession who are to be sent to the front. By secondary hemorrhage is here meant hemorrhage occurring from one to three weeks after the receipt of the injury, frequently after the wound has almost closed. The detection of the particular vessel which is giving rise to the loss of blood is of slight importance; the all important point is to recognize the fact that hemorrhage is going on, because as soon as the wound is opened up the vessel will usually be recognized. Infection, even slight, is the commonest factor of secondary hemorrhage in warfare. It acts by softening and destroying the clots which offer a temporary hemostasis; or ulceration destroys a portion of the walls of an artery after the vessel has been in contact with pus for some time. The treatment should therefore be first and foremost preventive. This is accomplished by opening up and freely exposing all irregular wounds and carefully draining them. It is in the midst of vast putrid hematomata developed below a cutaneous wound, sometimes of minute dimensions, that recurring hemorrhages are prone to arise; they end by killing the patient if not detected and treated surgically without delay. The infection is not always apparent; there is little rise in temperature and the patient feels fairly fit. Nevertheless, a large incision should be made and the parts freely exposed..

When the hemorrhage is the result of a vascular rupture or ulceration, ligature of the two ends of the vessel in the wound is the ideal treatment. Never attempt to plug a wound with gauze. This is only done by those who are not familiar with the pathology of wounds in warfare. Incise the wound freely, clean out the ill smelling clots and ligate the vessel where you can, since on account of the many technical difficulties encountered no hard and fast rule can be laid down. It is sometimes impossible to tie the ends of the injured vessels in an infected wound, because the artery is soft and friable, tears easily, and may slough at the point of ligature with the natural consequence that the hemorrhage recurs in a few days. The artery must be well exposed by first freeing it from all the surrounding structures, so that the vessel can be ligated several centimetres above and below the lesion in its walls. All this takes time, care, and patience, but if the end can be attained it is well worth while as gangrene of the limb is not liable to result. Ligature of the main trunk high up above the lesion, in the classic points for ligature will, of course, control the bleeding, but this should be exclusively reserved for cases where, for some reason or other, it is impossible to expose and tie the vessel in the wound. Surface oozing in the wound is serious and requires active treatment. A long incision should be made and the atonic granulation tissue completely removed by the sharp curette. This unhealthy atonic tissue gives rise to extraordinary bleeding and one is astonished at the great amount that must be removed before coming upon healthy tissue. You must scrape until the muscles, aponeuroses, tendons, etc., can be recognized perfectly and although the loss of blood during the operation is considerable the hemorrhage will cease as soon as healthy structures are reached. A secondary hemorrhage in wounds of war always requires active and immediate surgical interference upon the lines I have indicated. The aftertreatment is the same as in any case of severe loss of blood. Infections kill more than hemorrhage, but one must never despair no matter how serious the resulting anemia may be, because ligature undertaken *in extremis* has often saved life.

MEDICAL NEWS FROM WASHINGTON.

Urgent Measures to Prevent Immorality at Puget Sound Navy Yard and Seattle.—Psychological Tests for the National Army.—Commandants of Medical Training Camps Meet at Fort Benjamin Harrison.—Great Lakes Naval Training Station in Good Order.—Recent Promotions in Rank Among the Higher Grades, Medical Corps.

Washington, *October 16, 1917.*

An alarming report has been received at the Navy Department, from Surgeon B. J. Lloyd, of the Public Health Service, who is serving as sanitary inspector under the bureau of medicine and surgery, in regard to certain conditions prevailing at Bremerton, Wash., where the Puget Sound navy yard is located, and at Seattle. It is alleged that the vicinity is thronged with women who have come from all parts of the country for immoral purposes. The situation is described as a real peril to the welfare of the enlisted men at the navy yard and training station and of the army camp at American Lake. Rear Admiral R. E. Coontz, in command of the navy yard, and Major General F. V. Greene, commanding the camp have endorsed Doctor Lloyd's comments, and they joined him in an appeal he made to the municipal authorities to correct the evil. Doctor Lloyd recommends that the Navy Department take steps to have enacted a law that shall declare a federal district, 100 miles in diameter, surrounding every military naval reservation, to the end that undesirable persons not only may be excluded therefrom, but also that the most objectionable may be interned.

* * * * *

The 160,000 men stationed at Camp Lee, Va., Camp Dix, N. J., and Camp Devens, Mass., are the first to be given intelligent ratings by the psychological examinations being conducted by the section of psychology of the office of the surgeon general of the army. The examinations involve many tests to enable the examiners to grade every man according to his intelligence or manual skill. Every man's record thus obtained will be placed at the disposal of his company commander to assist him in picking men for promotion or for special lines of work.

* * * * *

A meeting of the commandants of the several army medical training camps was held at the training camp at Fort Benjamin Harrison, Ind., on October 8th, for the purpose of considering further standardization of the training of the Medical Department personnel, and as a result some important changes in methods will be introduced. The meeting was called at an opportune time, for it enabled those attending to take advantage of their presence also to attend the convention at Indianapolis of the Association of Military Surgeons on October 8th, 9th, and 10th. Many interesting addresses were made and papers read, and field demonstrations of the army Medical Department personnel and material were had at Fort Benjamin Harrison. Medical Director George A. Lung, of the navy, was elected president of the association.

* * * * *

Surgeon General William C. Braisted, of the navy, has returned to Washington, after a trip to Indianapolis to attend the convention of the Association of Military Surgeons and to North Chicago, Ill., to inspect the Great Lakes naval training station. He also attended a meeting at Chicago of the national medical examining board, of which he is president. He was much impressed with the extent and completeness of the provisions that are being made at the training station for the preservation of the health of the naval personnel there. It is believed that there is nowhere in the world a training station that is more perfect in detail than that at North Chicago.

* * * * *

Much satisfaction is expressed in the Medical Department of the Army because of the recognition given, although delayed, to four high officers of the Medical Corps by their recent appointment as brigadier generals in the National Army, namely Colonels Charles Richard, William H. Arthur, Henry P. Birmingham, and Alfred E. Bradley. General Richard was the senior colonel in the Medical Corps; General Arthur is head of the Army Medical School at Washington; General Birmingham is serving as principal assistant to the surgeon general of the army and as director of the sanitary division of the surgeon general's office; General Bradley is the chief medical officer on the staff of General Pershing in France, upon whose recommendation his advancement was made. The temporary transfer with higher rank of these officers to the National Army will operate to promote temporarily in the regular Medical Corps, Lieutenant Colonels Louis T. Hess, Christopher C. Collins, Benjamin J. Edger, Jr., and Samuel M. Waterhouse to be colonels, and Majors Llewellyn P. Williamson, William R. Davis, Leartus J. Owen, and Robert M. Culler to be lieutenant colonels. Major William H. Tefft already has been temporarily promoted to lieutenant colonel as a result of the appointment of Lieutenant Colonel Elbert E. Persons to be colonel in the ambulance service of the National Army. As General Birmingham reaches the retiring age of sixty-four years next March, Colonel Hess and Lieutenant Colonel Tefft will become permanent in their present grades at that time, if not before, as a result of other changes in the rank of the personnel. Then Lieutenant Colonel Eugene H. Hartnett and Major Frank W. Weed will be temporarily advanced to the next higher grades, respectively.

Editorial Notes and Comments

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EDITORS
CHARLES E. DE M. SAJOUS, M.D., LL.D., Sc.D.,
Philadelphia,
SMITH ELY JELLIFFE, A.M., M.D., Ph.D.,
New York.

Address all communications to
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CONCRETE AID FOR THE CRIPPLE.

Chaos expresses too well the state of the patriotic mind as it contemplates the tasks confronting the nation. It represents also the condition of affairs at the centres of authority, where the best intentions would willingly have it otherwise. Therefore a suggestion which has the merit of definite practicability is more than a ray of light. It is a stimulus and an opportunity to take hold somewhere and make good will count.

In our editorial entitled Socialization of Cripples, in the issue of October 6th, attention was called in a general way to a great problem. No matter how we may desire to remedy the conditions therein stated and to meet the opportunities therein outlined, still the willing spirit is baffled by the question: How? Certain enterprising women are now working toward definite goals. There has been opened in this city a school of textile industry which gives promise that roused sympathy and interest can in this practical way find a wholesome and useful outlet, and, even better, that the maimed and crippled not only, but the large class of unemployed who are set aside by advancing years may find congenial, interesting, and remunerative employment. This industrial centre has already been organized as the International Handloom Industry and Textile Studio, and its operation on a modest scale foreshadows the larger scope by which it hopes to extend its usefulness and draw to it many who shall need work of this sort. The aim is directed first of all to that large body of the unemployed, the "unused labor," who are such because there never has been industrial opportunity suited to their age and equipment, or rather lack of equipment. This is easily extended, in the broad conception on which this work is based, to include all those who are crippled in opportunity and in individual endowment. Such is the truly dynamic spirit of the undertaking that it sees here the possibility not only of providing a new employment suited to such workers and of training them for it, but also the more fundamental service of rousing in such often dormant, discouraged souls an active creative interest in something of intrinsic beauty and value. The ideal of organization is upon such lines of simplicity as make the work within the reach of the humblest worker, but at the same time with such an artistic end in view that it will furnish a stimulus and interest that will carry it quite beyond the routine of mere remunerative toil.

It is the essential therapy in such a scheme which makes it of especial interest to the student of medicosocial problems. Such a directed interest in industrial work and the fact that it stands independently as an industrial centre, an interchange of labor and produce pure and simple, lifts it also from any opprobrium that might attach in the mind of the worker to a prescribed therapeutic agency. Yet its value as such, enhanced by this independence and freedom for the worker, must make its appeal to the psychotherapist. He realizes the need for a place where the nervously crippled may find such a source of selfreliant help, and knows also that such a form of industry must go far toward a prophylaxis which will prevent the elderly, the crippled, and the otherwise infirm from falling into the mental conditions which lie ready to receive these individuals.

A very practical issue, still more pertinent to the exceptional needs of today, suggests itself in regard to such an organization. The care of crippled soldiers is soon to come upon this country and every available means for meeting the situation and providing for them something fitted to their capacity, curtailed as it will be in one form or another, must claim the consideration now of our medical profession. This sort of work has not only a practicability of organization and outfit and a variety of detail which make it adaptable to a large and varied class of workers, but it aims to discover, through the value of its products, a latent artistic creative ability, however humble or talented. It offers a form of activity at once stimulating and productive and therefore presents an example of the joining of industrial efficiency to the problems of individual and social health. It is worthy of consideration in its value to the health of the community in general and to the coming problem of our crippled soldiers in particular.

AMERICAN CHEMISTS.

The size and variety of the exhibits shown at the third national chemical exposition held recently in this city were of themselves a sufficient demonstration of the activity and capacity of the chemists of America. Among these products were many of medical interest, including remedies such as salvarsan, neosalvarsan, aspirin, and phenacetin, and many other synthetics now made in the United States.

One of the most interesting of the many addresses delivered at the meeting was that of Dr. H. Baekeland, a member of the National Council of Defense, who pointed out that the much vaunted supremacy of the Germans in chemistry was, as a matter of fact, limited to one particular field which was a relatively unimportant one from a commercial standpoint. In the manufacture of the heavy acids, America leads the world. Before the war Doctor Baekeland found that American methods and American apparatus were used throughout Germany in the manufacture of the heavy acids. America likewise leads in the field of electrochemistry, American electrochemical cells being admittedly the best in the world. It is only in the field of synthetic chemicals that the Germans have led. Our total imports of these before the war, including both dyestuffs and medicines, was only $10,000,000 annually, divided among over twelve hundred different products. The American business man is busy with big things, and a business so small as this did not appeal to him. The Ford factory, turning out a single standardized product, earned in 1913 four times the dividends and paid three times the wages of all the German dye factories put together; a single mail order house in the United States paid in a single special dividend twice as much as was earned in dividends by the total dyestuffs industry of Germany for a year, and one chain of five and ten cent stores sold in one year more goods than the total of German exports of organic synthetic products throughout the whole world by $11,000,000.

Now that we are cut off from the German source of supply, it has become worth while for the American business man to develop this hitherto neglected industry, and the third chemical national exposition shows clearly that the American chemist is quite able to meet the emergency which confronts us as regards synthetic chemicals.

HOOKWORM INFECTION AMONG RECRUITS.

Charles Wardell Stiles, professor of zoology, United States Public Health Service, states that his observations of a newly formed militia unit which was quartered temporarily at a Government reservation where he was conducting experiments led him to conclude that the dangers incidental to ignorance or disregard of hookworm infection in recruits were very real and far reaching. In Doctor Stiles's experience recruits sometimes came up for physical examination with a complaint from the commanding officer of inefficiency, laziness, shirking, etc., which the men would try to account for by stating that they "did not feel well." A diagnosis of hookworm infection, confirmed microscopically was followed by appropriate treatment and resulting gain in weight and improvement in appearance, disposition, and spirit. Out of seventy-five recruits, forty-seven showed hookworm infection and five proved to be suffering from an infection with other intestinal parasites causing symptoms allied to the hookworm type. These recruits represent an unselected instance of what may be expected in certain portions of the country among average enlistments. Men may be rejected because of underweight, but when this can be proved to be due to hookworm, which is a remediable condition, Doctor Stiles believes that such men should be accepted provisionally subject to the results of treatment.

Not the least important point in this matter is the danger of cases of hookworm infection reaching the trenches in Europe and causing a widespread epidemic in Belgium and France. Our men are going "over there" to help win the war. They represent a force on the side of decency, justice, and truth. It is extremely important that their physical status should be as nearly perfect as possible for their own sake, but it is infinitely more important that they should not constitute a menace to their brothers in arms, the allied troops. These dangers, it is pointed out, may be to a great extent prevented by the systematic examination of all recruits for intestinal parasites. Men in whom the infection is detected should either be treated in training camps in this country, or discharged. Doctor Stiles outlines briefly a plan for such an examination by the Government, which seems to be feasible, and suggests that in those parts of the country where hookworm infection is prevalent newspaper campaigns might be undertaken to present the danger to the men themselves with the result that recruits might take the initiative and have themselves examined and treated before presenting themselves to the authorities.

PNEUMONIC PSEUDOAPPENDICITIS.

In typical cases of pneumonia and appendicitis, it would seem that differential diagnosis between the two processes would never have to be made. Unquestionably, both affections have generally a sudden onset which, from the viewpoint of diagnosis, has a similar etiological aspect, since both processes are more prone to occur in adults in perfect health. Once this similarity is recognized everything would seem to distinguish them, and considering only the onset, it might appear that the symptomatic picture of each would be quite in contrast to the other.

Pneumonia has a sudden début with one severe chill, pain in the chest quite distinctly limited to a spot just below the nipple, a rapid rise of temperature immediately reaching above 102° F.; and lastly, the almost inevitable dyspnea and cough. Everything indicates thoracic trouble. The onset of appendicitis on the contrary is often preceded by prodromes. Meteorism, tension, and vague abdominal pain, usually in the right iliac fossa, are complained of; then some recurring chills take place and the temperature varies between 101° and 103° F. or more. Although the abdominal tenderness is more frequently found over McBurney's point it may often be located near the umbilicus or at some other point. Bilious vomiting is apt to occur, thus completing the abdominal character of the process. In pneumonia the physical signs derived from percussion and auscultation will be found, while in appendicitis examination reveals a purely abdominal symptomatology. Nothing will be found in the thorax, but by palpation and methodical percussion pain will be made evident over McBurney's point, at least after the first twenty-four hours. There is rigidity of the abdominal walls and a cutaneous hyperesthesia limited to the area over the cecum.

In practice, however, such a distinct and typical symptomatology does not always exist and the specific characters of each affection may be so attenuated that the two clinical pictures may become superimposed so as to be identical. The initial chill of pneumonia, when the subject is a child or a debilitated or perhaps even a vigorous person, is replaced by a series of little chills very similar to those of appendicitis. The initial chill may even be wanting and this fact is not likely to eliminate the idea of an appendicular syndrome in the mind of the physician. The temperature may rise more slowly and not so high, while vomiting may occur. It is well known that, although not common, vomiting may be among the first symptoms of a pneumonia which does not run an exactly typical course; this applies more particularly to about fifty per cent. of children in whom this affection undergoes an atypical evolution. Last, but not least, the pain in the chest, which is undoubtedly the most characteristic early symptom of pneumonia, may assume such a character and location as to be readily identified with that of appendicular inflammation at its début. In fact, this latter peculiarity is the most important and is none the less the most comprehensible of all. If there is, in fact, a symptomatic peculiarity by which an appendicitis resembles pneumonia it is certainly the pain in the side.

In both affections there is the same sudden onset, the same acuity, the same paroxysmal character, while the differences separating them is simply their location. The pneumonic point of pain is above all thoracic, the painful appendicular point is more particularly abdominal. Now, although it is true that the pain of an appendicitis rarely leaves its abdominal domain, it not infrequently happens that the painful spot of pneumonia deserts the thorax and descends as low as the right iliac fossa. Therefore, although mistaken diagnoses have and will still occur, these are less likely when the physician bears in mind such a possibility.

THE MINER'S "BIT."

The great service rendered by our industrial army is recognized by a growing feeling that workers in certain industries should be exempt from the military draft. This exemption will be no exemption in that the preservation of the industrial army puts the workers in the position of rendering absolutely necessary national service. In this conception of the status of industry in a national crisis, political expediency parallels the economic and humanitarian motives. The state should recognize the same motive in safeguarding the health and lives of its workers as obtains in the military and naval units of defense. One of the branches of industry upon which the Government is vitally dependent presents a terrible problem in the safeguarding of its workers. This is the mining industry and one kind of mining which makes physical wrecks of its toilers to a man is hard rock mining. Zinc and lead mining in certain districts in which the ore is imbedded in flint with a silica content of ninety-five per cent. involves working in an atmosphere impregnated with fine, hard, insoluble dust. Thirty to thirty-five per cent. of these miners inhaling silicious rock dust contract a pneumonoconiosis resulting in a fibrosis with loss of function. This condition is commonly called miners' consumption, but it is due primarily to a silicosis, tuberculous or pyogenic infection being a secondary and often a terminal process. In the performance of what is perhaps no longer his job, but his "bit," the casual risk, increasing in direct proportion to the length of service, is almost a certainty. With $14,000,000 appropriated for army hospitals for those who are to do their bit in the trenches, to say nothing of the efforts to insure mental, moral, and psychic safety for them, do not the men doing their bit underground deserve as much time, money, and scientific endeavor proportionately as those others?

DIGITAL ANARTHROSIS THROUGH FOURTEEN GENERATIONS.

A rare and interesting example of the persistence of anatomical abnormality through fourteen generations is recorded by Dr. H. Drinkwater in the *Proceedings of the Royal Society of Medicine* (March, 1917). The abnormality consists of absence of the proximal interphalangeal joints in the ring and little fingers of both hands and the enlargment of the articular ends of the bones at the same joint in the middle fingers with restriction of movement of the joint. The skin folds and creases are absent over the points where the joints normally exist. Other joints with the cutaneous folds on the two remaining fingers of both hands are quite normal. The hands are symmetrical. The observer illustrates the condition in the present living descendant by a radiogram and states that it has apparently been inherited directly from an ancestor who was killed at the Battle of Chastillon in 1453. "It thus," he says, "constitutes the longest period over which an anatomical abnormality has been traced." In 1874 a descendant of John Talbot, first Earl of Shrewsbury, the ancestor under discussion, had his tomb repaired and the skeleton was taken out. "Bishop Abraham . . . a very intimate friend of A. T. [the present living descendant], knowing of his digital peculiarity, at once examined the fingers and discovered the same ankylosis." The grandfather, father, and a half brother, a son of the father, show the same abnormality.

TETANUS IN THE BRITISH ARMY.

Four sets of analyses of tetanus cases treated in the home military hospital of Great Britain have been published in the *Lancet*. The first of these appeared on October 23, 1915, the second on December 2, 1916, the third on June 30, 1917, and the fourth on September 15, 1917. These analyses cover, respectively, 231, 195, 200, and 100 cases. It is most satisfactory to note that the mortality has declined steadily, having been 57.7 per cent. in the first series of cases, 49.2 in the second, 36.6 in the third, and only thirty-one per cent. in the fourth. Sir David Bruce, surgeon general in the British army medical service, who presents these analyses, points out the great decline in the ratio of tetanus to the total number of wounded. This change, no doubt, may be ascribed to the prophylactic injections of antitetanic serum and the fact that the inoculation period tends to become longer. While the prophylactic effect of the serum is well established, Sir David Bruce regards the evidence as to the therapeutic effect of antitoxic serum as still inconclusive. While interesting statistics are given as to the results of different methods of administering the serum, no definite conclusions are drawn.

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News Items.

Changes of Address.—Dr. William F. C. Steinbugler, to 815 Park Avenue, New York.

Dr. S. A. Hardy, to 1186 Lexington Avenue, New York.

Benedict Hospital Dedicated.—The $500,000 hospital given to Greenwich, Conn., by Mr. E. C. Benedict, of New York, was dedicated on Sunday, October 14th. The building, which is well equipped and modern in every respect, has accommodations for two hundred patients.

New York Medical Union.—The next meeting of this society will be held on Tuesday, October 23, 8:30 p. m., at 59 East Seventy-fifth Street, by invitation of Dr. Wolff Freudenthal. The program will consist of an exhibition of pathological specimens and new instruments and the reports of interesting clinical cases.

Doctor Bulkley's Lectures on Skin Diseases.—The New York Skin and Cancer Hospital announces that Dr. L. Duncan Bulkley, assisted by the attending staff, will give the nineteenth series of clinical lectures on diseases of the skin, in the out patient hall of the hospital, Wednesday afternoons at 4:15 o'clock, beginning November 7th. These lectures are free to the medical profession.

Cold at Camp Wadsworth.—Press despatches from Camp Wadsworth in South Carolina contain severe criticisms of the hospital buildings there as being unsuited to the climate. There are neither sewers nor bathing facilities, nor is there any method of supplying hot water or heating the buildings, the average temperature of which is said to be 50° by day and below freezing at night.

Psychiatric Institute.—On October 1, 1917, the State Hospital Commission appointed Dr. George H. Kirby director of the Psychiatric Institute, Ward's Island, New York city. Dr. Kirby, who was formerly director of clinical psychiatry at the Manhattan State Hospital and recently medical inspector of the New York State hospitals, has also been appointed professor of psychiatry at the Cornell University Medical College, succeeding Dr. August Hoch, who has resigned and will move to California.

Astor Home Offered to the Government.—Vincent Astor has offered his country home at Rhinecliff, N. Y., to the Army Medical Department for use as a hospital during the war. The estate overlooks the Hudson and is valued at $8,000,000. Mr. Astor is now serving as an ensign on his yacht *Mona* which he gave to the government early in the war, and Mrs. Astor is in France engaged in relief work. It is understood that several other country estates have been tendered to the government for use as hospitals or as convalescent homes.

Civil Service Examination for Pathologist.—The Municipal Civil Service Commission of New York City is endeavoring to secure a number of competent physicians for the position of assistant pathologist. Unusual opportunities are offered a man who is desirous of securing wide experience in the performance of pathological examinations and research work. The position carries a salary of from $1,440 to $2,100 per annum. Candidates must be at least twenty-one years of age. Applications will be received at Room 1400, Municipal Building, Manhattan, until October 24th, at 4 p. m.

The Health of the Navy.—Surgeon General Braisted reports that the health of the navy is excellent. Typhoid fever and other communicable diseases have been practically eliminated from the navy by modern preventive methods. Despite the enormous increase in the navy personnel, fewer than ten cases of typhoid have been reported since the war began. Practically the only diseases which have given much concern during the present war have been those of the respiratory type, which are spread mainly by nose and throat secretions, principally mumps and measles.

Medical Society of the County of New York.—A stated meeting of this society will be held Monday evening, October 22d, in Hosack Hall, New York Academy of Medicine. Dr. William A. Downes will read a paper on the Results Following Operation in Hourglass Stomach Due to Benign Ulcer, which will be discussed by Dr. John F. Erdmann. Conservative Surgery of Chronic Intestinal Stasis is the title of a paper which will be read by Frank C. Yeomans. Dr. John D. Stewart will open the discussion. The 112th annual meeting of the society will be held on November 26th, under the presidency of Dr. J. Bentley Squier.

Meetings of Medical Societies to Be Held in Philadelphia During the Coming Week.—Monday, October 22d, North Branch of the County Medical Society, Section in General Medicine of the College of Physicians; Tuesday, October 23d, Academy of Stomatology, West Philadelphia Medical Association; Wednesday, October 24th, County Medical Society; Thursday, October 25th, Northwest Branch of the County Medical Society, Pathological Society; Friday, October 26th, Medical Club (directors), Neurological Society, South Branch of the County Medical Society, Northern Medical Association, Logan Medical Association.

Weekly Mortality Reports.—The Bureau of the Census, Washington, D. C., announces that hereafter mortality reports from the larger cities of the United States will be issued weekly. There will be given for each city the total number of deaths reported (still-births excluded), the death rate, the number of deaths under one year of age, and the proportion of infant deaths to total deaths. Where the data are obtainable for the previous five years, averages for the corresponding weeks will be given for each city. These totals, rates, and percentages will serve as a ready health index for health officers and others.

A Merger of Bronx Hospitals Under Consideration.—For the purpose of improving hospital facilities in the Bronx, a merger of the Bronx, the Bronx Maternity, and Lebanon Hospitals has been suggested. The plan considered calls for the erection of a great central, modern hospital building to cost at least $500,000 and accommodate 300 patients. A committee has been appointed to make a survey and work out a plan for the merger.

The Alvarenga Prize.—Announcement is made by the College of Physicians of Philadelphia that the Alvarenga Prize for 1917 has been awarded to Dr. Wilburt G. Davison, of Baltimore, for his essay entitled The Superiority of Inoculations with Mixed Triple Vaccine (B. typhosus, B. paratyphosus A, and B. paratyphosus B) over Successive Inoculations with the Single Vaccines, as Shown by Agglutinin Curves in Men and Rabbits. The next award of this prize will be made on July 14, 1918. For full particulars regarding the conditions of competition address the secretary, Dr. Francis R. Packard, 19 South Twenty-second Street, Philadelphia.

Resolutions on the Death of Doctor Schirmer.—At a meeting of the medical board of the Bronx Hospital and Dispensary, on October 9th, the following resolutions were passed:

> WHEREAS, The death of one so loved and honored and admired as Otto W. A. Schirmer is felt for a long period of time and in a sphere that is very wide, and
>
> WHEREAS, By his untimely death the Bronx Hospital and Dispensary, among other institutions, is deprived of one of its most glorious names, whose professional brilliance was honored in two continents, be it
>
> *Resolved*, That the Medical Board of the Bronx Hospital and Dispensary express as far as words can the loss of one from among them whose kindness and breadth of mind are memories that will live vibrant in the hearts of all who knew him, and be it further
>
> *Resolved*, That upon the minutes of this meeting shall be entered the notice of the obituary and the expression of the grave loss that we feel.
>
> For the Medical Board, William J. Robinson, M. D., Henry Heiman, M. D., Martin Rehling, M. D., Max Rosenthal, M. D., Moses Aronson, M. D.

Medical Service Chiefs.—The Surgeon General of the Army announces the following as chiefs of the medical service in the National Army: Camp Devens, Ayer, Mass, Major Joseph H. Pratt, of Boston, Mass.; Camp Upton, Yaphank, N. Y., Major Harlow Brooks, of New York; Camp Dix, Wrightstown, N. J., Major David Bovaird, of New York; Camp Meade, Admiral, Md., Major Nellis B. Foster, of Ann Arbor, Mich.; Camp Lee, Petersburg, Va., Major Lawrence Litchfield, of Pittsburgh, Pa.; Camp Jackson, Columbia, S. C., Major W. W. Herick, of New York; Camp Gordon, Atlanta, Ga., Major Eugene E. Murphey, of Augusta, Ga.; Camp Sherman, Chillicothe, Ohio, Major Dudley D. Roberts, of Brooklyn, N. Y.; Camp Taylor, Louisville, Ky., Major Walter W. Hamburger, of Chicago, Ill.; Camp Custer, Battle Creek, Mich., Major Ernest E. Irons, of Chicago, Ill.; Camp Grant, Rockford, Ill., Major Joseph A. Capps, of Chicago, Ill.; Camp Pike, Little Rock, Ark., Major Arthur A. Small, of Chicago, Ill.; Camp Dodge, Des Moines, Ia., Major Joseph L. Miller, of Chicago, Ill.; Camp Funston, Fort Riley, Kan., Major Andrew MacFarlane, of Albany, N. Y.; Camp Travis, Fort Sam Houston, Tex., Major Herbert C. Moffitt, of San Francisco, Cal.; Camp Lewis, American Lake, Wash., Major Colvin S. White, of Portland, Ore.

Chiefs of Medical Service, National Guard: Camp Greene, Charlotte, N. C., Major Francis W. Palfrey, of Boston, Mass.; Camp Wadsworth, Spartanburg, S. C., Major Llewellyn Sale, of St. Louis, Mo.; Camp Hancock, Augusta, Ga., Major Frederick J. Barrett, of New York, N. Y.; Camp McClellan, Anniston, Ala., Major William H. Robey, Jr., of Boston, Mass.; Camp Sevier, Greenville, S. C., Major Edward H. Goodman, of Philadelphia, Pa.; Camp Wheeler, Macon, Ga., Major Richard Weil, of New York; Camp McArthur, Waco, Tex., Major Oliver H. Campbell, of St. Louis, Mo.; Camp Logan, Houston, Tex., Major Josiah N. Hall, of Denver, Colo.; Camp Cody, Deming, N. Mex., Major William S. Bigelow, of Boston, Mass.; Camp Doniphan, Fort Sill, Okla., Major Sidney Strauss, of Chicago, Ill.; Camp Bowie, Fort Worth, Tex., Major James C. Greenway, of New Haven, Conn.; Camp Sheridan, Montgomery, Ala., Major James S. McLester, of Birmingham, Ala.; Camp Shelby, Hattiesburg, Miss., Major George H. Lathrope, of Morristown, N. J.; Camp Beauregard, Alexandria, La., Major Birnie J. Guthrie, of New Orleans, La.; Camp Kearney, Linda Vista, Cal., Major Philip S. Chancellor, Santa Barbara, Cal. Base Hospitals: Fort McPherson, Major C. N. B. Camac, of New York; Fort Des Moines, Major Herbert H. Frothingham, of Chicago, Ill.; Fort McHenry, Captain J. Albert Chatard, of Baltimore, Md.

Assistants at medical service base hospitals for study and care of cardiovascular disease: Camp Travis, Captain James Howard Agnew, of Mobile, Ala.; Camp Funston, Fort Riley, Lieutenant Julien E. Benjamin, of Cincinnati, Ohio; Camp Kearney, Lieutenant Hugh K. Berkley, of San Francisco, Cal.; Camp McClellan, Lieutenant Ernest P. Boas, of New York; Camp Logan, Lieutenant James H. Brown, Colorado Springs, Colo.; Camp Cody, Captain Henry Rose Carter, Jr., Baltimore, Md.; Camp Pike, Lieutenant Carl R. Comstock, Saratoga Springs, N. Y.; Camp Sherman, Lieutenant William L. Freyhoff, Cincinnati, Ohio; Camp Gordon, Lieutenant Charles D. Giddings, New York City; Camp Custer, Lieutenant Alpheus F. Jennings, Detroit, Mich.; Camp Jackson, Lieutenant Berton Lattin, New York City; Camp Dodge, Lieutenant Frank B. Lusk, Chicago, Ill.; Camp Taylor, Lieutenant Willard D. Mayer, Detroit, Mich.; Camp Lewis, Lieutenant William J. Kerr, San Francisco, Cal.; Camp Doniphan, Lieutenant Louis H. Nahun, New York; Camp Grant, Lieutenant Harold E. B. Pardee, New York; Camp Upton, Lieutenant Edward J. Riley, New York; Camp Bowie, Lieutenant Orville F. Rogers, Jr., Dorchester, Mass.; Camp Sevier, Lieutenant Truman G. Schnabel, Philadelphia, Pa.; Camp Hancock, Lieutenant S. Calvin Smith, Philadelphia, Pa.; Camp Lee, Lieutenant F. Janney Smith, Detroit, Mich.; Camp Dix, Lieutenant Thayer A. Smith, New York; Camp Devens, Captain Harold W. Stevens, Pittsburgh, Pa.; Camp Meade, Lieutenant Arthur E. Strauss, St. Louis, Mo.; Camp Beauregard, Lieutenant Francis C. Tyng, Salt Lake City, Utah; Camp McArthur, Captain Albert van der Veer, Jr., New York.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

THE TREATMENT OF BOILS.

By Louis T. de M. Sajous, B. S., M. D.,
Philadelphia.

In the preceding issue reference was made to various methods intended to arrest a boil in its early stages through destruction of the focus of infection in its interior by the introduction of a strong antiseptic or cauterant through the apex of the lesion. A related plan, believed by some to be superior in its results, is to inject small amounts of an antiseptic hypodermically beneath the infected area. Such a procedure would seem especially desirable, though not exclusively so, where the infection is not entirely superficial but extends more or less deeply in the tissues. An old, well recognized method is to inject a dilute solution of phenol through a needle inserted obliquely from healthy skin into the base of the inflammatory induration. Thus, Bidder some years abo advised the use of a two per cent. solution, introduced if necessary at several different points around and beneath the lesion. He believed the procedure capable of rapidly arresting the infective process in any stage and of reducing the subsequent scarring. Some pain was experienced after the injection, but this soon passed off.

More recently the tendency has been to inject the antiseptic in a more concentrated form and in smaller amount. Mumford, 1910, considered such a procedure more successful as an abortive treatment than evacuation of the beginning, small pustule and its cauterization with pure phenol. Attention is also being paid to reduction of the pain attending the antiseptic injection through preliminary local anesthesia. Thus, in Mumford's procedure, after cleansing the part with soap and water and alcohol, five or six minims of a four per cent. solution of cocaine are injected under the infected area. Two minims of pure styron—cinnamic or phenyl allylic alcohol—are then injected beneath the boil along the track of the cocaine injection. This "ancient but efficient balsamic antiseptic" he prefers to pure phenol because it permeates the involved tissues more thoroughly. The burning sensation which follows its introduction passes off in a few minutes, and the antiseptic proceeds painlessly to destroy the bacteria and turn the infected tissue into an aseptic eschar. When the latter has been eliminated the small wound remaining promptly heals up. This procedure Mumford described as being usually successful in aborting boils. Injection of fifteen minims of a 1:500 solution of methylene blue into the centre of the infiltration is mentioned by Leonard Freeman, 1906, as a method of abortive treatment which, however, he characterizes as unreliable in its results.

Abortive treatment through external applications alone would not seem as promising as procedures calculated, like these already mentioned, to bring an antiseptic immediately into contact with the infecting organisms. Good results have, however, been claimed for a number of measures of the former type. According to Unna, 1915, boils soften and become absorbed with little or no scar formation by the use of certain pastes, which may be formulated as follows:

℞ Ichthyolis, ...ʒi (4 grams);
Glycerini, ...ʒii (8 grams);
Kaolini, ...℥ss (16 grams).
Fiat pasta.

℞ Sulphuris præcipitati,
Zinci oxidi, ... ana ʒii (8 grams);
Calcii carbonatis, ...
Glycerini, ...ʒvi (24 grams).
Fiat pasta.

By the use of these pastes cauterization, Unna finds, is often rendered unnecessary. Professor Pouchet, of Paris, has been credited with the following plaster, to be spread on muslin or other soft material and renewed every twelve hours:

℞ Acidi salicylici, ..
Emplastri saponis, ... ana ʒii (8 grams);
Emplastri plumbi, ...℥ss (16 grams).
Fiat emplastrum

From this preparation arrest of the process within twenty-four hours is expected to result where pus has not yet formed. Similarly Philippson many years ago recommended frequent applications of a two per cent. solution of salicylic acid in alcohol in small, beginning furuncles.

Very small papular skin inflammations or pustules of staphylococcic origin can undoubtedly in most cases be aborted or prevented from enlarging to form a boil, unless some pronounced underlying constitutional disorder exists, by the mere local application of tincture of iodine. Even ordinary soap at times seems quite sufficient to check such incipient inflammations, the area being first carefully cleansed with soap and water, and a little soap rubbed into a thick paste with a trace of water, applied over the area and allowed to dry on. In incipient boils, an amplification of this procedure which has been advocated as an abortive treatment consists, after cleansing with soap and water, in washing the area with fifty per cent. alcohol, placing an alcohol compress over it to remain until the alcohol has evaporated, and again washing with soap and water and allowing the suds to dry on. The recognized efficacy of tincture of iodine in cutting short a certain proportion of early boils is doubtless due to its property, demonstrated experimentally by Grossich and by Walther, to penetrate deeply through the skin. The iodine has been held to combine with the fatty acids of the skin to form compounds which are quickly absorbed. According to Schumacher, 1915, compounds formed by it with the tissues are antiseptic. In addition to any direct effect exerted on the bacteria present, it tends to induce a superficial hyperemia probably favorable to local defensive processes, promoting exudation of leucocytes and phagocytosis. According to Chantemesse, Gallois, and Courcoux, iodoacetone, a solution of two parts of iodine in five parts of acetone, is more effectual as an aborting agent in furuncles than the tincture itself. This solution becomes black and syrupy some days after preparation, and preferably should not be used until this condition has been reached, as it is then less irritating than before. Little or no smarting results where it is applied over the unbroken epidermis, but where the surface is open local burning is experienced and symptoms of iodism may be noted. Where suppuration has not yet set in, disappearance of all signs of inflammation in twenty-four hours is believed to follow a single application of iodoacetone to the inflamed area; but even boils already containing a drop or two of pus superficially are said to be aborted by one, or occasionally two, applications.

Another antiseptic agent for which power to abort furuncles has been claimed is potassium permanganate, applied freely in a saturated solution. As ordinarily understood, however, the action of this compound is more superficial than that of iodine.

(*To be continued.*)

Vaccine Treatment of Chronic Enteritis.—A. Berthelot (*Press médicale,* August 6, 1917) uses an autogenous vaccine in which are combined a true acidaminolytic organism and a proteolytic organism. In isolating the first type from the stools he uses a medium consisting of tap water, one litre; dipotassium phosphate, pure and dried, 1.5 grams; magnesium sulphate, pure and crystallized, 0.75 gram, and an aminoacid, one to two grams. The aminoacids used are alpha alanin, tryptophane, tyrosin, and histidin. The solution is heated to 120° C. for five minutes, filtered, and then sterilized at 115° C. for thirty minutes. The mediums are placed in test tubes in ten c. c. amounts, very lightly inoculated with fecal material, and kept at 37° C. The acidaminolytic species chosen is that which preponderates or is pure in the fourth reinoculation tube. Gelatin, agar, milk, and anaerobic meat or egg bouillon mediums are simultaneously inoculated. The choice of the proteolytic organisms to be used, where several are isolated, is made upon microscopic examination of stained feces. The two organisms chosen are cultivated on agar if aerobic and in bouillon, if anaerobic. The organisms are washed twice by centrifugation in 0.9 per cent. salt solution, counted with the hemocytometer after staining with acid fuchsin, each species made into an emulsion of proper concentration, and the emulsions placed in ampoules and sterilized at 63 to 65° C. for three quarters to one hour. Sterility of the emulsions is insured by inoculation of bouillon and agar. The initial doses are approximately as follows: colon bacillus, 5 to 10 millions; Bacillus lactis aerogenes group, 3 to 10 millions; dysentery group, 1 to 3 millions; Bacillus perfringens, 5 to 20 millions; Bacillus sporogenes, Bacillus putrificus, 1 to 3 millions; Proteus vulgaris, 3 to 10 millions, and Bacillus pyocyaneus, 5 to 10 millions. The two vaccines are mixed in the syringe just before injecting. Only a light intestinal reaction should result. The treatment is suitable for chronic enteritis which does not yield to removal of infectious foci or other treatment. It is contraindicated in the presence of parasites, intestinal tuberculosis, cancer, syphilis or mycosis, or of nephritis or chronic appendicitis.

Protection of the Ears from Injury by the Discharge of Artillery.—L. and M. Verain (*Bulletin de l'Académie de médecine,* August 7, 1917) state that repeated heavy gun discharges cause, subjectively, tinnitus, dizziness, aural pain, and deafness of varying degree; objectively, occlusion with cerumen, intratympanic hemorrhage, tympanic rupture, and fresh suppuration of former otitic processes. Their aural obturator, which has for its purpose prevention of injury by cannon discharges without interfering with the hearing of commands or the whistling of shells, is a hollow, olive shaped device made of celluloid or metal. It is about twelve millimetres long and nine to ten millimetres in diameter, and fits closely in the outer, soft portion of the meatus. Sound is carried into and out of the space inside the olive by two T shaped canals bored through a rod which passes through the olive in its long axis. At the outer end of the olive the rod projects beyond it and serves as a handle. In another form of obturator, the interior cavity is divided into two chambers by a thin celluloid partition with a small hole in its centre. The external chamber communicates with the outer air through a short tube and the inner chamber with the ear through a small hole. Six hundred pairs of these obturators have lately been in use at the front, and in an entire artillery regiment provided with them not a single case of tinnitus, dizziness, pain, wax accumulation, hemorrhage, or recurrent suppuration was observed during two months of heavy service.

Arthritis and Foreign Protein.—Henry Bascom Thomas (*Journal A. M. A.,* September 8, 1917) used intravenous injections of killed typhoid bacilli in the treatment of a series of eighty-six cases of subacute and chronic arthritis, beginning with a dose of fifty million and rising cautiously to seventy-five million. The doses were repeated at intervals of two to three days. No serious harm was done in any case, though the author has heard of several fatal cases resulting from the intravenous protein treatment. The treatment should not be withheld because of moderately advanced heart or renal disease or tuberculosis, but the patient should be prepared for the injection in every instance so as to minimize the severity of the reaction. The special point to observe in this preparation is that the stomach shall have been empty for several hours prior to the injection. The immediate effect of the injection is to produce an uncomfortable sensation of varying intensity, accompanied by a chill, fever and vomiting. The fever is often higher in old cases after the second injection than following the first. In practically all cases relief from joint pain begins a few hours after the injection, but usually in about two days the pain returns, and this free interval decreases after repeated injections. Most of the patients are able to leave the hospital cured after from twelve to twenty-four treatments in a period of one to two months. The final results are, however, not so good, but the method is the best that has yet been devised. Before resorting to the protein injections one must search out and remove all foci of infection, and all necessary orthopedic or other treatment should be given.

Skin Repair by Dermoepidermal Sowings.—P. Alglave (*Presse médicale,* July 23, 1917) lays stress on autogenous grafting and a fair general condition of the patient as important factors in success. In one of his cases, failure of grafting rapidly changed to success upon administration of potassium iodide, though the patient showed no clinical sign of the congenital syphilitic taint suggested by previous death of the patient's father from paresis. As a source of grafts, the patient's flanks are preferred. A good granulating condition of the open surface is essential for success, but suppuration has little or no influence. Both operative fields having been washed with ether—not tincture of iodine—a single trough eight to ten millimetres wide and extending down to the fascia or muscle is cut in the granulating surface and a corresponding graft six to eight millimetres wide comprising the epidermis and most of the dermis is cut from the flank with toothed tissue forceps and a fine, sharp bistoury. If the tissue underlying the graft appears yellow instead of white, the graft has been taken too deeply. Successive grafts are then placed one and a half centimetres apart. As soon as a graft is placed bleeding in the corresponding trough stops, and the clot formed serves subsequently as pabulum for the graft. Dressings are applied first to the area from which grafts have been taken, after the blood has been washed off with ether, and consist of a sheet of chiffon taffeta, previously boiled for four or five minutes, and covered by gauze, cotton, and a bandage. At the daily redressings, boiled water is allowed to fall gently on the grafts, which are then left exposed to the air for ten or fifteen minutes each time. When repair is complete, in two to six weeks, massage is practised daily over the grafted area to restore tissue elasticity.

Local Application of Tuberculin in Tuberculosis of the Eye.—Henry A. Ellis and H. M. Gay (*Lancet,* August 4, 1917) emphasize the unexpected frequency of tuberculous lesions of the eye, as discovered through careful tuberculin tests. Such lesions include mainly blepharitis, phlyctenular conjunctivitis, ceratitis, and corneal clouding. The treatment of these conditions is both simple and uniformly successful if properly carried out. It consists in determining the patient's local reaction to tuberculin of the bovine type by means of the multipapillary cutaneous test. The dilutions used for both the test and the treatment are serially numbered from 1 to 8, beginning at 1:10 and progressing regularly, each being one tenth the strength of the one before. The cases are classified as hypersensitive, reacting between 1:500 to 1:10,000; sensitive, reacting between 1:100 and 1:500; subsensitive, reacting to original tuberculin or 1:10; and the insensitive, giving slight or no reaction at all. Most eye cases belong to the first or second class. In the sensitive class treatment is started by instilling dilution 6 into both eyes twice or three times weekly and rising one dilution each week to dilution 3, when more care has to be used to avoid severe local reactions. Only two instillations weekly are made from this point until the maximum dose of dilution 1 is reached, which marks the end of treatment. In hypersensitive cases the beginning is made with dilution 8 and the end is often reached with dilution 2. The increase has to be watched more carefully and progress is often much slower. Where a severe reaction is produced it is wise either to repeat the dose in the sensitive cases more than twice, or to begin the treatment over again in the hypersensitive ones after all reaction has disappeared. The aim of the treatment is to produce a slight reaction, since recovery from such is followed by marked improvement in each case. The precise technic of the treatment is given in detail in the article and should be referred to before trying to put it into practice, as many precautions have to be observed by the beginner. During the whole time of tuberculin treatment the patient should be given calcium chloride, which is best administered in the form of the following prescription:

℞ Calcii chloridi,	40.0
Syrupi,	90.0

Sig.—Take 0.3 to 2.0 mils t. i. d., p. c., in a cup of milk.

Gunshot Wounds of the Extremities.—J. C. Wills and A. B. Nelson (*New Orleans Medical and Surgical Journal,* September, 1917) say that in the treatment of these wounds we have to consider the life of the patient, the loss of the limb, and the function of the limb. In the beginning the treatment should be directed toward the management of shock, the arrest of hemorrhage, and the prevention of infection. In dealing with a case of shock the patient should be carefully watched for a recurrent hemorrhage, which is prone to take place as soon as the blood pressure is reëstablished. If the temperature falls to about 96.8° F., the prognosis is grave. The thermometer should be the guide for the proper time to operate. All wounded who fail to recover normal temperature in about four hours should be considered among the seriously wounded and unfit for immediate operation. No operation, except the ligation of vessels to control hemorrhage, is permissible in a state of shock. External primary hemorrhage should be controlled by ligation if practicable, otherwise by clamping the vessel or by tourniquet; a clamp may remain until permanent ligation can be done or until the second dressing, but a tourniquet should be removed within four hours if possible. Intermediate hemorrhage is the result of the removal of a blood clot, the giving way of the remaining wall of a bloodvessel, or the increase of the blood pressure after shock. Secondary hemorrhage rarely occurs, but requires ligation when it happens. Suturing of the larger vessels may be practised, provided not too much of the vessel is shot away and provided it is reasonably certain that infection will not occur. Diffuse traumatic aneurysm, when demanding operative treatment, should be opened up, the clots turned out, and the vessel ligated. In cleansing fresh wounds great care should be taken to remove separated and devitalized fragments of tissue as well as to remove foreign bodies. A severed nerve may be sutured, but an incision to investigate the nerve is not justified. Later it may be necessary to cut down on the nerve and suture it. Aseptic fractures put up in plaster with iodine and iodoform gauze are apt to heal like simple fractures. Infected fractures are treated through a window in the cast.

Trichloracetic Acid in Dermatology.—W. H. B. Aikins (*Canadian Journal of Medicine and Surgery,* September, 1917) recommends trichloracetic acid as a substitute for carbon dioxide snow in the treatment of conditions affecting comparatively small cutaneous surfaces down to warts the size of a pinhead and isolated pigmentations of the skin. Following the application there is a certain amount of local reaction. Vesicle formation does not occur. The surface becomes dry in a few days, leaving superficial crusts which fall off in the course of seven to ten days, leaving the skin temporarily reddened or pigmented. It has also been used in senile ceratosis, warts, papillomata, warty nevi, hairy nevi, telengiectasis, lupus vulgaris, and lupus erythematosis.

Vaccine Therapy of Typhoid.—Massimo Chiadini (*Riforma medica,* June 9, 1917) declares that this is a measure of great value in reducing markedly the mortality and shortening the course and the convalescence; furthermore, it is equally efficacious in the paratyphoids. Three injections are the maximum, given at intervals of one day or more, preferably by the intravenous route, the best time for the administration being in the early hours of the morning. The local reaction requires no treatment and the vaccines are of no avail in cases with grave pulmonary, myocardial, or nervous alterations. The number of bacilli in each injection should be high—from 300 to 600 million—and the bacilli in the urine of the patient rapidly disappear after injection.

Treatment of Bronchial Asthma.—M. Ford Morris (*Medical Record,* August 4, 1917) has found Dorsey's formula of help in warding off paroxysms. This is as follows:

Iodine crystals,	gr. 5;
Spirits chloroformi,	ʒ1;
Spirits ætheris comp.,	ʒ1½:
Alcoholis, q. s. ad,	℥3.

Sig.—One teaspoonful in cold water every forty-six hours.

For the relief of the actual attack one may use by hypodermic one of the following: 0.01 grain nitroglycerin; ten to fifteen minims adrenalin 1:1,000; 0.01 grain atropine; 0.25 grain morphine; 0.005 grain hyoscine with 0.01 grain atropine. Morphine is the most efficacious but should be given only when others fail.

Gunshot Wounds of the Knee.—J. Campbell and H. F. Woolfenden (*Lancet,* August 11, 1917) regard such wounds as furnishing one of the most important and difficult problems of the surgical side of the war. Many plans of treatment have been suggested and tried and it is only recently that a satisfactory plan has been worked out. This includes absolute rest of the joint with fixation, the strictest asepsis, and the use of Carrel's method of treatment. The first requirement is met by placing the extremity on a properly made Thomas splint in full extension by the fixed method. The leg and lower thigh are supported by means of auxiliary straps of metal which can be adjusted to fit the individual extremity and changed as muscular wasting progresses. All further treatment after the initial operation is carried out without removing the extremity from the splint. In cases with moderate sepsis the joint is opened, thoroughly explored, washed clean with hot eusol and hydrogen peroxide, every particle of fibrin and other material removed, and the wound sutured immediately in layers with ten day chromic gut. In all cases with wounds leading into the joint cavity Carrel's treatment is applied locally to the wound. If this fails and the wound is very septic, the local insertion of the tubes into the joint through the original wound is often practised. But in the most severe cases, including all with extensive bony lesions, the joint is opened freely by lateral anterior incisions, foreign material or missiles are removed, the lateral extensions of the synovial membrane are opened from behind, and Carrel's tubes inserted for the intensive treatment of the joint cavity. An important feature of the operative treatment of joints is the invariable use of the tourniquet, combined with which are the total elimination of ligatures in the joint cavity and the complete prevention of bleeding by means of very firm bandaging and immobilization.

Treatment of Bichloride of Mercury Poisoning.—H. B. Weiss (*Ohio State Medical Journal,* September, 1917) advises the following treatment, as outlined by Lamber and Patterson. A large amount of fluid should be taken by mouth—eight ounces of milk every second hour, alternating with eight ounces of the following mixture:

Potassium bitartrate,	4 grams;
Sugar,	4 grams;
Lactose,	15 grams;
Water,	ad 16 ounces.

Lemon juice or orange juice to taste.

A solution containing a dram of potassium acetate to the pint of water is also given continuously by the rectum. The stomach is washed twice daily and the patient receives two colonic irrigations daily. A hot pack is given once a day. A pleasant alkaline drink consists of the following:

Cream of tartar,	4 grams;
Sodium citrate,	2 grams;
Sugar,	2 grams;
Water,	ad 8 ounces.

Lemon juice or orange juice to taste.

The following, Fischer's solution, is given intravenously:

Sodium carbonate (crystallized),	10 grams;
Sodium chloride,	15 grams;
Water,	ad 1000 c. c.

At the beginning of the treatment the stomach is washed with the whites of three eggs and one quart of milk. Before the stomach tube is removed, three ounces of magnesium sulphate with six ounces of water is introduced and allowed to remain in the stomach. The patient is then given a soapsuds enema. If the patient did not vomit after taking the poison and did not reach medical aid for at least three hours later, an intravenous injection of Fischer's solution is given at once. One thousand to 2,000 c. c. are introduced into the stomach. The patient receives eight glasses of imperial drink a day and large quantities of water. The urine is analyzed in order to control the treatment. The urine should be kept alkaline. It is tested with a saturated solution of methyl red in alcohol. If it cannot be made alkaline to methylene red the patient is in a dangerous state. Complications following this form of treatment are rare

Duodenal Catheterization in Gallbladder Disease.—S. de Santa Maria y Marron (*Revista de medicina y cirugia practicas,* July 28, 1917) is enthusiastic over the employment of duodenal catheterization first advised by Max Einhorn in 1914. He prefers the fractional method of extraction of both stomach and duodenal contents for examination. In gallbladder disease the bile is so changed in color and appearance that it is frequently necessary to employ Gmelin's test to identify the presence of bile pigments.

Therapeutic Value of Corpus Luteum Extract.—H. E. Happel (*Interstate Medical Journal,* July, 1917) says that the indications for this agent are menstrual irregularity in young women with associated nervous symptoms, postoperative and natural climacteric, sterility, sexual anesthesia, and vomiting of pregnancy. While it may be given by mouth in capsules of two to five grains three times daily, it is best administered intramuscularly two or three times a week in the dose of three grains of the desiccated gland in aqueous solution.

Surgical Treatment of Tuberculous Peritonitis.—Vincenzo Ruffo (*La Riforma medica,* June 16, 1917) from his own experience and from a thorough review of the literature is of the opinion that surgical operation is of great efficacy in all cases; that lavage is not of great value, though it may help in certain cases; that the indication for operation exists in all forms of the disease and operative interference is contraindicated only in cases with extensive pulmonary involvement, or with tuberculosis of many viscera and in such debilitated states of the system which absolutely preclude any operation whatsoever.

Results of Blood Culture in Rheumatoid Arthritis.—Moon and Edwards (*Journal of Infectious Diseases,* August 1917) made blood cultures from forty cases of acute arthritis and from eighty-three cases of chronic arthritis. Of the first series twenty-one were negative; thirteen contained a nonhemolytic streptococcus; one, a hemolytic streptococcus; two, Bacillus mucosus capsulatus; two, diphtheroid bacilli; one, Staphylococcus areus. In the chronic cases there were fifty-eight negative; eighteen, nonhemolytic streptococci; three, Bacillus mucosus capsulatus; three, diphtheroid bacilli; one, unidentified organism.

Nonspecific Protein Treatment of Inoperable Carcinoma.—S. P. Beebe and H. S. Williams (*Medical Record,* July 21, 1917) have for some time been using proteins prepared from plant seeds such as alfalfa, sweet clover, hemp, rape, and millet, in the treatment of inoperable cancer, and they believe that these extracts stimulate blood changes which have a beneficial effect in these cases. The dose at first was five to eight minims increased to fifteen or twenty-five minims, given hypodermically every one to three days according to the case. In 3,000 cases eighty per cent. were improved as follows: pain was greatly diminished; foul discharges were markedly modified; appetite and weight improved; anemia and cachexia diminished or disappeared, as did bleeding from ulcerated growths; retrogression in the tumors in some cases amounting to complete absorption and seeming recovery.

Pituitrin in Postoperative Treatment.—Neville Davis and Robert Owens (*Texas Medical Journal,* July, 1917) conclude that pituitrin is a valuable drug in stimulating the muscular coat of the intestine after abdominal section in nonseptic cases; that it assists in preventing postoperative shock, as evidenced by the lack of rise of temperature and pulse rate; that it had very little effect upon cases complicated with septic peritonitis; that it stimulates the secretory action of the kidney in cases of eclampsia, and that it materially reduces the amount of postoperative suffering.

Surgical Treatment of Tuberculous Peritonitis.—S. Stocker, Jr. (*Correspondenz-Blatt für Schweizer Aerzte,* June 23, 1917) performs a medium laparotomy and paints the peritoneum with tincture of iodine, breaking up adhesions only so far as necessary to reach all of the surface. The presence of dense adhesions may make a second incision necessary. The adhesions have to be handled very carefully, lest the intestine, or a suppurating gland be ruptured, an accident that happened in two of his cases. He claims to have cured twelve out of fifteen patients in this manner.

A Universal Arm Splint.—George Ewart Wilson (*Lancet,* June 23, 1917) describes and illustrates a simple arm splint which is universally adapted for use in fractures of the arm, irrespective of their location. It consists of a single rod of rather stiff, malleable iron, bent so as to fit closely to the contour of the average chest and to support the arm and forearm in a position of complete immobilization and comfort. It is light, cheap, easily fashioned, and readily applied. By its use the entire weight of the upper extremity is borne by the trunk so that there is no strain.

Partial Gastrectomy in Treatment of Chronic Ulcers.—Sierra (*Surgery, Gynecology, and Obstetrics,* July, 1917) states that up to the present time in Chili, exploratory laparotomy is relied upon as the final step in determining whether an indurated chronic ulcer of the stomach should be treated by the indirect operation or by the most radical and rational method, i. e., gastrectomy. We are in this respect a little in the same position as the English surgeons were in 1911. He strongly recommended gastrectomy and prefered the operation introduced by Pólya and recommended by W. J. Mayo.

Surgical Tuberculosis of the Peritoneal Cavity.—Oscar M. Shere (*Colorado Medicine,* June, 1917) says that laparotomy alone should not be considered as a cure for tuberculous peritonitis, but that the disease should be treated in the light of the pathological conditions found in each case. In many cases, when diagnosed early, the peritonitis is found to be a localized process, confined to the region of the primary focus of infection, such as the appendix, cecum, Fallopian tubes, etc. In such cases the surgical removal of the entire infected area with its underlying organ or organs is the rational method of treatment. This should be followed by energetic hygienic measures and the administration of tuberculin. Where the disease has become more widespread so that it cannot be removed surgically, laparotomy is not only not indicated, but often actually hastens the fatal issue.

Proceedings of National and Local Societies

THE NEW YORK ACADEMY OF MEDICINE.

SECTION IN GENITOURINARY SURGERY.

Stated Meeting, Held March 21, 1917.

Dr. Clarence G. Bandler in the Chair.

A New Combined Operating, Observation, and Catheterizing Cystoscope.—An account of this instrument shown by Dr. Leo Buerger, was published in full in the August 25th issue of the Journal.

Dr. R. F. O'Neil, of Boston, said it was a distinct advantage to be able to use different telescopes and operating appliances through a single sheath, and the slightly increased calibre did not seem to be a point of any importance. Considerable trouble had been experienced in manipulating the older instruments, due to the fact that the elevator or lever was not strong enough. In Doctor Buerger's instrument the lever was heavier and the flexible shafts of the operating instruments were lighter.

Dr. J. F. McCarthy showed two other electrodes, and said that while Doctor Buerger's instrument for this purpose was valuable, he himself preferred the ones he presented for vesical-nect cauterization as well as for growths, because they enhanced the value of the cauterant by at least fifty per cent. Doctor Buerger's instrument seemed to be identical in principle with that devised by Ballinger, of Atlanta.

Doctor Beer said Doctor Buerger's instrument was rather expensive. In high frequency treatment of the neck of the bladder, he had not had any trouble with the instruments he had been using. The instruments shown by Doctor McCarthy were practically the same as those which he himself has been using since 1912, but he no longer used the D'Arsonval current.

Foreign Body in Bladder.—Dr. Clarence G. Bandler presented a patient complaining of occasional terminal, interrupted, and partial hematuria, accompanied by occasional dysuria. Previous venereal infection was denied. His illness was of two weeks' duration, beginning the day after a prolonged alcoholic and sexual debauch. Cystoscopy showed a low grade cystitis with an irregular mass on the floor of the bladder, apparently some foreign material. Röntgenographic examination disclosed a similarly shaped shadow in the bladder region. Suprapubic cystotomy revealed a piece of lead three inches long, one quarter of an inch wide, and one sixteenth of an inch thick. There was no evidence of vesical calculus or neoplasm. The convalescence was uneventful. Further questioning of the patient after the operation elicited the information that the foreign body had been introduced into the urethra during the alcoholic orgy.

Dr. H. Dawson Furniss cited an instance of a young woman with a hairpin in the bladder; incrustation did not begin until sixteen months had elapsed. The hairpin was removed, but before she left the hospital she put another one in, which also was removed. After she left the hospital, she put in still another, and a few months later a piece of broken glass catheter was found; a stone had formed around both the catheter and hairpin. The patient was a very neurotic woman who suffered from polyuria at one time and oliguria at another. During a period of two weeks' observation 150 to 200 ounces were withdrawn daily by catheter.

Dr. R. F. O'Neil brought with him a specimen removed from a patient only the day before. Last November the patient had introduced a glass medicine tube into the urethra for irrigating purposes, and it had broken off in the deep urethra. A physician who was consulted did a perineal section and removed a small piece of glass, the remainder of the tube having slipped into the bladder. The patient had suffered so much since that he had trained himself to empty the bladder only partially. The foreign body was readily detected with a searcher, and the x ray showed the glass lying transversely in the bladder. The fragment presented was about three inches of a one quarter inch glass tube, with a calculus formed about the centre of it, and was removed through a suprapubic cystotomy done under local anesthesia.

Dr. James Pedersen said that a few years ago while performing an external uretherotomy he encountered a web catheter coiled up in the patient's bladder. He inferred that it had not been there very long, as it was not incrusted, but the smooth surface had become considerably eroded. Its presence was never explained. Its calibre was greater than that of the stricture. Probably it had been introduced and left in place to dilate the stricture, and had slipped into the bladder.

Dr. C. G. Bandler said that in all probability others had also frequently seen catheters in the bladder.

Traumatic Rupture of the Bladder.—This case was presented by Dr. E. F. Kilbane. The patient had been struck in the lower part of the abdomen by the pole of a wagon. The blow bent him double and "knocked the wind out of him." He had voided urine a short time previously. Very severe pain in the lower part of the abdomen during the night prevented him from sleeping; he also had intense desire to urinate but could void no urine. These symptoms continued for nearly five days, before he came to the hospital. At that time his abdomen was distended, but not rigid as in peritonitis. Temperature was 100° F.; pulse, 132; respiration, 32; white blood cells, 15,000; polynuclears, ninety-three per cent. He was catheterized and sixty-two ounces of clear fluid obtained, which, however, contained many red cells. As this did not relieve the abdominal distress, the abdomen was opened immediately, and 130 ounces of fluid were obtained from the abdominal cavity. A small transverse tear was found in the upper portion of the bladder above the peritoneal reflection. This was sutured and the bladder was drained below the peritoneum through a stab wound; the abdominal wound was also sutured and drained. Recovery was uneventful. The main point of interest in this case was the time that elapsed between the accident and the institution of treatment. Had the patient been catheterized infection might have occurred, and with an infected peritoneum recovery would have been improbable.

Retention of Urine.—This case, reported by Doctor KILBANE, occurred in a girl fourteen years of age. She had been in good health until four years previously, when constipation began and continued for a year. She was then operated upon for acute appendicitis. This was followed by good health for a year, when constipation again became troublesome. Five months before admission to the hospital she began to experience difficulty in voiding urine and soon complete retention occurred, though the desire to urinate persisted. She was catheterized twice a day for two months, and was then operated upon and told that some adhesions about the bladder had been removed. After this she was well for a month, during which time she voided regularly and frequently. After this complete retention began, and there was no desire to urinate even when the bladder was distended. She had been catheterized twice daily for two months preceding admission of this hospital, and this was continued for four days after admission. Examination was negative excepting for the scars of the two operations. Urine: specific gravity, 1014; clear, amber colored, acid; no albumin or sugar. Wassermann and von Pirquet test negative. Cystoscopy was entirely negative. The entire absence of infection was remarkable after the history of continuous catheterization. With the normal bladder and absence of any central nervous lesion, a diagnosis of hysteria was made. That evening the patient was wakened from sleep and told that an operation had been performed which had cured her, and that she could and would void her urine as soon as she rose the next morning. This she did, and continued to do normally until her discharge from the hospital fifteen days later. It was possible that after continued residence at home this condition would recur, or perhaps some other manifestation of the hysteria would appear.

Doctor BEER said that Doctor Kilbane's first case was especially interesting for it showed that with a ruptured bladder the vessel might still hold a large amount of urine. If a tyro had obtained several ounces, he might have doubted whether there was a rupture. Doctor Beer then cited a smiliar case which had come under his observation some years before. Under anesthesia, a Young's cystoscopic rongeur was introduced for the purpose of cutting off a specimen of a bladder tumor. While looking into the bladder with the blades slightly separated, just about to remove a piece, the patient suddenly vomited; consequently Doctor Beer was unable to see what he was doing and withdrew the rongeur. In the bight of the instrument a piece of tissue was found, which was thought to be a piece of the papilloma which had been noted. Subsequently, when the patient was completely under the anesthetic the cystoscopy was completed and several pieces of the tumor were removed, the instrument being withdrawn several times and the bladder irrigated and filled repeatedly. It was believed that a very satisfactory removal of the papilloma had been accomplished. The pathologist reported that the first specimen removed was a piece of mucous membrane of the small intestine. A few hours after the cystoscopy the patient was operated upon, and a very small hole was found in the bladder, which had evidently been punched by the instrument; there was also a similar hole in the small intestine, yet it had been possible to go into the bladder and do cystoscopic work, filling and emptying the viscus, without finding any evidence of the injury.

Doctor MCCARTHY cited a case with a history similar to that of Doctor Kilbane's patient. He had been hit by a truck, and was caught between the truck and the platform from which the trucks were loaded. On admission to the hospital, he was in a condition of moderate shock; a little blood was presenting at the meatus. His bladder capacity was normal, but notwithstanding this, operation subsequently demonstrated a valvelike peritoneal penetration through the bladder wall, which had closed on the withdrawal of the sharp bone splinter, immediately after the withdrawal of the crushing force of the accident, and opened subsequently when the bladder became distended. It was important to note the interval between the last micturition and the injury, and, that the so called bladder capacity test may be decidedly misleading.

Doctor O'NEIL, à propos of Doctor Kilbane's case of rupture of the bladder, cited an instance in which a cystoscope had been passed directly through a tuberculous bladder into the peritoneal cavity. The bladder was contracted, and although no undue force had been exerted in the passage of the instrument the bladder was perforated by it. The incident was immediately recognized and a laparotomy was performed, with no harmful effects. This incident illustrated the fact that a tuberculous bladder may be perforated with very little force.

Dr. JAMES PEDERSEN asked whether in Doctor Beer's case the intestine had entered the cavity of the bladder. Upon receiving a reply in the negative, he told of a rupture of the bladder that had come under his care. The patient, while intoxicated, had fallen from a window ten feet above the pavement. The house staff tried the capacity test and, failing to recover the right amount, made the diagnosis of intraperitoneal rupture. Within a few hours after the accident, the bladder was cut down upon and sutured. The mixture of urine and sterile water was swabbed out of the pelvis and a small gauze drain was inserted; the bladder was given continuous drainage by means of an indwelling catheter. The man recovered without untoward symptoms.

Dr. A. HYMAN said that cases of retention in the bladder are not uncommon. One woman had come to him complaining of pain in the right kidney, and a history of retention of urine and catheterization. She had a movable kidney on the right side; nothing else was found. The kidney was sutured in place, but the retention continued while she was in the hospital and subsided after she left. She had been seen within the past year and still had these attacks or retention without apparent cause; they lasted about three weeks. She had been cystoscoped with absolutely negative results. She had a perfectly normal bladder. In another young woman retention had developed some time after operation. She was in the hospital for eight or nine days, during which time she was catheterized daily; then suddenly, without any apparent reason, she started to urinate normally.

Doctor KILBANE said that one point brought out by Doctor Beer should be emphasized, that although the man was catheterized and sixty-two ounces of fluid obtained, yet the bladder had a large tear in it and had been leaking into the abdominal cavity for five days. Another point was that in spite of the tear the gross appearance of the urine was practically normal.

Clinical Observations on Three Hundred and Fifty Cases Presenting Symptoms of Nephrolithiasis.—This paper, by Dr. RICHARD F. O'NEIL, will be published shortly in the JOURNAL.

Dr. E. L. KEYES, Jr., said that the presence of a stone should always be confirmed by the scratch or by the visible catheter, or by pyelography if it is in the pelvis of the kidney. The most extraordinary case of misleading diagnosis that had come under his observation was that of a patient who had had one kidney removed for stone, and had a colic in the remaining kidney. The x ray showed a stone in the renal pelvis. Later, the man had another attack and was taken to St. Luke's where the x ray was negative. He then had another attack of colic and went to St. Francis's, and again no stone was found. After that, he returned to Doctor Keyes and was again x rayed by the radiographer who had formerly found the stone, and he said there was no stone. Yet in the first plates the stone was plainly visible overlapping the twelfth rib. This case illustrated the difficulty of interpretation, even by the man who had found the stone in the first place.

Doctor BEER said that he would like to know how frequently uric acid stones are found in Boston, and asked what was the mortality in cases of bilateral stone. Doctor O'Neil was to be congratulated on the excellent results secured in cases of bilateral stone, for they usually give bad results. In his own service he has seen twenty to thirty. Many patients came with bilateral infected kidneys, many were uremic, and the percentage of mortality was high. Were such cases classed in the excluded cases in the series reported by Doctor O'Neil? Personally, he was willing to operate on any patient with stone in the kidney, even those who looked desperate, for operation gave the only chance of recovery. The difficulty in diagnosis had not been in the recognition of the presence of stones, but in deciding definitely that there were no stones. The percentage of success with radiography had been somewhere about ninety per cent. In his service all the usual tests were employed, including x rays, argyrol ureterograms, etc., and still practically every week cases were seen in which the presence of stone could not be excluded. One of these cases had been reported recently before the section by Doctor Hyman, in which the x rays were negative. It was much easier to prove that there was no stone present in the ureter than in the kidney as by wax bougies, ureterograms, etc., an exclusion could usually be made. In his service they had operated upon close to fifty ureteral calculi and upon about twice as many kidney stones. The operative mortality is low in nephrolithiasis cases.

Doctor STEVENS said that in Doctor Beer's remarks on ascertaining the absence of a stone in a given case, it was to be inferred that he spoke of the kidney pelvis. The thorium plates and wax tips would now easily determine that it was not in the ureter. It would be interesting to know if any one present had ever got a scratch on a wax tip that was not due to calculi or to calcareous deposit, which would be the same thing from a diagnostic standpoint.

Doctor BARRINGER said that this was the third important paper on kidney stone which had come from the Massachusetts General Hospital in the last few years. We would hark back to Doctor O'Neil's paper for a long time to come, when we wished to know anything about kidney stone. Two of the points had especially impressed him: first, the coordination of the work of various departments with the urological service, and, second, the fact that the women were on the urological service, which did not obtain in New York, and which made Doctor O'Neil's statistics extremely valuable.

Dr. C. G. BANDLER cited the case of a patient with a history of two attacks of apparent renal colic, each accompanied by hematuria lasting twenty-four hours. The paroxysms were relieved by hypodermics of morphine. Two weeks after the second attack he was seen by Doctor Bandler. Cystoscopy was negative, as was also the x ray. Catheters were passed up to the pelvis of each kidney on two different occasions, and pyelograms were made which were negative. The urine from each kidney was negative except for a few blood cells, equal on each side. However, the patient insisted upon operation, so an exploratory operation was performed upon the upper urinary tract. The kidney was normal in appearance and no stone was palpable. The ureter was palpated down as far as possible, and absolutely nothing was revealed. The wound was closed and the man made an uneventful recovery. Three months after leaving the hospital, he reported complaining of frequency of urination, but of no pain whatsoever. Examinations were negative and he was sent home with an alkaline sedative diuretic. The next day he returned to the office with a calculus the size of a small olive pit which he had voided. He had been radiographed by three different men, had been examined most carefully and conscientiously, yet all the findings had been negative. The calculus was composed of calcium oxalate.

Dr. R. F. O'NEIL, in closing the discussion, said in regard to the bilateral cases, that fourteen were operated upon; one patient refused to be operated upon; another was refused operation on account of the size of the stones and the low renal function. Unfortunately, the proportion of pure uric acid calculi to the others could not be stated. His impression was that they were rather infrequent, most of them having some oxalate or phosphate in their composition. Doctor Beer's point that the evidence in some of the orthopedic cases in favor of the presence of a calculus is well taken. As stated in the paper, certain of these cases were excluded for that reason and it was probable that calculus was present in some of the others, but in the evidence of repeated negative examinations it was not fair to suppose that they all had calculi which were negative to x ray. In spite of the accuracy of diagnosis in general, there would probably always be a certain proportion of cases, small to be sure, where one would have to make the diagnosis by operation, the case reported by Doctor Keyes being an illustration. In these cases where the x ray was negative the injected radiograph would frequently cause a stone to show by photographing it in a medium of different density.

In regard to the simultaneous occurrence of renal tuberculosis and calculus, in one case it was thought this condition occurred, but it was very rare. In another case, what was supposed to be a calculus proved to be tuberculous material deposited in the ureter. In regard to the forcible lavage following pyelotomy, it had never been employed. In his opinion, scratches on a wax tipped catheter, properly introduced, were a positive indication of the presence of calculus. In closing he desired to state that these cases were worked up and operated upon by various members of the Genitourinary Service, and he wished to claim no undue credit.

THE MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

Special Meeting, Held April 2, 1917.

The President, Dr. Thomas S. Southworth, in the Chair.

Complications of Scarlet Fever.—This paper was read by Dr. Charles T. Sharp, of Jamaica, N. Y.

Dr. Thomas S. Southworth said that the paper was a difficult one to discuss because new information concerning disease which was presented by the investigators was often beyond the experience of those who listened. This study was of the highest value, as it enlarged our knowledge of a condition which in general practice was rarer than appeared from the number of cases studied by Doctor Sharp. The early cases, with moderate pain in the joints, were more common. Few saw many of the late cases with prolonged involvement and slow recovery. Referring to the difficulty arising from salicylates, a peculiarity of scarlet fever patients seemed to be that they did not excrete drugs as readily as others. Scarlet fever must have some special effect on the kidneys. Doctor Southworth cited the case of a child in whom a heart murmur developed, and the consultant advised giving bromide to quiet the rather rapid action of the heart. Although a very moderate amount of the bromide was given a most profuse bromide rash developed, covering the face and scalp. We must eventually find that the peculiar rash which came out with the late cases was due to some definite, discoverable factor. When we knew more about the actual causation of scarlet fever we should perhaps know more about the handling of these cases of arthritis.

One of the most important lines of treatment in scarlet fever was the prevention of complications. There were very few cases of articular complications at the Minturn Hospital. The plan of treatment consisted in the administration of large quantities of fluid as a routine. The patients were given milk one hour and water the next. Adults excreted as much as seventy or eighty ounces of urine a day and in addition to this amount of urine there was free insensible perspiration. It was very simple and physiological. There was toxemia and with the highly concentrated febrile urine there was great danger of injury at least to the kidney. It seemed probable that the foundation for later attacks of nephritis was often laid in the early days of the disease when an intensely concentrated febrile urine was allowed to persist without proper dilution. At any rate, by early and prompt routine flushing, fewer complications were seen, than when the ordinary plan was followed of letting the patient take the amount of fluid desired.

Gastrointestinal Toxemias.—This paper, by Dr. E. E. Smith, of New York, was published in full in the July 28th issue of the Journal.

Dr. B. P. Riley, speaking of arthritis and intestinal toxemias, said that Doctor Pemberton, of Philadelphia, had published a series of papers in the *Journal of the Medical Sciences* in regard to toxemia and its effect on arthritic conditions, and attempted to prove that a large number of these conditions should be treated through diet. Doctor Riley said that the work of Folin, Denis, and Benedict had led him to study the question of whether the intestinal toxemias had any bearing upon arthritic conditions or whether the arthritic conditions are true bacteriemias. In the cases he had studied in connection with this, the symptoms apparently had some bearing on the intestinal tract. Two cases presented the same conditions that in Pemberton's series seemed to have an effect on the intestinal tract; the patients could not digest their food properly, had vague pains and myalgias, and at times had intestinal stasis with arthritic conditions. In these cases the intake and output of food was observed, the urine examined, and the condition of the blood noted carefully as to the retained urates and the retained nitrogen, etc., but little was accomplished. Finally the question was solved by looking for the nidus of infection, which Doctor Smith had spoken of. In both cases a mixed infection was found—streptococcus and Staphylococcus pyogenes aureus. In one case it was a tooth. The dentists said that it was rare to find a mixed infection in tooth abscesses. When the infection was cleared up, the gastrointestinal symptoms and joint conditions entirely disappeared. The patients also had a functional change in the kidney. The functional change was relieved after getting rid of the focus of infection. The retained urates and the kind of food bore no relationship at all, and apparently made no difference. That also was the experience of Doctor Folin's assistants in Boston, in the attempt to discover the relation between the intake of food and and the retained urates.

Doctor Cornwall said that the subject of intestinal toxemia entered into much of the morbidity to which man was subject. Toxemia had probably at least two ways of doing damage: one through special sensitization of tissues to intestinal toxins; and the other through the general injuriousness of the intestinal toxins. Certain of the toxic split protein products of microbic activity in the intestines were regularly injurious in direct proportion to quantity, but this regular injuriousness was subject to modification on the one hand by superior or increased tolerance, which meant superior toxicolytic power of the organism, and on the other hand by diminished or inferior toxicolytic power of the organism, or special sensitization to certain split proteins. The idea of special sensitization, a kind of anaphylactic relation, was very fascinating, but should not be accepted as the essential or complete explanation although it might enter more or less into every case, for the absolute toxicity of these substances must remain the regular factor. It should be said that the intestinal toxemia generally referred to by that term was that due to the absorption of protein fragments produced by the activity of the saprophytic bacteria. That was what the speaker meant by the term "unqualified," but he did not wish to deny the other kinds of poisonings which could come from the intestines.

Doctor Cornwall called attention to the fact that sometimes fever was noted in connection with intestinal toxemia which may even be so extensive as to resemble typhoid. This suggested that the organism reacted to the toxins of the bacteria manufactured outside the tissues and absorbed, in the same way that it responded to the presence of the bacteria within the organism, acting as if it inferred from the toxins the presence of the bacteria themselves. This supported the idea that fever was part of nature's curative procedure when invaded by bacteria in any quantity. He also called attention to the fact that while high blood pressure was often present in conditions of intestinal toxemia, such conditions were also frequently associated with low blood pressure.

Book Reviews.

[*We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.*]

Hygiene and Public Health. By LOUIS C. PARKES, M. D., D. P. H., Univ. of London; Lt. Col. R. A. M. C. (Temp.); Consulting Sanitary Advisor to H. M. Office of Works, etc., and HENRY R. KENWOOD, M. B., F. R. S., Edin.; D. P. H., Lond.; Lt. Col. R. A. M. C. (Temp.); Chadwick Professor of Hygiene in the University of London, etc. Sixth Edition, with Illustrations. Philadelphia: P. Blakiston Company. (Price $4.)

This work, having successfully stood the test of five editions, each one an improvement on the previous one, now appears in a sixth edition. The authors state that it has been carefully revised and brought up to date. As the fifth edition was issued in 1913, this seems to be a large order, since studies in public health have made rapid strides recently. The elaborations reflect the advances along military lines and in those civilian departments which have been most seriously affected by war conditions. The section on Camp Sanitation has been extensively revised and a note on Marine Hygiene has been added. A new chapter on Maternity and Child Welfare Work appears. This phase of public health work, though having been broached heretofore, has developed in the war emergency into a serious problem. It is a new topic in books on Public Health, and seems to be most intelligently discussed here. The latest scientific advances in the study of communicable diseases have been included in this edition, as well as new material on personal hygiene. The work is written, of course, from the British point of view; its revision in an atmosphere of quickened endeavor and the broad, thorough, and authoritative treatment of the subject in its pages make it a valuable textbook in our country at this time.

The Fundus Oculi of Birds. Especially as Viewed by the Ophthalmoscope. A Study in Comparative Anatomy and Physiology. By CASEY ALBERT WOOD. Illustrated by 145 drawings in the text; also by sixty-one colored paintings prepared for this work by Arthur W. Head, F. Z. S., London. Chicago: H. A. Fox, 1917. Pp. 180. (Price $15.00.)

This beautiful book is the product of the leisure moments of the author, of the avocation to which he turns for relaxation. It seems hardly possible that an ophthalmologist engaged in a strenuous professional life and in making enormous contributions to ophthalmic literature, should take up this form of relaxation but the result is what might naturally be expected. We are too little acquainted with the contributions of other writers to this department of comparative anatomy and physiology to speak with authority, but our impression is that it is unsurpassed in breadth of observation and in technic of examination. More or less complete descriptions and illustrations are given of the backgrounds of the eyes of representatives of practically all of the various orders of birds, with instructions how to make the examinations most successfully. In addition considerable space is awarded to the macroscopic and microscopic anatomy. Numerous references to the findings of other observers render the book a compendium of what is known on the subject, rather than simply a record of the writer's personal observations. Yet these references themselves appear to indicate a need for such a work as this, the main purpose of which is stated to be "to furnish such a description of the intraocular appearances and the methods employed in viewing them, as will enable other ophthalmologists and zoologists to further this study by examining the eyegrounds of birds that come under their observation." Doctor Wood is to be congratulated on the production of a work which promises to hold a permanent place as a classic in the literature on comparative anatomy.

After Office Hours.

Another nurse heroine! Read Magic Casements in the October *Century.*

* * *

The Last Laugh had its laboratory scene and The Knife, the last play to occupy the stage of the Bijou, revolved wholly about an operation.

* * *

Young's magazine has a reputation for breeziness. Turning over the leaves of the September number, we find a story, The Downfall of Tony, which gives the impression of a breeze which has passed over the city's sewage.

* * *

We nominate for our own Hall of Fame the Indian Sequoya who, to better the condition of his race, spent twelve years in solitude, perfecting an alphabet. His completed work, an alphabet of eighty-five characters, enables an illiterate Indian to read and write in three hours.

* * *

The peculiar psychological epoch in a man's life called "middle age" is no less a time of stress than puberty although he brings to meet it a more stable organism than is the case with the earlier trials. This subject is well handled in The Middle Years by Henry James in *Scribner's* for October.

* * *

Munsey's for October quotes the *Quinquennial Record* of a college class graduated in 1911. Among other things the average income of the graduates is told. It is worthy of note that, while the average income in the fifth year is $2,069, the physicians in the class are not earning enough to report.

* * *

The defects in the Harrison Law are pointed out by the *American Review of Reviews* for October, quoting Mr. Charles B. Towns in the *Maryland Medical Journal.* The wisdom of informing the public in a lay periodical how large quantities of habit forming drugs may be obtained and the strict letter of the law observed may be questioned

The new spirit which dominates penology nowadays is described in The University of Sing Sing by Frank Marshall White in the *Century* for October.

* * *

Druggists in Chattanooga have been warned not to sell paregoric, bay rum, spirits of ammonia, and such things to the soldiers lest they use them as a substitute for liquor. The reason for barring spirits of ammonia was probably evolved by the same mind that included apomorphine in the Harrison Law.

* * *

Tears, idle tears! It is said that a Harvard professor of chemistry is making experiments with lachrymogenic gas for use in the trenches. It causes copious weeping that renders accurate marksmanship impossible on the part of the enemy. This is all right in theory but, after Belgium, we doubt the possibility of making a Prussian weep.

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Meetings of Local Medical Societies.

Monday, *October 22nd.*—Medical Society of the County of New York.

Tuesday, *October 23rd.*—New York Academy of Medicine (Section in Obstetrics and Gynecology); New York Dermatological Society; Metropolitan Medical Society of New York City; Buffalo Academy of Medicine (Section in Pathology); New York Medical Union; New York City Riverside Practitioners' Society; Onondaga Medical Society, New York; Valentine Mott Medical Society, New York; Washington Heights Medical Society, New York; Woman's Hospital Society, New York.

Wednesday, *October 24th.*—New York Academy of Medicine (Section in Laryngology and Rhinology); New York Surgical Society; New York Society of Internal Medicine; Schenectady Academy of Medicine.

Thursday, *October 25th.*—Ex-Interne Society of Seney Hospital, Brooklyn; Medical Union, Buffalo; Hospital Graduates' Club, New York; New York Physicians' Association.

Friday, *October 26th.*—Society of New York German Physicians; New York Clinical Society; Manhattan Medical Society; Society of Alumni of Sloane Hospital for Women; Brooklyn Society of Internal Medicine; Italian Medical Society of New York.

Saturday, *October 27th.*—New York Medical and Surgical Society; West End Medical Society; Lenox Medical and Surgical Society.

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Official News.

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending October 15, 1917:

Acker, R. B., Assistant Surgeon. Relieved from duty at Fort Stanton, N. M., and directed to proceed to Marine Hospital. La.

Bahrenburg, L. P. H., Surgeon. Directed to proceed to St. Louis, Mo., and take charge of Marine Hospital.

Clark, T., Surgeon. Directed to stop at Richmond en route to Washington under orders of September 28, 1917, to represent the Service at the meeting of the American Association for the Study and Prevention of Infant Mortality, October 15, 1917.

Ebert, H. G., Surgeon. Directed to proceed to Little Rock, Ark., on special temporary duty.

Foster, M. H., Surgeon. Directed to proceed to Providence, R. I., to assist in the medical examination of aliens arriving on vessels of the Fabre Line.

Holt, J. M., Surgeon. Directed to proceed to Houston, Tex., on special temporary duty.

Lavinder, C. H., Surgeon. Granted seven days' leave of absence from October 5, 1917.

McMullen, John, Surgeon. Directed to proceed to Jacksonville and other places in the State of Florida, for observation to determine prevalence of trachoma.

Meyer, E. M., Sanitary Bacteriologist. Directed to proceed to Providence, R. I., for duty in connection with surveys of coastal waters.

Nute, A. J., Acting Assistant Surgeon. Directed to proceed to Hot Springs, N. C., on special temporary duty.

Oakley, J. H., Surgeon. Directed to proceed to Fort Worth, Tex., on special temporary duty.

Phelps, E. B., Professor. Directed to proceed to Hot Springs, N. C., on special temporary duty.

Preble, Paul, Passed Assistant Surgeon. Granted six days' leave of absence from October 1, 1917.

Ransom, S. A., Acting Assistant Surgeon. Directed to proceed to Little Rock, Ark., and Houston, Tex., on special temporary duty.

Robles, H. C., Scientific Assistant. Directed to proceed to Chattanooga, Tenn., on special temporary duty.

Stewart, P. M., Assistant Surgeon. Relieved from further duty at Spartanburg, S. C., effective September 30, 1917.

Treadway, W. L., Assistant Surgeon. Directed to proceed to Hattiesburg, Miss., on special temporary duty; stop at Camden, Ala., to investigate prevalence of trachoma among school children.

Wheeler, G. A., Assistant Surgeon. Directed to proceed to Burnsville, N. C., to investigate pellagra cases.

Promotions.

Assistant Surgeons Daniel S. Baughman, Joseph Bolten, Harry C. Cody, Robert C. Derivaux, James B. Laughlin, Tully J. Liddell, Harry M. Thometz and Walter L. Treadway, promoted and commissioned as passed assistant surgeons.

Appointments.

Doctors Walter Charles Allen and Lynne Araunah Fullerton, appointed and commissioned as assistant surgeons from date of oath.

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Births, Marriages, and Deaths.

Married.

Boyden-Thompson.—In Pendleton, Ore., on Wednesday, September 26th, Dr. Guy Lee Boyden and Miss Zella Marie Thompson.

Hinman-Wonson.—In Gloucester, Mass., on Sunday, October 7th, Dr. Howard D. Hinman, of Enosburg Falls, Vt., and Miss Esther Burnham Wonson.

Dixon-Shannon.—In York, Pa., on Wednesday, October 3d, Dr. James S. Dixon, of Avoca, Pa., and Miss Helen Louise Shannon.

Larochelle-Roussin.—In Biddeford, Me., on Monday, October 8th, Dr. Joseph R. Larochelle and Miss Jeannette R. Roussin.

Phillips-Stafford.—In Rochester, N. Y., on Wednesday, October 3d, Dr. Harry C. Phillips and Miss Rowena E. Stafford.

Yates-Archer.—In Annapolis, Md., on Thursday, September 20th, Dr. Frederick Yates, of Washington, D. C., and Mrs. Mary Estelle Archer, of Drummond, Md.

Died.

Andres.—In El Paso, Tex., on Friday, October 5th, Dr. John H. Andres, of Bloomsburg, Pa., aged thirty-one years.

Bruce.—In Moundsville, W. Va., on Saturday, October 6th, Dr. George William Bruce, aged ninety years.

Crocker.—In Cambridge, Mass., on Saturday, October 6th, Dr. John M. Crocker, aged seventy-two years.

Gibson.—In Buffalo, N. Y., on Thursday, October 4th, Dr. James A. Gibson, aged fifty years.

Hadley.—In Plaistow, N. H., on Tuesday, October 9th, Dr. Charles Harney Hadley, aged sixty-five years.

Hughes.—In Russellville, Ala., on Thursday, October 4th, Dr. Thomas Hughes, aged forty-one years.

Jordan.—In Wabash, Ind., on Tuesday, October 2d, Dr. Loran W. Jordan, aged sixty-four years.

Mathias.—In Kansas City, Mo., on Monday, September 17th, Dr. John Swope Mathias, aged sixty-two years.

Rigg.—In Wilkinsburg, Pa., on Wednesday, October 3d, Dr. John Edwin Rigg, aged sixty-three years.

Russell.—In Oshkosh, Wis., on Friday, October 5th, Dr. Thomas P. Russell, aged ninety-one years.

Sikes.—In Bainbridge, Ga., on Sunday, September 30th, Dr. James A. B. Sikes, aged sixty-five years.

Tischbein.—In Cincinnati, Ohio, on Saturday, October 6th, Dr. Frederick J. Tischbein.

White.—In Phelps, N. Y., on Sunday, October 14th, Dr. William A. White, aged forty-four years.

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Original Communications

WAR TETANUS.*

By LEON H. CORNWALL, M. D.,

New York,

First Lieutenant, Medical Corps, National Guard, United States; Visiting Physician, Neurological Department, Vanderbilt Clinic, Columbia University; Pathologist, City Hospital.

The experiences of the armies of Europe in the early part of the present war demonstrated that, of the infectious diseases, tetanus required the greatest energy, zeal, and scientific acumen in order to be successfully combated. So frequent was its occurrence that it has often been referred to as the "war pestilence." In the voluminous literature of the first two years of conflict our enemies as well as our allies have contributed much to our information regarding this infection and by applying the lessons learned by them we should be able to prevent in our army the enormous sacrifice of human life suffered by them during 1914 and 1915.

A paradoxical commentary upon the much vaunted Teutonic efficiency, is the record of their lack of preparation to meet that insidious foe, the tetanus bacillus. Prophylactic measures were employed only in some of the largest hospitals, in many of which no injections at all were given until some fatalities had occurred. In the City Hospital of Mühlhausen the supply of tetanus antitoxin was so limited that at the opening of the war no prophylactic injections of antitetanic serum were possible and not until after several weeks of hostilities could any steps for prophylaxis be undertaken. In thirty-seven German war hospitals established for the care of the wounded of the fifteen army corps no prophylactic treatment was administered for a period during which 8,145 wounded soldiers were cared for, in whom sixty-three cases of tetanus developed. Thirty-nine other hospitals which cared for 19,432 wounded soldiers during the same period gave only selected cases immunizing injections and 107 cases of the disease developed representing an incidence of 5.5 per cent. per 1,000. Despite the preventive treatment there were twenty-one deaths.

Incidence.—Observations are convincing that infection is most frequent after injuries from high explosive shells, bombs, and hand grenades and relatively infrequent after wounds from shrapnel or rifle bullets. The reason is obvious, as in the former class of wounds the likelihood of wound contamination with dirt or portions of clothing is greater. Because of the relatively infrequent occurrence after infantry wounds, which are far more numerous than injuries from other weapons, one must not be led to believe that the disease may not and does not follow such injuries. The frequency of infection in relation to the regional incidence of injury is illustrated by the following figures taken from the report of Madelung: following injury of the lower extremity, 103 times; following injury of the upper extremity, fifty times; following injury of the body, eight times; following injury of the head, five times. It is remarkable that no cases have been recorded to my knowledge after lung injuries, but again the reason is undoubtedly due to the unfavorable conditions for growth of the bacillus in the presence of large quantities of oxygen.

Frequency.—The importance of the disease in the present war is only fully realized by comparison with statistics (1) from other wars:

War.	*Wounded.*	*Cases of tetanus.*	*Cases of tetanus per 1,000.*
Crimean War............	12,094 (English)	9	1.5
American Civil War.....	217,000	505	2.0
Franco-Prussian War....	95,000	350	3.5
Russo-Turkish War..... (1877-1878)	51,700	66	1.2
Present war.............	27,677 (German)	174	6.6

Madelung remarks that the high incidence is not difficult to understand when one considers the large number of wounded in the Vosges mountains who were compelled to remain in the forest camps or trenches days and even weeks after being wounded covered with mud and filth. In previous wars "tetanus epidemics" have been reported from certain hospitals and it has been observed that the incidence of the disease differs with the locality. Walther (2) emphasizes the importance of officers and surgeons acquainting themselves when possible with all regions known to be infected with tetanus, spoken of by the French as regions "*tetanifère.*" Owing to the requirement of anaerobic conditions for the growth of the causative organism of tetanus the disease is more frequent in deep than in superficial wounds. Necrotic tissue furnishes a good medium for the growth of tetanus bacilli because necrosis is a process of oxidation and oxygen is bound to the tissue substance.

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*Read before the Neurological Journal Club, Columbia University, 1916, and Company 3, Medical Officers' Training Camp, Fort Benjamin Harrison, Ind., August 7, 1917. Published by permission of the Surgeon General.

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Incubation period.—As in the case of fermentation, some reactions require a longer time than others and depend upon temperature. Under ordinary conditions cold blooded animals are not susceptible to tetanus, but in warm blooded animals poisoning with tetanus toxin occurs after a definite incubation period if one keeps the animal at 32° C. Sleeping in the cold therefore is thought to cause an increased resistance to infection. That the toxin remains in the central nervous system at ordinary temperatures and only requires the higher temperatures to become active has been proved by the work of Morgenroth on frogs. These animals do not become sick if kept at a cold temperature, but if brought into warmth even a long time after inoculation the disease will develop. Cold therefore only prolongs the incubation period and does not prevent the disease. The incubation period varies from six to sixteen days ordinarily. It has been known to be as short as twenty-four hours and to be prolonged from six weeks to three months in the cases of so called tardy tetanus. The average period of incubation is eight to nine days. Prophylactic injections of serum, when not preventing the disease, lengthen the incubation period, but this depends upon the lapse of time between the injury and injection. The tables below illustrate the interval between the antitoxin injection and the development of symptoms; also the incubation period or interval between the wound and the appearance of symptoms:

TABLE I.

Interval between injury and injection.	*Number of cases developing tetanus.*	*Incubation period (days).*
24 hours	1	5
24 hours	2	11
3 days	1	6
3 days	1	7
3 to 4 days	1	11
4 days	1	8
4 days	1	10

TABLE II.

Interval between injection and development of symptoms.	*Number of cases.*	*Incubation period (days).*
Same day	2	7 and (?)
24 hours	3	7, 8, and 12
48 hours	3	5, 6, and 6
4 days	4	4, 5, 7, and 8
6 days	1	10
7 days	1	10
8 days	1	8
10 days	2	10 and 13
12 days	1	20

According to von Behring (3) the period of incubation depends upon the length of the nerve tract and varies directly with the size of the animal, being eight to twelve hours in the mouse, thirteen to eighteen hours in the porpoise, one and one half to two days in the dog, and five days in the horse. A free excess of oxygen prolongs the incubation time or may permanently inhibit the development of the tetanus bacilli.

Diagnosis.—Although the major symptoms are familiar to most medical men it is surprising how frequently the early symptoms are overlooked. In the case of army surgeons in the field this is not to be wondered at when one considers the number of duties required of officers of the Medical Corps. They must be posted on military subjects quite foreign to their professional duties if they are to be of value to the army they accompany. In addition they must always be sanitarians and at times surgeons, diagnosticians, internists, pathologists, veterinarians, arbiters of justice, physical culturists, and, not to be omitted, bookkeepers and clerks. Many cases begin apparently harmlessly, the trouble being localized to the injured extremity and evidenced only by stiffness, contractures, and occasional convulsions. These local symptoms may be entirely overlooked, the medical officer viewing the case purely from the surgical standpoint.

Early symptoms which often give the first clue are profuse perspiration, vertigo, and difficulty of urination. The masticatory spasm which leads to trismus and contracture of the neck muscles is the forerunner of opisthotonus; indeed, the spasm of the breast and diaphragmatic muscles with the accompanying pain resembling pleurisy will many times not be enough for the patient or physician, because the wounded soldier in his patience and without knowledge of the danger minimizes these symptoms and concentrates his attention on the healing of the wound. The physician may suddenly discover that he is dealing with a case of severe general convulsions or one morning may find his patient suffering from intermittent convulsive attacks or in the condition characteristic of the spasm of the whole body musculature. That he stands by the bed of a tetanus victim will occur to him with a shock. Eunike (4) warns that early cases may be ascribed to rheumatism and precious time is lost.

Toxin.—Before discussing the treatment it is necessary to consider the pathway of infection with the tetanus toxin. From the wound the toxin passes along the pathways of the nerves, probably following along the perineural sheaths to the spinal cord. It may be absorbed by the blood and lymph capillaries and reach the cord indirectly, being taken up by the end plates of the motor nerves. The central nervous system and peripheral nerves do not take up the antitoxin in the same way as they do the toxin. A high antitoxic content of the blood will not protect an animal if the toxin is injected into a nerve and not subcutaneously or intravenously. The antitoxin can only neutralize that part of the toxin unabsorbed at the point of injection or that portion which is in the bloodstream and ununited with the nerve endings. A cure can only result if before the antitoxin injection a lethal dose has not been taken up by the nervous system. The result depends upon the interval between the toxin and antitoxin administration. The amount of antitoxin which, injected intravenously simultaneously with the toxin, will protect the animal against many times the lethal dose of toxin, fails if a few minutes elapse between the toxin administration and that of the antitoxin. After one hour forty times the amount of antitoxin is required that would suffice if given at the same time or immediately after the toxin, whereas after five hours six hundred times the dose of antitoxin necessary to neutralize the toxin *in vitro* fails. After a lethal dose of toxin is absorbed by the peripheral nerves only a direct injection of antitoxin into the affected nerve can hinder extension to the centres (3). If the centres are affected a very large dose of antitoxin subcutaneously is worthless.

Associated infection.—The bacillus of Nicolaier does not occur alone in wounds but has as its allies other organisms whose invasion of the human tissues is scarcely less ferocious. Among these are the pyogenic cocci, Bacillus aerogenes capsulatus of Welch, and the vibrio septique of Pasteur, the cause of malignant edema. The anaerobes play the leading rôle in the secondary infection of wounds of battle.

Treatment.—The treatment consists of three varieties: general, local, and regiminal. The general treatment consists of the use of antitoxin and drugs. Locally the treatment includes the use of antitoxin for its neutralizing effect, antiseptic surgical care, and the injection of medication with bactericidal action such as phenol and peroxide. Absolute quiet comprises the major part of the régime. The merits of antitoxin are so generally accepted that its use as a therapeutic measure needs no defense. It is the immunizing and curative agent *par excellence.* There are several methods of administration, however, which should be appreciated as the indications for their use differ, certain cases requiring a combination of all methods.

In support of the efficacy of the serum treatment Irons (5) reports 225 cases so treated with 131 deaths, or sixty-one per cent., as compared with eighteen deaths among twenty-one cases in which no serum was given, a mortality of eighty-five per cent. Voelcker's (6) series of 490 cases bears similar testimony. In this series the mortality among 300 serum treated cases was 62.1 per cent. and in 190 untreated cases seventy-nine per cent. For the administration of antitoxin four methods are employed: subcutaneous, intravenous, intraspinal, and endoneural. In every wound contaminated by dirt or pieces of clothing and especially wounds of the extremities a prophylactic injection of 1,000 to 2,000 units should be given subcutaneously at or near the site of injury. Owing to a difference in the methods of the standardization of antitoxin units in this country and abroad the dosage is not the same. In Europe twenty units constitute the dose for prophylactic purposes. The value of the local injection of antitoxin in prophylaxis is due to the fact that it prevents the absorption of the tetanus toxin from the wound by combining with and neutralizing it. If, however, the toxin has been absorbed by the nervous system this method is of no avail.

One initial prophylactic dose is not sufficient but should be repeated weekly for three doses or until the wound is healed. It must be remembered that serum administered soon after the injury is received, that is on the field or before transportation, does not always protect against subsequent development of the disease. Madelung observed the disease in three cases in which preventive injections were given the day following the wound and in seventeen other patients who received serum injections before the eighth day after injury. After the development of symptoms the subcutaneous method alone is insufficient. It is imperative at this stage to combine with it one or more of the other methods: intravenous, intraspinal, or endoneural. In this country the endoneural method has not been used to any extent, but in Europe it is employed generally by the French and Germans.

For therapeutic purposes an intraspinal injection of 3,000 to 5,000 units should be combined with 10,000 units intravenously at the same time. The intraspinal dose should be repeated daily until the symptoms subside and Nicoll (7) advises 10,000 units subcutaneously on the third or fourth day. Experiences abroad particularly in Germany—Meyer (8), Kempf (9), and von Behring (3)—would seem to justify amply the endoneural method although in the opinion of Park and Nicoll (10) it is a "roundabout way." Apparently the first application of the endoneural method was by von Behring upon a technician in his laboratory in whom, despite daily treatment by other methods, severe general symptoms developed. As the local injury was in the right arm the main nerve trunks in the right axilla were exposed and as much antitoxin as possible was injected into each nerve. The improvement was gradual until recovery but for a long time there was an impairment of the normal utility of the affected arm. Concerning this case von Behring remarks: "The nerve injections alone cured, which showed that soon after the injury the nerve endings in the muscle bound the toxin. The intravenous and intramuscular injections of antitoxin neutralized a part of the toxin but not enough to protect against a fatality." Twice before this same technician had been saved by antitoxin. Among other methods of administration of the antitoxin may be mentioned that of Jousset (11), which consists of subcutaneous or intramuscular injection into the submaxillary region. The result is said to be a remarkable diminution of dysphagia and trismus. If the tetanus toxin is in the circulating blood intravenous serum therapy can make it innocuous but there is no assurance of saving life by this method because if the virus lies in the tissues and remains there after the subcutaneous and intravenous therapeutic treatment the toxin produced there may become active and despite the antitoxin in the blood may extend along the perineural sheaths to the central nervous system. An early injection intraspinally may prevent such a course but if it fails the indication is clear for local surgery with infiltration of the nerve sheaths with antitoxin.

After the development of general symptoms the treatment should be directed toward their alleviation by dissociating the irritability of the central nervous system and the musculature. This is accomplished by sedatives such as chloral, veronal, codeine, morphine, and chloroform, which relieve the convulsions with their resulting muscular fatigue, and the concomitant elaboration of toxic products due to cellular catabolism. The anesthetic value of magnesium sulphate was first shown by the animal experiments of Metzler and Auer over ten years ago. In the dog a small dose intravenously produces narcosis with anesthesia, muscular relaxation, and cessation of respiration in a few minutes. Without artificial respiration the animal will die. The heart rate and blood pressure remain normal. A few c. c. of a twenty-five per cent. solution injected into a nerve blocks the irritability and conductivity and in the spinal canal causes paralysis and anesthesia of the segments below. A subcutaneous injection of seven c. c. of a twenty-five per cent. solution of magnesium sulphate in a dog will produce subcutaneous narcosis within one half hour, accompanied by paralysis of the whole body. The heart action is unaffected and respiratory paralysis is the chief danger. The pharmacological action of magnesium sulphate may be counteracted by five to ten c. c. of a solution of calcium chloride. Within twenty seconds the animal breathes more deeply, awakens within one minute, and in a short time revives completely.

In man the dose is very important and a knowledge of the pharmacology as well as the technic of lumbar puncture is essential. Great care is necessary to give only a sufficient quantity to produce narcosis deep enough to allay the muscular spasm but not to cause respiratory paralysis. In this one must be governed by the respiration and not by the cyanosis as tetanus patients are cyanotic anyway. Too small a dose must be avoided because if repeated one may go beyond the safety limit on account of the cumulative action of the drug. It is not possible to make arbitrary rules but one should begin with small amounts, increasing in subsequent injections till the desired effect is obtained and thereafter continue with that dose. An intraspinal injection of one c. c. for each nine to ten kilograms of weight produces an analgesia and anesthesia of the legs and pelvic region for about one hour, and of the body for three to four hours. In cases of dysarthria and trismus the foot of the bed should be raised. For the control of local spasm injection may be made into the wound. For those not familiar with the technic of lumbar puncture the subcutaneous method alone may be used. The dose to be recommended is fifteen to twenty c. c. of a twenty per cent. or twelve to sixteen c. c. of a twenty-five per cent. solution. As much as twenty-five c. c. of a twenty-five per cent. solution has been used but this certainly should never be employed as an initial dose. It is necessary to repeat the dose at least three times a day and for the first twenty-four hours more frequent administration may be required. Three to four injections are usually sufficient. In the spinal canal too large a dose can be counteracted by washing out with normal saline and subcutaneously by the use of calcium chloride or one mgm. of physostigmine salicylate.

Brilliant results with magnesium sulphate therapy in fifty cases have been reported by Weintrand (12); Madelung (1) records three cases with recovery without antitoxin treatment; Kocher (13) lost one of three cases; and Stadler (14) records a mortality of only thirty per cent. Among other methods of treatment should be mentioned that of Baccelli (15), who injects three to ten c. c. of three per cent. phenol subcutaneously three times a day. Of 190 cases he reports twenty per cent. mortality in the worst and two per cent. in the moderately severe. Local injection of three per cent. solution of peroxide is recommended by Kellerman (16) who reports one case of recovery after apparently fruitless use of antoxin in large amounts intravenously and subcutaneously. As this is very painful morphine is required.

Duration and mortality.—The duration of the disease varies between wide limits but usually is from one to five days, the shorter periods except in fulminating cases occurring in those attacked late. Serum treatment as would be expected lowers the mortality rate as shown by the table below:

	Treated		Untreated	
	Number.	Mortality.	Number.	Mortality.
Voelcker (6)........	300	62.1%	190	79.0%
Irons (5)..........	225	61.0%	21	85.0%
	525	61.5%	211	82.0%

If preventive immunization could be given in all cases, obviously of impossible accomplishment, the mortality could be still further diminished to perhaps ten to twenty per cent. of twenty-seven cases receiving prophylactic treatment. Walther records but one death, whereas of 107 cases similarly treated Madelung reports twenty-one deaths. There is reason to believe that there is a definite relation between the incubation period and the mortality. A short incubation period with early appearance of symptoms is a bad omen, death occurring quickly with much salivation and tonic contractures, but without clonic crises or elevation of temperature. The prognosis is very favorable in all cases developing after the eighth day and in this class the symptoms are slight.

Tardy tetanus.—That the spores of tetanus may remain latent for long periods and only require favorable conditions for them to become active is well known. Early prophylactic injections of antitetanic serum may cause sporulation of the tetanus bacilli, rendering them inactive for periods varying from three weeks to three months. Five such cases have been reported by Bererd and Lumière (17). A study of the conditions which produce the late development of the disease in those receiving preventive treatment is not always easy. That late surgical intervention or secondary surgical operations upon previously infected wounds on other traumata occasions reinfection is beyond doubt. In this manner latent spores are liberated and scattered through the neighboring tissues, where they again find favorable pabulum for growth. The conclusion that following long periods of incubation the disease is more easily curable is not strictly applicable to tardy tetanus. In this type the onset is always insidious. The symptoms may consist of permanent contractures but slightly evident at first and gradually becoming more accentuated. These contractures may be localized in an injured member as in partial tetanus. Generally one observes some trismus which remains incomplete for several days or weeks. A neck rigidity of slight degree is frequently maintained. Other symptoms such as exaggerated reflexes, epileptiform tremors, and profuse perspiration may be present to the same degree as in ordinary tetanus or more attenuated. There is no hyperthermia. A constant sign in this form of the infection is the permanent progressive contraction of the abdominal muscles. In general there are no spasmodic crises, but if they are present they are of slight degree and appear a long time after the onset. In every case of surgical intervention which could provoke the liberation of latent spores in suspected wounds an injection of serum should be made. This precaution will prevent the development of much of the tardy tetanus.

SUMMARY.

1. Tetanus is a common scourge of war.

2. In the present war there have been more cases of tetanus per 1,000 than in any previous war.

3. Tetanus develops after wounds contaminated by dirt and clothing and is more frequent after wounds of the extremities than those of other regions.

4. The usual incubation period is from six to sixteen days, but in tardy tetanus may be prolonged to three months.

5. Low temperatures and free excess of oxygen prolong the period of incubation.

6. The onset is frequently so insidious as to render early diagnosis difficult.

7. The pathway of the infection is along the perineural lymph channels to the spinal cord.

8. Early prophylactic injection of antitoxin should be given in every wound contaminated by dirt or particles of clothing.

9. For therapeutic purposes the serum should be given subcutaneously, intravenously, intraspinally, and endoneurally.

10. To prevent the muscular fatigue due to spasms and convulsions sedatives are of great value and absolute rest is of paramount importance.

11. So called tardy tetanus may occur as late as three months after injury and is especially likely to follow secondary surgical operations or other trauma at or near wounds previously infected with tetanus bacilli.

12. The prognosis is grave when the disease develops early, but late cases have a favorable prognosis.

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350 PARK AVENUE.

Premeningeal Rash in Cerebrospinal Fever.—C. P. Symonds (*Lancet*, July 21, 1917) recalls the fact that early rashes have been mentioned by others, but states that there has been no mention of their relation to the development of the meningeal symptoms. He then records three cases of his own in each of which an erythematous rash developed shortly or just before the appearance of symptoms of meningeal involvement. In every case it seemed that the rash appeared and faded within twenty-four hours of the onset or the general infection.

THE BRINGING UP OF CHILDREN AND NERVOUS DISEASES.*

By ADOLPH STERN, M. D.,
New York.

The child is the future man. In no respect is the saying, "The child is father to the man," more true than when we view the child, as he grows, fitting into his surroundings and meeting difficulties without any undue emotional disturbance. The basis for this ability is laid in his infancy and very early childhood. It is unfair to say that a child learns bad things away from home. He could not pick up bad traits unless the soil were prepared to receive the seeds and allow growth of evil. This is absolutely true. In my work with nervous people, in their symptoms and their attitude toward life in general, I see displayed typical infantile and childlike characteristics; in many ways they live as adults the life they lived in very early childhood, and not always to their advantage. We must remember that the mind or psyche of the child is like an exceedingly sensitive or sensitized plate which is ready to record the most subtle impression very frequently as a permanent record, determining his conduct and character in the future. Whether in later life he is to turn out a good, normal human being with kind, healthy, generous impulses depends entirely upon the nature of these impressions, on the frequency of their repetition, and on the force with which they are made. Though these impressions may in the course of time be weakened, they are in reality never effaced; they are never completely wiped out. We all know this because in later years experiences of early childhood, apparently long forgotten, rise into our consciousness and we marvel that such a thing should occur. That these earliest experiences leave the deepest imprint is shown also by the fact that old people remember best what took place in their very early years, readily forgetting recent events. Many actually live in their childhood, speaking with fond recollection of "the good old days." To many, however, these old days may be anything but good. We all carry with us pictures of our early life, memories of bygone days, changed to some extent by the life of mature years but maintaining in general their early characteristics.

How important, then, is it to surround a child in his tender years with scenes, experiences, examples, and impressions that will later on give a pleasant, and yet more important, a healthy retrospect. By a healthy retrospect I mean one which enables the child to look back on his early life without any feeling of hate or anger toward his guides or guardians. You have no conception what hate most, if not all, of my patients manifest for their parents or guardians, a feeling impossible to exist if the child is brought up as he should be. Small and mean traits such as envy and jealousy, the tendency to tell lies, all very characteristic in the neurotic and also in the child, do not exist in adults who have been properly brought up. Desire for revenge is very typical of both the child and the nervous individual, a trait that does not exist in the adult with proper early childhood.

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*Read at a mothers' meeting in one of the public schools of New York, May, 1916.

You hear it frequently said that nervous troubles are inherited, because children of nervous parents are nervous, or there may be two nervous brothers or sisters in the same family. Even though nervous parents have nervous children, we are not justified in saying that the disease is inherited. I am convinced that instead of being inherited, the disease, so to speak, is directly given by the parent to the child. Children are great imitators, especially when they can derive some benefit from imitating. They frequently observe that the mother stays in bed or rests on account of a headache or some minor ill, so the observant child uses the same pretext to get out of an unpleasant task or to take a day off from school or to receive additional attention. This is but one of the many ways that a nervous disease may be transmitted, and it is but one of the many symptoms of a nervous trouble which the child learns or imitates. The average nervous parent has many so called small traits, that is, lying, envy, desire for revenge, jealously, etc., and they display these traits on occasion. The child has opportunity to imitate the parents in these characteristics and since the use of these traits and symptoms brings the child some indulgence, instinctively in later life he does the same without knowing it or consciously intending it. He is living his early life over again and instinctively imitating his parent, guardian, or some one whom he has learned to take as a model. The child argues that the parent did it; it cannot be wrong. To the very young child parents are models of everything good, big, and noble.

I wish to present what I consider the chief points to keep in mind in the bringing up of children. Their importance has been impressed upon me in my work among nervous people, who in many respects, especially in their lack of emotional control, show evident infantile or childish traits. I wish to present the general, and in some instances special, suggestions I give as a physician and not as a teacher, moralist, or preacher. These individuals have their own special duty toward children. One might say that these suggestions come within the category of rules for mental hygiene; they are suggestions for mental health applied to the handling of children, to bear their best fruits as these little people mature.

An important single factor for the future mental health of the adult is his position as a child in the family, in so far as he is merely one of the other children, the only child, or the favorite child. A few days ago I came across an interview between a well known statesman and a mother. She had asked the gentleman some advice concerning the marriage of her son, and received in reply, among other suggestions, that the boy should select a girl from a family in which there was a goodly number of children. His basis for the advice was that in a family of many children each one learns to give up something for the other, to do something for the other. Such children are less apt to be selfish than in the case of the only child, and selfishness is an important characteristic of a nervous patient. Let us take a family in which a favorite child exists. One family consists of three boys and their parents. The middle boy, fourteen years of age, is the favorite of the mother. This child had been sick with pneumonia when about six years of age had been looked after at that time by its mother. Though at present he is a healthy looking boy the mother insists he does not look well; that he does not eat well and on that account needs more attention than the other two, and for the same reason is exempt from tasks that the other two are required to perform. To preserve his health he has the best room in the house in which to sleep, the other two boys sleeping in one room. The mother worries unnecessarily about his condition. What is the almost invariable result? Let us take first the effect such a state of affairs has on the two healthy boys. Children can almost always see through such a condition, and in this instance they did and resented the favoritism shown their brother. They would twit him with being mother's pet; they would not take him into their confidences, share their possessions with him, nor have him in their games. Some feeling of resentment was also shown toward the mother, the two brothers frequently complaining to her of her unfair treatment. What happens to the favorite boy? Too much mothering keeps him a permanent child. It prevents him from doing things for himself. It instils into him at times so deeply that it is never eradicated, the desire to have things done for him, given to him, to have his desires and wishes looked after. It makes of him an intensely selfcentered selfish individual. In addition, his isolation by his own brothers throws him more and more into his own company which gives him more time to think than is healthy. He does not have the opportunity to throw off what is on his mind, nor can he obtain perfect relaxation in play with his fellows. He often sits and broods and imagines himself ill treated by his brothers and others. He sees them enjoying themselves without him. All this gives birth in him to desires for revenge and envy which are kept alive in later years and serve very often as the cause of a nervous attack.

Another picture is one in which the favorite child, perhaps a little bit weaker than his brothers, has the apparent good fortune of having an older brother or sister similarly inclined toward him as the parent or parents. The result in this instance is almost as disastrous as in the first child I mentioned, for the favorite is almost certain to develop into a clinging, weak, undetermined individual, accustomed to have some stronger one do his work, completely lost when forced to rely on his own initiative. He is a misfit, for in reality, though grown up in years, he is but a child. Such individuals often get along well enough if their way is smooth, but they are very easily thrown into a nervous state when brought face to face with some sudden shock or forced to decide a vital question.

The only child presents a very big problem fraught with dangers for that only child in his mature years. In my experience I can truthfully say that in no family that I have seen has the real cause for that only child been an economic one. We find many children in families that apparently cannot afford it. I like to see big families even when the financial conditions are not the best. The children seem to get along well and they frequently grow into wonderful men and women. When we examine closely the history of the family with an only child, we find that perhaps both father and mother are worriers, constantly anxious, afraid they cannot make ends meet if more children come. They seem to be blessed with the unhappy faculty of having something to worry about, and unfortunately, most frequently the poor only child is the object of worry. Everything is done with the object in view to providing for that child. Since he or she is the sole object of their solicitude that child receives more love, care, anxiety, and attention than would be healthy for a half dozen children. What is the result when such a child reaches manhood or womanhood? There has been in this instance no exchange. In so far as the child is concerned, it has been all take and very little give. He wishes to act when in the company of strangers as he does at home. That only child is mother's pet; he is not a good mixer; he does not make friends readily; he is accustomed to receive and not to give. For a compact to be mutually satisfactory an exchange must take place. These only children have been accustomed to receive; they have had no training in giving. Their marriage, as far as love and care are concerned, is a one sided affair, and they always yearn for their old home or their "old times" when things were better for them. Such marriages as a rule are very unhappy, and the children of such a union show the results. They too are apt to be nervous individuals.

One great error often made is that parents do not look into the future in their attitude toward their children. Many parents regret to see their children growing up, feeling that the time is coming when these little ones will begin to live for themselves. Parents do not view with entire satisfaction the thought of separation. Yet the fundamental object in bringing children into the world and caring for them should be to plan that these little ones will gradually learn to prepare themselves to become independent beings, capable of looking out for themselves and starting out in life as their parents did before them. I recall one mother who told me with tears in her eyes on the occasion of her taking her little boy to school for the first time and leaving him there for the day that she only then realized that her little boy was beginning to grow up, and that he couldn't be such a constant companion to her as before. She said that she felt the loss keenly. Normally that mother should have been glad that her boy was beginning to grow up, and if her attitude had been the proper one she should have so regulated things as to prepare that child for his growing up. Look into the future. Do not seek to keep children always children and dependents, but seek in every way to make them selfreliant. Give them things to do which will make them feel they are growing up. One can accomplish this often, not by doing certain things, but by leaving others undone. For instance, I have often found that nervous children were bathed and dressed by the mother even up to twelve or fourteen years of age. These duties should be performed by children very much younger. Doing such things for older children keeps them far behind in their years in their ability to help themselves and renders them more dependent and helpless.

It seems a truism that children should be more in the company of children than in that of adults. Yet how often is the opposite the case? Children are not as care free nor as spontaneous when with adults as when among themselves. With most of them a sense of restraint and a feeling of selfconsciousness is present when with adults. Many parents for one reason or another do not see to it that their little ones mingle freely with older children, but for a good part of the day keep them in their, the parents', company. In such instances so strong an attachment may grow up between parent and child that separation even for a short while brings about a nervous breakdown, and in many instances a permanent separation, like a marriage, is impossible, or if it takes place, it results in failure, the grown up child always yearning to go back to mother or father. As a rule the mother is the offender in these instances.

Threatening children with punishment is a very fruitful field for nervous disease. Never make a threat of punishment that you would not carry into effect. For that matter never make a promise that you cannot fulfill. Parents are in the habit of telling naughty children that if they are bad the policeman or the bogy man will get them, or that their tongues will be cut out if they tell lies, or that they are no longer the mother's children, that they must leave home, that the parent must leave home if they are naughty. These threats serve as sources of worry and anxiety to children, who always magnify the importance of the unknown, investing it with terror. During the nervous attack patients frequently live through these early experiences which now in their attack serve as sources of fear and dread.

Many parents obtain obedience by instilling into their children the feeling of fear and awe. Often they term it respect. Most of my patients have feared one or other of their parents and these patients, even in their healthy state, fear strangers with whom they come in contact. Fear sets up a barrier between child and parent and prevents that intimacy which is so valuable to a child, Fear brings about a desire to protect or defend one's self, and the child does it by shrinking away when approached. It is very easy to tell, especially when a child is nervous, whether his parents or guardians are kind and gentle or harsh and stern. The shrinking child with his anxious look, the drawing away from the approach of anybody, denote a harsh and too strict bringing up. Such children even in a healthy state are of an extremely modest and retiring disposition, easily frightened by trivial causes. They do not mingle readily with their playmates nor do they assert themselves sufficiently to forge ahead in the struggle for existence. They seem to live in a world of fear in some form or other, most pronounced when they are going through a nervous illness.

By far the most important cause of nervous disease both in the young and in the adult is our conception of the very young child—before the age of three to five years—as one who looks but does not see or who hears but does not understand. They see and hear, and if they do not understand they ask questions. If the answers are not satisfactory, they supply their own answers. They make up something to explain the incident more clearly than does the answer of the parent. That brings me for a moment to the great importance of being absolutely honest and frank with children. If we cannot answer a question, for instance, "Where does the baby come from?" without embarrassment, or if we feel that the child will not understand, do not put it off by saying, "Don't ask me, you must not know." Give an answer that you think will satisfy, but let it be the truth as far as you can tell it. If you give that child a wrong answer, or if you say, "Don't ask me it is not nice for you to know," that child will get his answer somewhere else, and he will learn that his parent had not told the truth. It shakes the child's implicit faith in his parent. More important yet, he gets his knowledge without the parent knowing about it, that is from questionable sources. If, however, you answer the question to the best of your ability so that the child will understand, you put the stamp of authority on the information, and if you have answered the question to the child's satisfaction, that child will pit what you told him against any knowledge he receives anywhere else and will believe you. He cannot thereafter get wrong information. He will say to himself, "My mother told me, it must be right. There cannot be anything indecent or bad or wrong about it." But what you tell the child must be the truth. If the child asks you a question an answer to which would embarrass you or make you blush or hesitate or stammer, leave the question unanswered, but tell the child to ask you that question at some other time and you will attempt to answer it, or if you later feel capable of answering the question without any show of emotion, do so. Never let a question go without a satisfactory answer. For by questions the child shows that his quest for knowledge has been aroused, and he will satisfy that quest somehow. The parent should supply that knowledge and thus endorse it.

Children who are too much in the company of their elders, hear and see things not meant for them. Many things are said and done with no thought of their effect upon the child. Many parents allow their children up to the age of five or six, and some unfortunately even up to the age of twelve or fourteen, to sleep in the bedroom of the parents, and worse yet in their bed. What untold harm this brings the child in later life can hardly be imagined. It is during these hours that the child hears and sees things that make an indelible impression on his mind. Parents imagining that the little ones are asleep act and talk without restraint. Many of my patients, now adults, have told me what they as children had seen and heard; how they frequently merely pretended to be asleep or purposely stayed awake so as to see and hear, and that the recollection of these early experiences came back to them in later life in the form of dreams and fancies to torture them and to cause them feelings of intense remorse and shame and selfreproach. All of this can be so easily prevented by arranging separate sleeping rooms for parents and children from the very start.

In many instances children, even while very young, are in the habit of taking part in the family council. I recall what a boy of seven who came to me because of nervous trouble, told me. To test the child's power of observation one of the questions I asked him was, "Where is your father?" In answering he said, all in one breath, "My father is home baking bread. We are now selling a seven cent loaf for five cents." In answer to my question "Why?" he said, "My father just opened the bakery. He had a business in Newark but failed. He got money from my uncle and just now opened the store. By selling bread cheap now he will get the people coming and later he will raise the price." All this from a child of seven. Where is the boy's childhood, his fairy stories, his care free laughter and play? At seven years of age men's problems occupy his mind and rob him of the heritage of every child, slow growth into manhood with all that that implies. It is no wonder that this boy of seven, hearing and seeing things meant only for grown ups is already nervous. More than he could properly take care of had crept into his mind and made him nervous. This is but an illustration. By means of it I wish to drive home the fact that these little ones have eyes and ears and eagerly absorb, often incorrectly, what they see and hear.

In this brief paper I cannot give definite instructions to follow, but I wish to impress the fact that a child's bringing up has a very important bearing on his future, not only as to his character but also in deciding whether that individual is to be a normal minded man or woman; that is, a healthy minded, or a nervous, sickly minded individual. I want to give parents something to think about and to make them feel that in their hands and in theirs exclusively, lies the future of their children; that not what the child learns away from home, but what he learns or does not learn in the home decides his entire future.

40 West Eighty-fourth Street.

DIABETES MELLITUS.

By I. W. Held, M. D.,
New York.

and M. H. Gross, M. D.,
New York.

Notwithstanding the immense amount of scientific labor expended in the investigation of diabetes, an agreement as to the pathogenesis of the disease has not as yet been reached. We shall not discuss the controversial theories of diabetes. As our aim here is mainly to dwell more or less in detail on the relation the pathogenesis of diabetes bears to a successful treatment of this affection, a short discussion of the physiological pathology must be included.

Scientific investigation of diabetes mellitus dates back to Claude Bernard, 1877, who discovered the glycogenic function of the liver. He also showed that the blood contains normally a certain percentage of sugar, 0.08 to 0.12, which is constant. Recent experiments, especially those of Woodyat, Allen, and others, have demonstrated that if an excess of sugar is given by mouth most of it is utilized, the blood sugar does not rise, and only a transient glycosuria of a very low sugar percentage results. Rectal introduction of sugar is also utilized without raising the blood sugar. Parenteral methods—intramuscular, subcutaneous, and intravenous—will temporarily increase the blood sugar with a resulting polyuria and glycosuria. Temporary glycosuria can only take place in the presence of healthy kidneys. That more than normal quantities of sugar can be tolerated by healthy persons with little or no excretion in the urine is explained in that the blood and the tissues form sugar ferments in case of need. Rahel Hirsch and O. Cohnheim have shown that the amboceptor for such a ferment lies in the pancreas—a foundation to the amboceptor theory of Allen. The blood sugar Claude Bernard proved to be derived from the glycogen, which in turn is chiefly derived from the carbohydrates.

The normal carbohydrate metabolism is as follows: Carbohydrate food is first converted by the respective digestive ferments into monosaccharides, which are a source of energy and heat to the body; the excess is carried by the blood to the liver, where it is deposited as glycogen and some of the sugar is deposited as glycogen in the muscles. Whether glycogen of the muscles is directly formed there or derived from the liver is still a disputed question. A small percentage of sugar stays unchanged in the blood, and according to some authors the spinal fluid contains small quantities of sugar. If greater quantities of carbohydrates are partaken of, what is not utilized goes into the formation of fats.

Glycogen is a dextrorotatory polysaccharide which does not reduce Fehling's solution, nor does it ferment yeast, and with iodine—depending on its concentration—it turns yellow, red brown, or dark red. Glycogen is the source of sugar to the blood formed by a ferment in the liver cell, as first pointed out by Claude Bernard and conclusively demonstrated by Salkowski and Ivar Bank. Only monosaccharides form glycogen directly, while polysaccharides must first be converted into monosaccharides.

Until a recent date only the carbohydrates were considered in the sugar metabolism. The studies of Minkowski, Lusk, Ringer, Janney, and others have conclusively demonstrated that proteins yield a sugar percentage, and, according to Lusk, each gram of nitrogen which is the product of 6.25 grams of protein yields into the body 3.65 grams of dextrose, which signifies dextrose nitrogen ratio (D:N) 3.65 : 1. Whether fat contributes to the sugar formation is still a disputed question. Von Noorden and his pupils maintain that the glycerin of the fat is a source of sugar formation.

The experimental work related to the production of diabetes which is of special interest in the therapeutics is that carried out by Claude Bernard, Minkowski, Mehring, the school of von Noorden, and Allen. Claude Bernard laid the foundation for experimental studies in diabetes by producing glycosuria in animals when he punctured a certain point on the floor of the fourth ventricle (piqûre diabétique). He found, however, that severing the splanchnic nerves failed to produce glycosuria. The same was true if the animal was made glycogen free and also when the adrenals were excised. Claude Bernard promulgated the theory that the piqûre diabétique is the result of a vasomotor dilatation of the splanchnics, causing an excess of blood to flow through the liver by a special ferment converting the glycogen into sugar which is carried to the blood and thence to the kidneys. Hence the theory that diabetes is the result of an overproduction of sugar. This was further strengthened by the fact that even in glycogen free animals injections of adrenalin produce glycosuria, showing the relation of overstimulation of the sympathicus to glycosuria. Stimulation of the vagus produces glycosuria even if the liver is made glycogen free only in the presence of the adrenals or by the injection of adrenalin. This is explained by the fact that adrenalin stimulates the formation of sugar out of glycogen contained in the muscles, again proving the relation of the chromaffin system to sugar formation. Injury to the peripheral nerves or trauma to the brain likewise cause glycosuria. Such experimental work bears relations to the human glycosuria after shock, concussion of the brain, sciatica, etc.

An epoch making discovery relating to experimental diabetes is that of Minkowsky and von Mehring. They showed that extirpation of the entire pancreas in animals causes severe diabetes, while removal of three fourths of the pancreas or transplantation of pancreas in a pancreatized animal does not produce diabetes. Sandmeyer showed that removal of eight tenths of the pancreas and ligation of the ducts so as to cause gradual degeneration of the nonremoved pancreas causes a progressively fatal diabetes as the pancreas entirely disappears. It was further proved that ligation of the ducts alone, thereby cutting off the external secretions of the pancreas, did not produce diabetes. Such cumulative evidence led to the correct conclusion that diabetes is a result of a disturbance of the internal secretion of the pancreas, on which is founded the theory that diabetes is the result of the noncombustion of the carbohydrates.

The pathological findings of the pancreas in the experimental animal demonstrated hyalin degeneration in the islands of Langerhans, a finding confirmed by many pathologists.

From the above it is evident that it is agreed that the pancreas, through a disturbance in the internal secretion, is the organ which is chiefly responsible for a defect in the carbohydrate metabolism. The best explanation of how this is brought about we owe to O. Cohnheim, E. Fischer, Rahel Hirsch, and F. Allen. It has already been mentioned that Cohnheim and Hirsch have demonstrated experimentally that in the islands of Langerhans there is an amboceptor regulating the carbohydrate metabolism. In both human and experimental diabetes, it may be found impossible to utilize certain carbohydrates and not others—what Naunyn calls dyszooamylie of certain carbohydrates and zooamylie of those that can be utilized. This is explained by Umber to be due to the fact that in the protoplasm of the normal cell there exist receptors which bind the carbohydrate molecules. In severe diabetes all receptors for carbohydrates are disturbed, while in the milder forms only receptors to certain carbohydrates are disturbed. This has led to the practical therapeutic use of levulose, inulin, oatmeal, etc., in certain forms of diabetes. Umber has based his theory on the work of Emil Fischer in relation to food assimilation, who in turn stands on the shoulders of the "side chain" theory of Ehrlich.

Mention must be made of the well known and fascinating theory of von Noorden, who, like all other investigators, sees the main seat of the disease in the pancreas, the detrimental influences, however, causing the disturbed function of the internal secretion of the pancreas, lying in the nervous system, particularly the chromaffin system, the thyroids, and the other glands of internal secretion. This theory is known as the polyglandular theory. The conception of this school, that diabetes is the result of an overproduction of sugar in the system, was further strengthened by the experiments of Porgas and Salomon. They showed that even on removal of the abdominal viscera, including the adrenals, if adrenaline is injected glycosuria results. Such sugar is derived from the glycogen of the muscles. In contradistinction to the Porgas theory, Falta, Rudinger, Eppinger and others demonstrated that lack of assimilation, caused primarily by pancreatic dysfunction and enhanced through the influence of the adrenals, is the sole cause of diabetes. This is called the biglandular theory of Falta.

Glycosurias are of various natures. There are the alimentary glycosuria produced by excessive intake of sugar, the nonutilized part of which is passed out; phloridzin diabetes which is synonymous with renal diabetes and is dependent upon the glycogen in the liver and muscles; the adrenaline glycosuria; the hyperthyroid glycosuria; and the piqûre diabétique. All these are of transient nature and do not belong to the picture of true diabetes.

Loewi conceived the idea that sugar under normal circumstances exists in the body as a colloid, while in diabetes it is a crystalloid and hence is passed out with the urine. This brief sketch of the experimental work in relation to diabetes will help us to understand fully the very painstaking and enlightening work carried out by Allen. It was Allen who simplified our conception of diabetes, and throughout all his experimental studies he gives us practical therapeutic hints. Independently of O. Cohnheim and Rahel Hirsch, Allen considers diabetes the result of a disturbed function of the pancreas. Normally there is a bond between the tissues and the sugar. Such a bond is upheld by an amboceptor in the pancreas. In diabetes this amboceptor is disturbed. Allen, in his experimental studies in the production of diabetes has succeeded in imitating human diabetes more closely than all previous experimenters. By removing parts of the pancreas and leaving the ducts intact he was able to show that the diet modifies the form of diabetes, depending on how much of the pancreas is removed, which in turn determines the weakening of the pancreatic function. If he removed even small fractions of the pancreas carbohydrates would cause diabetes, whereas proteins and fats would still be tolerated. The removal of still greater portions of pancreas would produce an intolerance to proteins and even to fats. For therapeutic purposes he made further studies of his diabetic animals with the ducts intact, from the standpoint of diet. He found that starving these animals would eventually increase the tolerance to all articles of food.

The idea that a nonligated duct with removal of part of the pancreas can more readily produce a diabetes, is based on the studies of Adelman, Allen, and others who found that an increase in the external secretion of the pancreas causes diabetes if the internal secretion of the pancreas is disturbed.

The paradoxical law of Allen is an important point differentiating a diabetic from a nondiabetic glycosuria. This law is based on the fact that carbohydrates or sugar administered to individuals or experimental animals with nondiabetic glycosuria does not increase the quantity of sugar in the urine nor do they raise the blood sugar, whereas in the diabetic the blood sugar and the sugar in the urine are increased. This is important, because it tends to demonstrate that a difference exists between the true diabetes due to disturbed function of the internal secretion of the pancreas and the transitory forms of glycosuria mentioned above.

Allen conclusively demonstrated the diuretic effect the sugar has on the true diabetic, no matter by what route it is administered, in contradistinction to the nondiabetic with temporary glycosuria in whom the sugar is a diuretic when given intravenously. It tends to confirm the work of Loewi, that in the nondiabetics or temporary glycosuria sugar exists as a colloid in the system, whereas in true diabetes it exists as a crystalloid.

Etiologically from the clinical standpoint it is important to mention that diabetes is often inherited, also, the connection of diabetes with metabolic disturbances such as gout, arthritis deformans, and obesity. It is well known that in the same family one member may have gout, another may have obesity, and a third diabetes. There are cases of obesity with hyperglycemia, as pointed out by von Noorden, where the sugar is deposited as fat and not passed out in the urine. Let it be mentioned here that those forms of obesity resulting from hypothyroidism or pituitary disturbance do not belong to this group. Certain races, especially the Hebrew race, have been shown to be predisposed to diabetes. It has also been occasionally observed that a husband and wife were both diabetic. These instances, however, are more likely the result of mode of living. Affection in the right hypochondrium such as cholelithiasis, pericholecystitis, periduodenitis, and duodenal ulcer, are sometimes associated with glycosuria. These are the cases where the increase in external secretion of the pancreas lowers the function of the internal secretion. Of great importance is the relation of syphilis to diabetes—so important that it is deemed advisable to obtain a Wassermann reaction in every case of diabetes.

It would be superfluous to discuss the symptoms in detail, but the causative factors of some of the important symptoms and complications will be mentioned briefly. The tired feeling and exhaustion on slightest exertion, frequently the first complaint and preceding even the loss of weight, are due to the excretion of dextrose which would otherwise serve as a source of energy to the body. This also explains the vicarious appetite. The polyuria and thirst are the result of the hyperglycemia. This in turn causes a dry skin. The eczema and pruritus are the result of the growth of fermentative organism clinging to all parts of the body, especially the mucus membrane of the vagina. Furunculosis and carbunculosis are due to the altered chemical and physical character of the blood and the other tissues. Occasionally the fermented urine gives rise to cystitis and even pyelitis. Disturbance in the body tissues is responsible for preventing the normal healing of wounds, and the setting in of gangrene. The high sugar content of the blood is probably responsible for the tendency to tuberculosis. Furunculosis and carbunculosis in diabetes seldom if ever lead to general infection, a clinical observation made by E. Libman. Magnus Levy also calls attention to this and attributes the relative immunity to the existing fermentation of sugar in the tissues.

From the laboratory standpoint it would be entirely out of place to give a detailed description of the methods, but a few practical remarks may be of service. We heartily agree with Joslin, that a patient should be instructed to use at home the qualitative Benedict test for sugar in the urine. Against this the argument may be advanced that a neurasthenic patient will be converted into a hypochondriac because of excessive selfobservation, but outweighing all objections are the satisfaction that the patient derives from seeing that the sugar can be made to disappear and his tolerance of carbohydrates increased, and the fact that he is educated not to look lightly upon the return of the slightest trace of sugar when still amenable to treatment.

As a word of caution when employing the reducing method alone for determination of sugar in the urine, we must remember that there are a number of reducing agents almost simulating the sugar reaction such as uric acid, indican, phenacetin, salicylic acid, iodine, etc. It is of still greater importance to know that other sugars, like lactose—in nursing mothers—levulose, and pentose are reducing agents. Acetone and diacetic acid can easily be examined in any office laboratory; oxybutyric acid only when one has at his disposal fermentation tubes and a polariscope. Where these acids persist in the urine it becomes necessary from prognostic and therapeutic standpoints to know the CO_2 in the alveolar air, which is easily determined by the Friedericia or the Marriott method. A little more difficult, but still quite accessible, is the determination of CO_2 in the blood by the Van Slyke method, or the determination of ammonia in the urine by the method advocated by Rosenbloom, of Pittsburgh. More refined and useful methods of study of the nitrogen and respiratory quotient should be carried out by competent physiological chemists.

Very important and at present easily ascertained is the determination of sugar in the blood, especially where the sugar has disappeared in the urine and even in cases where there is glycosuria. In the former disappearance of glycosuria but persistent hyperglycemia shows clinically one of two things—either the kidney is not permeable to sugar—interstitial nephritis in connection with diabetes—or the tolerance for sugar is still low. Where glycosuria is present the increased blood sugar signifies a true diabetes. The best methods for office use are those of Benedict, Eppstein, or Kuttner.

THERAPY.

In attempting to treat a diabetic intelligently it is customary to determine the severity of the disease. The well known classification of von Noorden of mild, medium, and severe depending on the positive or negative carbohydrate balance, still holds good. Of greater value is the warning of Naunyn, which is emphasized by his pupil Umber, that diabetes is a progressive disease and a light case may be converted into a severe one if treated with indifference. In this country Allen and Joslin deserve credit for carrying out the principles of Naunyn in greater detail. According to Allen a mild diabetic tolerates more than fifty grams of carbohydrates, a medium case up to fifty grams, and a very severe case up to ten grams.

From the clinical standpoint the method of treatment depends a great deal on the symptoms of the disease, the age of the patient, and the underlying etiological factors and complications. When the diabetic is in perfect health and only the insurance physician or a routine examination discovers sugar in the urine, but when there are no acid bodies in the urine and only a moderate hyperglycemia, it is best to follow the old, timeworn treatment, namely, to cut out all carbohydrates for two or three days until the patient is entirely sugar free. This may cause the appearance of a little acetone in the urine, which is, however, physiological and does not call for a quick return to carbohydrates or treatment of acidosis.

After the patient is sugar free allow five to ten per cent. vegetables which, after boiling and excluding the nonutilized cellulose, yields only three to four per cent. of carbohydrate. The first two or three days we allow only twenty to thirty grams of carbohydrates in such form, gradually increasing until forty to fifty grams of vegetable carbohydrates are assimilated. If the patient is sugar and acetone free, we allow carbohydrates in the form of 250 grams of forty per cent. sweet cream, which equals about ten grams of carbohydrates and has the additional advantage of adding fat. And finally we allow milk, 100 grams of which have five grams of carbohydrate, and gradually whole rye bread which has thirty-five per cent. of carbohydrate. Of this fifty grams is given, gradually ascending until a tolerance of 150 grams is reached.

The patient is cautioned never to partake of such carbohydrates as are readily converted into dextrose, namely, doughy substances, most of the cereals, and certainly no sugar. In those whose circulatory system and kidneys are intact and in whom acetone does not recur in the urine, proteins and fats may well replace the calories missed through the lack of carbohydrate intake. When there is no contraindication alcohol in the form of white wine or brandy, because of its caloric value (one gram=seven calories), may be given up to fifty grams. These cases are benefited by a spa cure of a month once or twice a year in the form of Carlsbad or Saratoga waters. Such cures have the advantage of bringing sodium chloride to the system, which, according to Joslin, minimizes the danger of the formation of acid bodies in the system, at the same time aiding in elimination. It is selfevident that during this cure the dietetic régime must be adhered to.

The majority of diabetics, however, come to us with symptoms of polyuria, excessive thirst, loss of weight, etc. In the treatment prior to Allen's work such cases were difficult to control, and there was a great divergence of opinion as to methods of procedure. Empirically able clinicians like Guelpa, Naunyn, and von Noorden advocated fasting when the sugar persisted notwithstanding the withdrawal of carbohydrates or when there was a negative carbohydrate balance and acid bodies were present in the urine. It was Allen, however, who through his experimental studies demonstrated the value of a prolonged fast and laid particular stress on the importance of returning gradually to the administration of food. This method has received widespread publication in medical literature and is too well known to necessitate a detailed description. It was soon evident, however, that strict adherence to Allen's rules was not possible in all cases.

Cases were reported—and we, too, saw similar ones—where death was hastened as a result either of coma or marked inanition because of the prolonged fast. It was Joslin, with his great experience and unusual opportunities in the treatment of diabetes, who modified the Allen method, making it applicable to all cases. In well preserved individuals without important complications the original Allen method holds good. For patients who are markedly emaciated, with voracious appetites and acetone in the urine, or such as are to be prepared for an operation—diabetic gangrene—it is best to proceed according to Joslin's plan. He first withdraws the fat only for two days, then the fat and proteins for another two days; he then allows one half of the amount of carbohydrates of which the patient partook before, until ten grams are allowed. After these days of preparation the maximum of four days' fast is introduced. If the sugar or existing acetone has disappeared within less time the fasting period is shortened. If after a four days' fast there is still sugar or acetone, the fast is prolonged. During the fast days plenty of water, bouillon, black coffee, lemonade, and tea are given. The large quantities of alcohol originally advocated by Allen are not adhered to, and if given at all in cases where there is no contraindication, not more than two ounces of brandy are allowed daily. The fast days are followed by 200 grams of five per cent. vegetables, cooked and taken with the water, in addition to the above liquids. There is then a daily increase in the five per cent. vegetables up to twenty or thirty grams of carbohydrates. On the third day we allow ten per cent. vegetables until fifty grams of carbohydrates are tolerated. We then begin with our proteins: first twenty grams a day, increasing fifteen grams daily until they reach a point where one gram for each kilogram of body weight is tolerated. Finally the fats are given, guarding against the appearance of acetone.[1] Where acetone is a factor the increase of fat should be even more guarded against than that of carbohydrates or proteins. The patient is instructed to examine the urine frequently, twice to four times daily. On the reappearance of a trace of sugar one or two fast days are ordered.

If after a four day fast there is still some sugar present the patient is allowed one gram of protein and one half gram of carbohydrate to each kilogram of body weight for two days and then fasted for three days unless sugar free before. If after the second period of fasting sugar still persists proteins are allowed for two days as above, but no carbohydrates. If there is still sugar, give proteins for four days, then fast one day, and increase the period of feeding by one day each time, until one fast day a week is reached. Joslin asserts that no uncomplicated case has failed to become sugar free and to increase carbohydrate tolerance after such treatment. If, notwithstanding, acetone persists or even increases, the appropriate method of treating acidosis must be instituted.

To increase the proteins it is best to give first three eggs, which yield twenty grams of protein, and then meat one gram per kilogram of body weight. The fats are started at five to twenty-five grams daily until the patient begins to gain weight, when he is again given thirty to forty calories per kilogram of body weight. During fast days no alkalies are necessary; sometimes they are really harmful because of the nausea they cause. Patients should not be forced to bed for the entire day during the course of fasting, for, as demonstrated by Allen, moderate exercise is even advantageous. In favorable cases the fast does not cause a marked loss in body weight, which is very likely due to sodium chloride metabolism and to the burning up of the acetone. The loss of weight is an advantage in fat diabetics, as it increases the tolerance. It is fortunate that in favorable cases nitrogenous equilibrium is well maintained notwithstanding the fast.

Successful as the above treatment is in the greatest number of manageable cases, one often finds it impossible to obtain good results; either sugar or acetone persists, or they disappear only to return just as soon as the patient gets a more liberal diet. Here the oatmeal treatment is often very efficacious. Preceding the oatmeal days the patient is prepared by one or two five per cent. vegetable days, the vegetables cooked in water and salt, 150 to 200 grams, and eaten without butter. Von Noorden originally allowed butter. We feel, however, that the acids formed out of the fat are a contraindication to the use of butter. It is desirable, before starting the oatmeal, that the patient should be sugar free. To accomplish this a third vegetable day may be added. Besides the vegetables, water, tea, lemonade, and bouillon are permitted. Small quantities of brandy are allowed if the patient is very weak. The original quantity of 250 grams of oatmeal in twenty-four hours should be reduced to 150 grams during the first course of treatment. It is cooked in water and salt, and butter is added only when there is no acetone in the urine. Besides this, water, black coffee, tea, and bouillon are allowed, and if the patient cannot endure the hunger two or three eggs are added. If acetone is present only the white of egg should be given. The oatmeal day is followed by a vegetable day.

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[1] The percentage table for vegetables as well as calories for food stuffs is found in Joslin's excellent book on *Treatment of Diabetics*, New York, 1916, pp. 309-317.

In the course of the oatmeal cure the patient often shows edema in different parts of the body. Von Noorden originally advised diuretin on the oatmeal day in order to avoid edema. Since the studies of Joslin, however, we know that diabetic coma is almost unknown with edema. It seems to us more reasonable not to give any diuretics. In favorable cases after the oatmeal cure carbohydrate tolerance is usually increased. The oatmeal treatment can be carried out once or twice yearly. Other cereals have been substituted for oatmeal which in the course of time have not yielded the results that oatmeal does.

In desperate cases where every effort to produce a carbohydrate tolerance fails and acetone persists, sugars like inulin (Strauss) fifty grams daily, or levulose fifty grams, or sugar per rectum as advocated by Arnheim, may be tried.

As to age, it is known that diabetes is severest in the young and hence treatment must be carried out from the start according to the Allen method, or the one modified by Joslin. It is important to remember, however, that there is a form of diabetes in the young occurring in several members of a family which never reaches any high degree of seriousness. It is not an ordinary kidney diabetes, because after 100 grams of grape sugar the blood sugar rises. It resembles rather the suprarenal glycosuria, where only a small quantity of sugar appears in the urine when large quantities of sugar are taken. This condition lasts indefinitely, and the person is in perfectly good health, only excesses in carbohydrates should be prohibited.

The treatment of cases of diabetes with demonstrable etiological factors is more simple. The first to be mentioned is that of syphilitic origin. Specific treatment is of most value, though diet must be adhered to until good tolerance is established. Diabetes resulting from cholecystitis, duodenal ulcer, and periduodenitis, is relieved by surgical interference. Cases are reported where the removal of a fibroid uterus has caused the sugar to disappear. An important consideration in the treatment is the mode of life, mental and physical. More than one improving patient has gone suddenly into coma as the result of business excitement. Exercise should be strongly encouraged, but not allowed to excess, and frequent short vacations often raise the carbohydrate tolerance.

Medicinally very little can be accomplished. From time to time clinicians and those commercially interested recommend products of external secretion of the pancreas, like pancreon, trypsogen, etc. There are sufficient experimental data and clinical disappointments to warn against the employment of such products.

In some cases polyuria cannot be checked by diet alone, but must be supplemented by extract opium $0.015^{0.3}$ or pantapon 0.01 once or twice daily for a short time. Atropine sulphate or atropine methylbromide (0.008 to 0.032) may have to be resorted to. In von Noorden's clinic jambul seed has been employed in the following manner: 200 grams of jambul fruit including seeds are ground into fine powder. To this ten grams of sodium chloride and four grams of salicylic acid are added and all mixed with two litres of water. It is allowed to stand twenty-four hours at room temperature, during which time it is frequently shaken. It is then filtered and kept in a cool place. It is given in the quantity of 100 c. c. twice daily. Alkalies, especially the free use of sodium bicarbonate, should be discouraged. Joslin showed that the indiscriminate use of this drug sets acid bodies free and leads to acidosis.

A few remarks about acidosis may be in place. Under normal conditions acid bodies are produced in the cells, leaving the same in the lymph, and are carried by the blood to the organs by which they are excreted. As they are being transmitted, they combine with basic substances, thereby not exerting the poisonous effect on the tissues, especially the blood. Acidosis does not signify acidity of the blood, as that would be incompatible with life. It only signifies that the reserved alkalinity of the blood is reduced. Such a condition may be caused by an overproduction of acid bodies in the system; slow excretion of the existing acid bodies; rapid excretion of the basic substances, and the failure of the body for some reason to furnish bases, or those furnished are not absorbed. Diabetic acidosis, which interests us here most, is most likely the result of overproduction of acid bodies, chiefly from fatty acids and the lack of elimination of the acid bodies. It is these two factors upon which the treatment of acidosis is chiefly based, consisting in withholding such foods that form acids, especially fats, and aiding in the elimination of the existing acids.

As to the treatment of complications, we will discuss only the most important, namely, threatening diabetic coma and coma proper. In a great number of cases the real coma is preceded by prodromal symptoms. These must be recognized, because the treatment during this stage is so much more efficacious. The symptoms as outlined by Joslin are the following: anorexia, nausea, vomiting, restlessness, unusual fatigue, excitement, vertigo, tinnitus aurium, drowsiness, listlessness, discomfort, and painful or deep breathing. The ammonia in the urine rises quickly, reaching a maximum of three grams in twenty-four hours, and carbon dioxide tension falls.

The patient should be put to bed and kept warm; seidlitz powder or epsom salts should be given. One pint of normal saline solution should be administered per rectum to be absorbed. Fluids are to be given by mouth freely, but no more than four ounces at a time—no ice water! For elimination, theocin 0.3 three times daily is useful. Fasting is the best treatment and easily carried out, as the appetite is usually lost.

During the first three days sodium bicarbonate mixed in Vichy water should be given, as much as 100 grams in twenty-four hours. Then decrease gradually by fifteen to twenty grams daily until fifty grams are reached. Then further reduce to eight grams a day until the symptoms disappear. Alkalies should not be given in milk nor immediately after acid fruits. Even in the precomatose state it is of great advantage to give a pint of five per cent. bicarbonate of soda intravenously. For restlessness or persistent pain opium is advantageous. Alcohol is not used nowadays in as large quantities as advocated by Neubauer, but a tablespoonful of brandy four or five times daily is useful.

In the stage of coma the following should be resorted to: Five per cent. of bicarbonate of soda, one pint intravenously, and ten per cent. of bicarbonate of soda in normal saline by way of the Murphy drip method; also four per cent. levulose one half to one pint intravenously, sustaining the circulation by digitalis, caffeine, sodium benzoid, or black coffee.

REFERENCE.

1. JOSLIN: *Treatment of Diabetes*, New York, 1916, pp. 399-417.

3 East Eighty-fourth Street.
40 East Forty-first Street.

TWO CASES OF INFLAMMATORY STRICTURE OF THE RIGHT URETER DUE TO A PELVIC ABSCESS FOLLOWING URETEROTOMY OF THE LEFT URETER.*

By Walter H. McNeill, Jr., M. D.,
New York.

The two following cases occurred on the urological service of Bellevue Hospital. They are not reported from a sense of surgical satisfaction since both are plainly surgical failures, but they represent the truly extraordinary sequence of the removal, or the attempted removal, of a small stone from the left ureter, followed by grave general pelvic infection and distinct inflammatory stricture of the opposite ureter, which in one case was relieved by the indwelling catheter, but in the other led to secondary stone formation and required nephrotomy for its relief. The histories, very much condensed, follow:

Case I.—A. G., a Polish laborer, twenty-three years old, entered Bellevue Hospital September 3, 1916, complaining of pain in the left side. His previous history had no bearing upon the present condition. His present history was of a left renal colic with vomiting, but without hematuria or disturbance of urination, immediately previous to his entrance into the hospital. At the time of his admission his temperature was 100° F.; his left kidney large, palpable, and tender; his urine dense, acid, and containing a faint trace of albumin and many pus cells. Two days later the patient had another attack of kidney colic. The radiogram showed a shadow opposite the left ischial spine suggestive of ureteral calculus, and a wax tipped catheter introduced into the left ureter was scratched. The urine obtained from the right kidney seemed normal; no urine was obtained through the catheter in the left ureter. The left ureter was accordingly exposed, but no stone was found, although probes were passed up into the kidney and down into the bladder. The operator believed that he had pushed the small stone into the bladder. The wound was drained with a cigarette drain after the ureter had been sutured.

Two days after operation there was a copious leakage of urine through the wound. This continued for a month, at the end of which time the x ray again showed a shadow suggestive of calculus in the ureter, and a wax tipped catheter was again scratched. At this time the patient had been out of bed for a week or more, and had been running a perfectly normal temperature. It therefore seemed wise to make a second attempt to extract the stone. An incision was made parallel to the first one and the ureter was identified; while this was being followed down into the pelvis a large pocket of pus was opened. This extended all the way across the pelvis so that the finger in it could distinctly feel the obturator foramen on the opposite side. The abscess did not encroach upon the peritoneum, but this was widely torn during the operation. Since the patient's condition was not at all satisfactory, and it was obviously impossible to identify the ureter in the mass of scar and reestablish its lumen, the ureter was divided and attached to the skin, the peritoneum sutured, and the abscess drained.

For the first three weeks the convalescence from this second operation was uninterrupted. Then the patient had a renal colic on the right side and ceased urinating from his bladder. The patient was accordingly cystoscoped, and a No. 6 ureteral catheter passed up the right ureter. Some obstruction was met at about two centimetres, then the catheter passed easily and about ten c. c. of urine containing only a few pus cells gushed from the catheter. Meanwhile, however, it was noted that several drops of pure pus passed alongside of the catheter into the bladder. The catheter was left in the right ureter for twenty-four hours, during which only 100 c. c. of urine was obtained from it, but on its withdrawal bladder urination was resumed and has continued up to the present time. At the end of October the phenolsulphonephthalein test showed a very small return from the left kidney while the right side was evidently working satisfactorily. A left nephrectomy was therefore done, this being considered preferable to an anastomosis of the left ureter with the intestines. The patient has been seen several times at the return clinic; he has gained weight, and his right kidney is working well.

Case II.—M. K., a Polish laborer, twenty-four years old, was admitted to the hospital October 10, 1914, with a history of six attacks of renal colic since the preceding May. The urine showed a trace of albumin and some pus and blood cells; urea, one gram to the litre; phenolsulphonephthalein, ten per cent. in the first and second hours. Physical examination revealed nothing out of the ordinary. The x ray showed a shadow opposite the left ischial spine. A wax tipped catheter in this ureter was scratched, and the x ray showed a lead catheter in contact with the stone. A week later the stone was removed by the usual extraperitoneal operation from the lower end of the ureter. The convalescence was delayed by urinary leakage that lasted three weeks.

Two months after operation the patient returned to the hospital with pain and rigidity over the lower belly; temperature, 104° F.; pulse, 134; white blood count, 12,000 with ninety-one per cent. polymorphonuclears. Diagnosis of peritonitis was made and the belly opened by an incision internal to the former scar. It was found that a pelvic abscess had ruptured into the peritoneal cavity and counter drainage was accordingly established on the right side, much pus and urine being washed out. Convalescence from this operation was delayed by a phlebitis of the left thigh.

Three weeks after operation, though the left ureter continued to discharge through the sinus on the left side of the belly, the right ureter suddenly became occluded. Bladder urination ceased; there was pain and rigidity in the right loin; cystoscopy revealed a slight cystitis; the left ureter, which on previous cystoscopy had been impassable, was readily catheterized to the kidney pelvis, and urine obtained which contained seven grams to the litre of urea pus, colon bacilli, and staphylococci. The right ureter, however, which had been entirely normal before operation, now admitted a catheter no more than about six centimetres. On pulling the catheter out, a gush of pus followed it into the bladder. Repeated reinsertion of the catheter was followed by renewed gushes of pus and phosphatic grit, but no urine followed, and the catheter could not pass the obstacle. Since it was believed that the patient's life depended upon his right kidney, this was immediately cut down upon, and was found to be large, congested, and opened through its lower pole. Through this incision a large amount of thick pus and phosphatic grit was washed away. Bacillus coli was found in the pus. During the following two weeks the patient passed a good deal of phosphatic grit from the bladder, and it was found thereafter that a methylene blue colored solution injected into the right kidney pelvis passed freely into the bladder.

On February 15, 1915, however, the patient had a chill, a rise of temperature to 104° F., and pain in the right loin. X ray showed a stone in the right kidney, so the old wound in the right loin was reopened, and several stones, two of them the size of cherry pits, were removed from the dilated pelvis of the right kidney. Meanwhile, although the left ureter could be freely catheterized from the bladder, the ureterotomy wound, which had been closed, had to be reopened to drain the suppuration occurring there, and on one occasion a sharp pain in the left loin was relieved by ureter catheterization, which obtained a considerable amount of urine from the left kidney pelvis. The patient left the hospital for a second time on May 2, 1915, but on July 15, 1915, he returned with another abscess in the left groin, which was opened. At this time the left ureter could be readily catheterized, but since the tendency to hydronephrosis persisted this kidney was drained under local anesthesia. Previous to this operation phenolsulphonephthalein injection resulted in the excretion of eighteen per cent. in the first hour, and twenty-eight per cent. in the second hour, from the right side; two per cent. in the first hour, three per cent. in the second hour, from the left side.

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*Read before the Section in Genitourinary Diseases, New York Academy of Medicine, March 21, 1917.

In July, 1916, one year and nine months since the patient first entered the hospital, he was readmitted for the fourth time on account of recurring suppuration in the groin wound on the left side. At this time his right kidney wound was entirely healed, the urine passed from the bladder was clear; specific gravity, 1020; acid; small trace of albumin, and a few pus cells. On the left side both the loin wound and the groin wound were open. The patient refused to have anything done excepting the cleaning up of pockets in the groin wound.

COMMENT.

In spite of their many sufferings these patients have perhaps been fortunate to escape with their lives after so many vicissitudes. The inflammatory obstruction of the right ureter in these two cases is interesting no less from the obscure etiology than from its spontaneous relief after pressure had been removed in the one case by the passage of the ureter catheter, in the other by nephrotomy. The error in technic which started this chain of accidents is clear enough in the case in which the ureter stone was not found. In the second case the ureter was opened at the brim of the pelvis in the effort to locate the stone lower down. It was probably at this point that the sinus was formed, though towards the end of the patient's various stays in the hospital it seemed that there was a secondary hydronephrosis due to the kinking of the ureter above the incision in it. This patient, like the first, can hope for a clinical cure only through nephrectomy.

34 East Fortieth Street.

Involvement of the Hemolymphatic Organs in Icterogenous Spirochetosis.—M. Garnier and J. Reilly (*Presse médicale,* August 23, 1917) assert that the production of leucocytes in the bone marrow is increased in this disease, as it occurs in man, whereas production of the erythroblasts, reduced at the start, is later completely arrested. In the spleen there is intense macrophagic activity without myeloid transformation; in the lymph glands there is proliferation of the lymphatic cells. The destruction of red blood elements, whether occurring in the marrow or spleen, coupled with the complete absence of blood regeneration, accounts for the anemia constantly noted in these patients. It is one of the determining factors in the less frequently observed late anemic syndrome, and where this sets in, the marked diminution in the resistance of the red cells to hypotonic saline solutions apparently indicates a special red cell fragility induced by the causal spirochete.

CIRCUMCISION.

By F. D. Austin, M. D.,
Charlotte, N. C.,
and T. G. Sharpe, M. D.,
Greenville, S. C.

Circumcision was in vogue long before the Christian era, not only among the Hebrews but among the various races on the different continents. It has always been a custom among the Egyptians, Arabs, Turks, Persians, East Indians, certain African tribes, Australians, and other South Sea islanders. Among the different races it was customary to perform the operation at different ages; among the Hebrews on the eighth day, among the Egyptians from the sixth to the tenth year, and among the Arabs at the beginning of puberty. In olden times the methods of procedures were crude, the foreskin was generally chopped off with a piece of shell or sharpened stone. As time has passed and the science of surgery has advanced other more refined and delicate operative technic have come into general use. We are sure that the majority of surgeons who have performed this operation have been annoyed many times by the dressings becoming saturated with urine, necessitating the daily or more frequent changing of the dressing, with the infection that so often follows these changes. The operation that is shown in these plates can be done on all patients who can retract the foreskin, but if there is a phimosis it cannot be done without first making a dorsal slit in the foreskin. Early in 1913 Dr. T. G. Sharpe, who was then associated with me, and I began doing the operation as shown in Figs. 1 and 2.

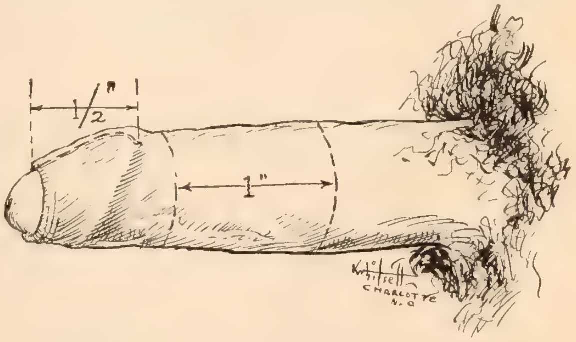

Fig. 1.—Area to be anesthetized in circumcision.

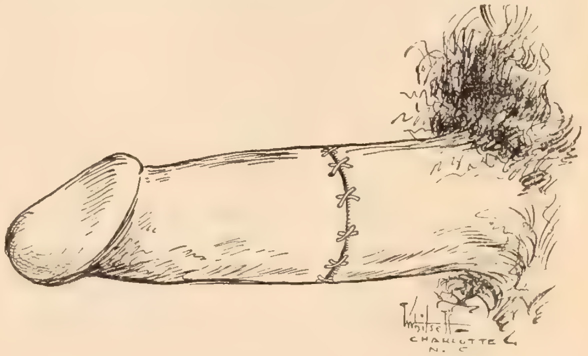

Fig. 2.—Operation completed. Sutures in place.

TECHNIC.

After cleansing the parts just as you would for any operation in this region, except it is not necessary to shave the pubis in any case, measure the foreskin from the corona to its margin. Then go back on the shaft of the penis and anesthetize with a one per cent. novocaine and suprarenin solution two complete rings around the organ twice the distance apart of that between the corona and the margin of the foreskin as shown in Fig. 1. The reason for this is that the mucous membrane and the skin covering the glans penis is folded and therefore the distance is doubled. It is also advisable to inject a few minims of the novocaine and suprarenin solution in the skin between the rings. Now dissect away that portion of skin between the rings and pick up and ligate the bleeding vessels if there are any.

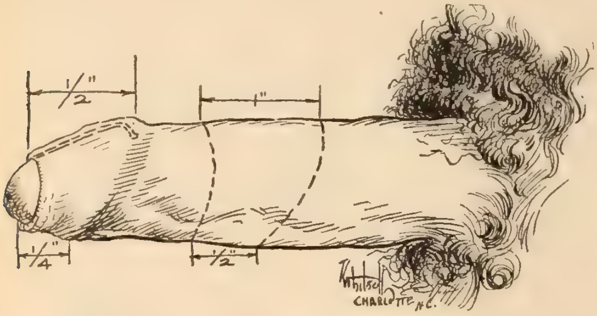

Fig. 3.—Circumcision. Improved technic.

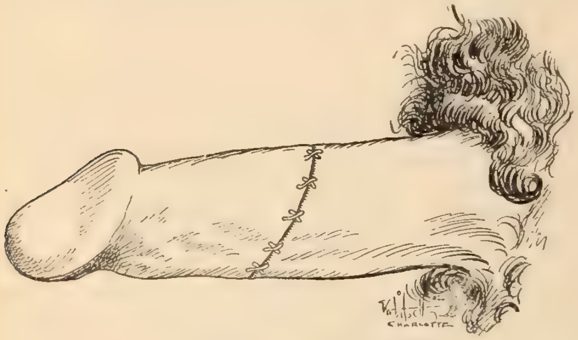

Fig. 4.—Circumcision. Improved technic.

Then bring the edges of the skin together with plain No. 2 catgut using interrupted sutures as shown in Fig 2. Dress it aseptically and do not disturb it for four days; then change the dressings and leave it alone for eight to ten days. The wound has entirely healed by this time and the patient can be discharged.

After doing a number of operations according to this procedure we noticed in some of our patients that the skin was pulled a little taut on the lower surface. We then changed our operative technic to that as shown in Figs. 3 and 4 on patients who have a small amount of redundant skin on the under surface or a short frenum. The difference between this and the technic in Figs. 1 and 2 is that we only take away one half the amount of skin on the lower surface of the penis as we do on the upper as shown in Fig. 1, and the line of sutures are oblique as shown in Fig. 4. Fig. 5 shows the skin after it has been removed.

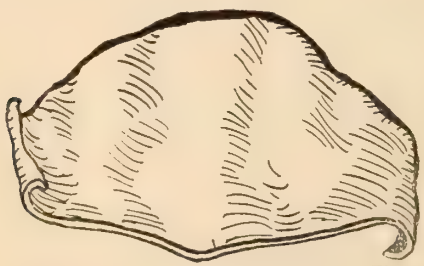

Fig. 5.—Skin removed in operation as shown in Figs. 3 and 4.

This wound can be dressed just as you would any one free from the dangers of contamination. There is no danger of it becoming wet and infected by the urine. We use only two dressings, whereas in the ordinary circumcision we use a dozen or more sometimes. It gives a perfectly smooth retraction of the foreskin. The scar from the incision is almost unnoticeable. We do not get the indurated ring behind the corona that so often follows the usual operation, nor do we have the ragged and uneven scar. There is practically no afterpain. There are no painful nocturnal erections due to the fact that the frenum is not cut nor sutured, nor is there too much tension on the frenum when these erections do occur. This is the operation of choice.

808-809 Independence Building.
305 Wallace Building.

APPLICABILITY OF DESICCATION SURGERY TO EYE CONDITIONS.

By J. A. Kearney, M. D.,
New York,
Adjunct Professor of Ophthalmology, Polyclinic Medical School and Hospital.

During the past two years I have adopted desiccation surgery when it was indicated and the results obtained by this mode have been so eminently satisfactory that I urgently recommend it. This type of surgery is applicable to the removal of malignant and benign growths in the skin of the lids or of the face about the eyes or in the conjunctiva, cornea or sclera. Of the malignant type we see the squamous carcinoma, or epithelioma, glandular carcinoma, or rodent ulcer, and sarcoma. Squamous carcinoma occurs most frequently near the outer canthus in the lower lid and has its origin in the squamous epithelium of the skin; if not removed early the process usually will involve the neighboring lymphatic glands. Glandular carcinoma has its origin in the tubular cells lining the sebaceous or sweat glands of the skin. It first appears as a pimple usually near the inner canthus and is characterized by its slowly spreading ulceration. The neighboring lymphatic glands do not become involved. Sarcomata are rare. Of the benign growths we usually see the papilloma, mole or nevus, fibroma, angioma, and xanthelasma. The papilloma occurs most frequently in or near the margin of the lids. Moles or nevi are circumscribed congenital pigmentary spots seen in the skin of the lids with surfaces that are either hairy or smooth. Fibromata occur as nodes in the subcutaneous tissue or hang by slender pedicles from the surface of the lid. Angiomata are bright red spots in the skin of the lids and are composed of dilated and tortuous bloodvessels. Xanthelasma are yellowish brown irregularly shaped plaques slightly raised occurring in the neighborhood of the inner canthus and are usually bilateral.

The pterygium is best excised by the usual stated operations. Pinguecula, a raised yellow spot—hyaline degeneration of the subconjunctival tissue—occurring in the ocular conjuctiva just within or without the cornea, is ideally ablated by desiccation. Succulent follicles in the conjunctiva either in trachoma or follicular inflammations may be reduced by the usual means quite as satisfactorily, but when the follicles are brawny or when fibrous or granulomatous masses remain on the conjunctival surface of trachomatous lids desiccation is the method *par excellence* for their speedy reduction. In corneal ulcerations, when it is desirable to break down tissue without much subsequent reaction, desiccation is an excellent means. The inspection of the photographic cuts presented here will demonstrate the desirability of adopting this type of surgery in the reduction of growths of this sort about the eyes.

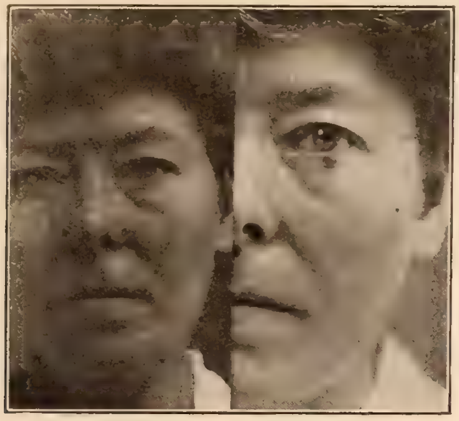

FIG. 1.—Papilloma on lower lid removed by desiccation surgery. Front.

CASE.—Mary C., of Irish parentage, applied for treatment with the most frequent benign growth that occurs about the eyes, the papilloma, and it was in the usual locality. She wished it removed at once when she was assured that no scar would remain. This growth caused her no pain nor discomfort whatever and she wished it taken off because of its disfigurement alone. It was set in the outer angular edge of the lower lid margin and a little to the outer side of the middle of the lid. It protruded slightly less than one half inch and extended a trifle more than one quarter inch along its free border. The cilia were intact and surrounded by the new growth tissue, which was of a brownish hue. The base of the growth was rendered anesthetic. The current used was that of high frequency produced through a high speed static apparatus of a character sufficient to dehydrate the cells but not to carbonize them—the desiccation current. The electric filaments thus produced and regulated for this sort of growth were applied to the mass from the point of a steel needle set in an insulated holder until I deemed it sufficiently devitalized. At the end of six days the abnormal tissue that was desiccated dropped off, leaving an unbroken free outer angular edge to the lid margin. The cilia were intact and in their proper settings. In four weeks' time there was no trace of a new growth ever having been there nor any semblance of a scar remaining.

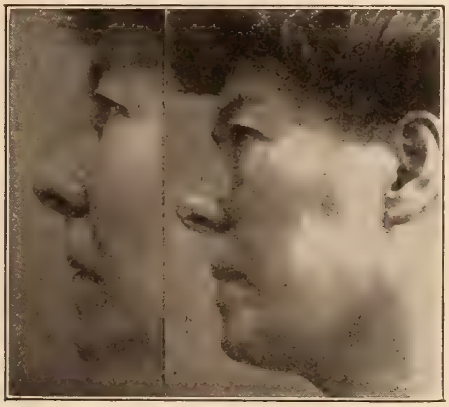

FIG. 2.—Papilloma on lower lid removed by desiccation surgery. Profile.

Had this growth been excised by a scalpel a permanent defect or a notch in the lid margin would have remained with loss of some cilia.

CONCLUSIONS.

The advantages of desiccation surgery in eye conditions are:

1. Benign or maligant growths in the skin of the lids or of the face about the eyes or in the conjunctiva, cornea, or sclera may be removed without a contracting scar.
2. If the malign process has not reached the lymphatics a cure may be reasonably expected.
3. There is no possible likelihood of the diseased condition spreading by this mode of surgery, as the lymph and blood channels are sealed in the desiccation process.
4. It is precise because pathological cells are especially amenable to desiccation destruction, the normal tissue escaping with little injury.
5. Slight or no reaction follows the process.
6. Either is rarely necessary, as local anesthesia sufficies in the majority of the cases.
7. No knife is used.
8. There is no bleeding during the operation.
9. The consent of the patient is easily obtained because of the above advantages.

127 WEST FIFTY-EIGHT STREET.

A CASE HISTORY OF PUERPERAL ECLAMPSIA.[*]

By MAURICE COHEN, M. D.,
Montclair, N. J.,
House Surgeon, Mountainside Hospital.

CASE.—Mrs. B. G., age 23 years, was born in Montclair, N. J. Her mother died of tuberculosis. Her father and the rest of the family were alive and well and negative to tuberculosis and cancer. The patient had had the usual diseases of childhood and was a patient in the Mountainside Hospital several times between the ages of two and ten years for treatment for Pott's disease; several plaster casts were applied. She had pneumonia two years ago, and since then has had two attacks of pleurisy. She says she has had "colds" continuously for last eight months, and gave a history of being somewhat sickly or delicate all her life. Menstruation began at fifteen years of age and was normal save that the periods had always been irregular. Last menstruation was February 17, 1916. Her present history was as follows: Since the beginning of her pregnancy she has felt weak, vomited nearly every morning, and had frequent headaches. About three weeks ago—the first week in September—she noticed that her ankles would swell, that her weakness and headache increased, and that her sides and back pained continuously. At this time she was admitted to the hospital under the maternity service.

Physical examination showed the patient was weak and run down. She was undersized, with a marked kyphosis in the dorsal region; she had a sallow complexion, bright eyes, and high cheek bones. The chest was somewhat "pigeon shaped" with supraclavicular and intraclavicular spaces very prominent; she had long, thin arms, and chest muscles were undeveloped. The apex of the heart was displaced a little to the left but heart sounds were normal. In looking in her mouth one could see a chronic pharyngitis, normal tonsils, and a profuse pyorrhea. On inspection of the abdomen an enlargement beginning at the pelvis and extending slightly above the umbilicus was round and centrally located, and on palpation and external manipulation the fetus could be felt *in utero* with the small parts to the front and left and the head not engaged. On auscultation the fetal heart could be heard best near the umbilicus; the uterine murmur was present. The vagina seemed normal in size but the pubic arch was narrow. The promontory of the sacrum could be felt and the internal conjugate was small. The cervix was dilated one and one half fingers. The passive motions of the child could be felt. On measuring the pelvis the interspinous was twenty-five centimetres; intercrestal twenty-seven centimetres; right oblique twenty-two centimetres; left oblique twenty-two centimetres, and external conjugate nineteen centimetres. Although the measurements seemed normal, still the pelvis had a general contracted appearance.

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[*] Reported to the Mountainside Hospital Clinical Society, January 2, 1917.

The patient's blood pressure was taken and found to be systolic 135, diastolic 80. Mean pressure 55. Examination of several specimens of urine gave an average of specific gravity 10.25; acid reaction very faint; trace of albumin; no sugar; many epithelium; few pus cells; amorphous sediment. Although the blood pressure was not very high and the urinary picture normal, the staff decided to advise that the uterus be emptied. Her history was well known; she was never in good health and suffered from general weakness, edema, and headaches, and the internal measurements were small. The patient was very anxious to have a child and refused treatment. She stayed in the hospital but three days, was on regular diet, had no medication, and seemed much improved. Three weeks later the patient began to have labor pains and her physician was called in. On examination he informed the patient that the fetus was dead and advised her to come to the hospital at once. Life had not been felt for three days previous. She was admitted that afternoon, October 13th, at 1:20, and a stillborn child was delivered at 1:25; placenta was expressed fifteen minutes later. After the delivery the patient had a chill which lasted twenty minutes, and external heat was applied. One hour after delivery her temperature was 98° F.; pulse, 86; respiration, 24; her condition remained the same the rest of the afternoon. During the afternoon the patient complained of a slight headache and backache. During the early part of the evening she began to complain of a sharp pain in the epigastrium and dorsal lumbar region, and a little later she began to vomit a few ounces of watery fluid. At 2 a. m. the pain was severe and the patient's blood pressure was found to be systolic, 170; diastolic, 120; mean, 50. Temperature, pulse, and respiration was 97.4° F., 92, and 24, respectively. Morphine, grain 1/6, was ordered; external heat was applied, the colon was irrigated, and forced liquids given. In the morning at eight o'clock, eighteen hours after the delivery of the fetus, she had her first real convulsion. Morphine, 0.25 grain, was given, and the convulsion controlled by chloroform. One minim of fluidextract of veratrum was given on the tongue. Colonic irrigation followed by hot pack was ordered every four hours. The patient began to vomit and stomach was washed and one ounce castor oil and two minims croton oil was passed through the tube but not retained; then chloral hydrate and sodium bromides āā grains twenty was also given and not retained. Then the chloral and bromides were given by rectum and retained. She then was removed to the septic ward to make her as comfortable as possible. Five hundred and fifty c. c. of saline by hypodermoclysis was injected at noon and repeated in six hours. Six ounces of saline was given every six hours by rectum. Then the question arose should a venesection be done, and it was thought best not to take off too much blood at that time because the heart sounds were very weak; so only six ounces was taken off. For her heart condition 0.01 grain digitalin and 0.025 grain strychnine was ordered every four hours. During the whole time since her first convulsion she was irrational and unconscious. At four o'clock her temperature was 101.2° F.; pulse, 98; respiration, 24. During the afternoon she had five convulsions. In the evening the pulse improved and the digitalin was given without the strychnine and the saline by rectum increased to every two hours. During the evening between seven and twelve o'clock the patient had six convulsions, making a total of twenty convulsions in less than twenty-four hours. Her blood pressure again was taken and found to be systolic, 195; diastolic, 115; mean, 80. Uranalysis gave a specific gravity of 1014; acid reaction; pale yellow color, urinous odor; limpid consistency; cloudy transparency; increased sediment; no sugar, and fifteen per cent. by bulk or 1.5 grams of albumin. Microscopically there were few squamous epithelial cells, excessive pus cells, occasional red cells, and no casts. At midnight, her heart being considered strengthened enough to take off some more blood, 600 c. c., or twenty ounces, was withdrawn with very little effect on the heart's action. Spinal puncture was suggested and would have been done, but good results were obtained with the venesection, for the patient only had one convulsion following the operation, fifty minutes later, and consciousness was regained in four hours. There was no saline infusion following the venesection. Her temperature continued to drop to normal within forty-eight hours. Colonic irrigation, saline by rectum, and heart stimulation were done at longer intervals, and stopped when the patient's condition would allow. Fluids were forced, starting with imperial drink, one quart daily, and three ounces skim milk every four hours, was increased to six ounces of whole milk every four hours. The patient received fluids every two hours of either imperial drink, water, or milk. On the second day following venesection she was getting two hot packs and two colonic irrigations, on the third day one, and discontinued on the fourth day. She received salts every morning. On the fifth day the liquid diet was supplemented with bread and cereal, and on the seventh day she was on a liberal special diet. For her high blood pressure, which fell to 160 after the venesection, one grain of sodium nitrite was given daily; as her pressure went down the sodium nitrite was decreased and discontinued on the tenth day. When she left the hospital her blood pressure was systolic, 135; diastolic, 95; mean, 40. Her kidneys did not respond as quickly and as well. The following day the albumin went up to eighteen per cent. by bulk and casts began to appear in the urine which were chiefly hyaline and granular; the percentage of albumin fluctuated and finally came down to four per cent. by bulk and numerous casts present. The patient was in the hospital only sixteen days. She was not discharged as cured, but she felt so well that she insisted on going home, and so signed a release card. The venesection, done in the proper time with the aid of the other medication changed the prognosis of this case, which looked very grave in the beginning, to a favorable one. Patient was seen a month later and said she felt very well. All symptoms disappeared within one week after leaving the institution. Another specimen of urine was examined and was found absolutely negative.

ANILINE POISONING.

By VALENTINE C. BAKER, M. D.,
New York.
Sheldon Fellow in Medicine; Assistant Physician, Cornell University Medical College Dispensary.

The production of nitrobenzol, aniline, aniline dyes, and related substances has been greatly increased in this country by the absence of the usual European supply of these chemicals. As a consequence, the number of workmen poisoned by these products has also been increased. New methods are being introduced and new products are being manufactured without an accurate idea of the industrial hazards. In fact, the symptoms of aniline poisoning are not well understood by the general medical profession; hence the real cause of the condition of these patients is often not recognized.

Aniline is a highly toxic, volatile, oily substance, derived as a byproduct in coal tar distillation and indirectly from benzine (1). The commercial product is known as aniline oil and contains some impurities. Its various combinations differ much in toxicity. Aniline blue, for example, is known to be much more toxic than fuchsin. The vapor of aniline oil is very highly toxic. This difference of toxicity accounts for the large number of poisonings in some industries and the small number in other processes. Aniline and its dyes can be so readily altered to suit different conditions that it is rapidly replacing older and less adaptable substances. One of the most important processes of manufacture in which aniline is employed is the production of aniline dyes. By changing the chemicals and processes different colors can be secured to answer every purpose. To suit the chemical affinities of the material to be dyed a basic or an acid color can be prepared. These dyes are an important factor in the textile industry where the art of dyeing is highly perfected. Sometimes different chemicals, as acids, bases, or oxidizing agents, are used on the materials before dyeing. Aniline black is developed on fabric by oxidation of aniline and is used for dyeing cotton and in calico printing. Wool, silk, and cotton have different affinities for certain aniline dyes. This fact is made use of in producing pleasing effects in the staining of fabrics. In any part of this industry poisoning may occur, and it has also occurred from wearing the finished product. Persons have been poisoned in dyeing establishments and home dyeing.

In leather dyeing aniline colors are being used. The water soluble anilines are most suitable. It is possible to combine these with vegetable and metallic colors to produce the desired effect. The substances used must be selected according as to whether vegetable or chrome tanned leather is to be dyed. To produce a black vegetable tanned leather nigrosine or other coal tar blacks are used. Black on chrome tanned leather is produced by the use of hematin and chrome leather black. In dyeing and handling dyed leathers poisonings may occur. In preparing shoe blacking, lamp black, animal charcoal, or bone black is usually employed. Here, too, aniline dyes are being introduced. With the prevailing style of various colored shoes it may become a danger to the bootblack. Colored furs, feathers, and artificial flowers may be dyed with aniline preparations. These are replacing the vegetable, arsenical, and other mineral colors formerly employed. Wall paper is now colored almost exclusively with aniline dyes. Air brush painting is used in preparing high grade paper, especially the border. The worker is well spattered with the dye.

In typographical printing (2) there is a demand for brilliant colors of almost every hue, many of which must be transparent, and the only way inks meeting these conditions can be produced is by the use of organic lakes, principally those made from aniline dyes. A wash in which aniline is one of the constituents is used for removing printing ink. Instances of poisoning from this wash have been reported. Aniline and closely related chemicals are used in the manufacture of high explosives, indelible inks, and hair dyes (3). Aniline is employed in the production of rubber tires and in the process of reclaiming rubber from which several instances of poisoning were reported. The chemical industries prepare aniline products. Many chemists are doing research work at the present time. Aniline is employed extensively by the physicians in bacteriology and pathology. Research, diagnosis, and therapeutics make use of aniline products. These measures should be carried out with an understanding of the toxic properties of the chemicals.

From the above mentioned industries one can see how extensive is the use of aniline products. Considering these and allied processes the possibilities of poisoning can be readily imagined. The source of the aniline may be very obscure. Aniline enters the circulation in various ways. The fumes or the dust of a certain dye may be inhaled. Absorption may take place through the unbroken skin or open sores. Instances of poisoning have been reported from swallowing the aniline. Combinations of the modes of entrance may occur, as both through the skin and by inhalation. High temperature, as in the drying rooms, favors poisoning. Poor ventilation and improper protection of the workman are important factors. Poor physical condition may increase the danger. It would seem that there must be an individual susceptibility, for otherwise it would be difficult to account for the occurrence of poisoning in certain workers of a factory, while the greater number show no symptoms although exposed to the same extent. The degree of toxicity of the aniline substance used accounts for a greater or less number of poisonings.

The signs and symptoms of aniline poisoning vary greatly in intensity. The diagnosis may depend on one or more characteristic signs, with a history of the use of aniline in the patient's work. The poisonings are classified as acute or chronic in type, depending on the duration of exposure and the acute or gradual development of symptoms. In acute poisoning (4) the effects of the poison may come on suddenly while the individual is at work or some hours after leaving work. In the milder forms the patients complain of lassitude, weakness, dizziness, fullness of the head, slight dyspnea, slight or severe frontal headaches, and mental confusion. The patient may lose consciousness for a few minutes or even several hours. The lips and fingers become markedly cyanosed, while face may be pale, or the cyanosis may be general. Cyanosis may be the only sign present, and the ease with which it is borne by the patient is a valuable point in differentiating aniline poisoning from other causes of cyanosis. The dyspnea is moderate and the pulse is soft and rapid. There is a frequent desire of micturition, and the urine becomes dark and smoky in appearance. Recovery occurs in a few hours after removal into the fresh air.

The severely poisoned patients are those in whom the amount of poison has been large, as in the inhalation of concentrated fumes or the saturation of the clothing with the substance. The condition is serious and may prove fatal. It may come on suddenly with loss of consciousness, delirium, or epileptiform convulsions. The symptoms of the milder poisonings are all intensified. The mucous membranes become almost black. The respirations are slowed while the heart action is very rapid and the pulse feeble. Nausea and vomiting may occur. The pupils are narrowed but react to light and may become dilated without reaction in the grave cases. The skin may be pale or cyanosed and is cold to the touch and bathed in perspiration. A marked odor of aniline is often present. Some patients have strangury and the urine is dark and smoky, often containing aniline and methemoglobin. In those patients where dye is the poisoning substance the urine may be the color of the dye. The spectroscopic band of methemoglobin in the blood can be obtained when this substance is present in sufficient amount. Granular basophilia and stippling of the red blood cells are often found. In these patients there is a tendency to relapse, which must be guarded against.

In the chronic forms of anilinism there are frontal headaches, tinnitus, vertigo, a sense of fullness of the head, and slight anemia. The mind is dull and confused. The patient shows mental retardation, but can answer properly if given time. Nausea, vomiting, and diarrhea often occur. Cyanosis may be slight or marked, while at times jaundice occurs. The skin of aniline workers may be stained by the dye and other chemicals used. A dermatitis, characterized by a swollen, reddened, vesicular, and even pustular eruption often occurs, where the substance comes in contact with the skin. Itching is usually very pronounced. The acids, alkalies, and other substances with which the dyes are mixed, are often factors, but aniline and some of its dyes will alone cause a dermatitis. It has been proved by experiment (5) that aniline dyes stimulate proliferation of epithelium. Tumors and cancers of the bladder occur more frequently in aniline workers than in other workers (6). These patients often give a history of bladder irritation of some duration.

In the treatment of aniline poisoning prophylaxis should be the aim of the physician and manufacturer. This can be accomplished by a careful examination of the worker at the time of employment. All who have organic troubles should be excluded. The workman should next be instructed concerning the dangers and how to avoid them. He should be given rubber gloves for handling the products. Other necessary protection should be provided. The inhaler is of doubtful value in the presence of aniline fumes. Where chemical dust exists a moistened inhaler is useful. A washroom and place for changing the working clothes should be provided. Where the hazard is great the worker should be obliged to go out into the fresh air every fifteen to thirty minutes. Hygiene in his home life and avoidance of alcoholic drinks should be insisted upon. Someone should be responsible for the enforcing of the above rules. Attention to the workroom is very important. Proper suction fans and other ventilation must be provided. Hoods with fans to remove the fumes should be used wherever possible. None of the chemicals should be spilled around and left for the worker to walk in, as it may reach his skin through his clothing and shoes. Dust will also take up the poison, which may then be inhaled. The company should be responsible for the workroom.

The treatment of aniline poisonings depends on the type and severity. A patient poisoned acutely should be removed at once to the open air and kept awake if possible. If the poisoning is more severe oxygen may be employed. The body should be kept warm and hypodermic injections of camphor, ether, strophanthin or digitalis given if necessary. Normal saline infusions and hot rectal irrigations of strong coffee are useful. The chronic types of poisoning require various methods of treatment. There must be improvement of the working conditions and proper instruction of the worker. If this can not be accomplished, a more suitable position must be obtained. Susceptible persons should leave this kind of work at once. Last, the general condition of the patient must be treated.

The following are case records of patients suffering from aniline poisoning. They illustrate the many industries in which aniline is used and bring out clearly the more significant symptoms.

CASE I.—W. S.; male; age thirty-five years; single; white; had been a longshoreman, doing heavy work all his life. Past history negative. He had smoked fifteen cigarettes a day all his life. He took a position in a dye factory because of the high wages. He worked one week, when he noticed that his face and lips were becoming very blue. Patient said he was told when he decided to quit that he had broken the record for holding this position, and was offered more pay to remain. He worked in a warm room with two small windows and a small suction fan. The air was filled with aniline vapor. The chemists in the factory would not put their noses inside the door. One half to three quarters of an hour a day was spent in this room. He wore a mask, eye glasses, and rubber gloves to the elbows. His work was to shovel a mixture from a barrel into a dryer where it remained two hours and then was shoveled out and weighed. This mixture consisted of aniline oil, a pigment, and acids, probably nitric. The resulting dye was known as "fur brown." He noticed slight shortness of breath on exertion, his head ached, and there was a sense of fullness and throbbing of the head while at work. There was an itchy skin eruption.

On examination the patient was found to be a well developed, muscular man. His face, lips, mucous membranes, and extremities were markedly cyanosed and his hands stained canary yellow. On one leg and foot and both arms there were reddened, irregular areas of dermatitis. The heart rate was rapid; otherwise normal; the systolic blood pressure was 118 millimetres. A strong odor of aniline was given off by his body and clothes. The urine was smoky and the indican high, otherwise negative. Dr. B. F. Weens, Jr., reported on the examination of the blood: The quantity of iron in 100 c. c. of the blood, by Newmann's chemical method, was found to be 55.2 mgm., a figure which corresponds approximately to the Sahli hemoglobin estimation, which was 103 per cent. The oxygen combining power of the hemoglobin, by Holdane's method, proved to be 15.49 c. c. per c. c. of blood, whereas the Sahli hemoglobin estimation as well as the iron determination of this blood would indicate a hemoglobin content sufficient to combine nineteen c. c. of oxygen, the oxygen actually combined is but eighty-one per cent. of this amount, indicating a reduction of the oxygen combining power of approximately nineteen per cent. This reduction is undoubtedly due to the deleterious action of the poison and the conversion of a part of the hemoglobin into its methemoglobin derivative.

CASE II.—B. B.; male; age twenty-two years; single; Russian Hebrew; a painter for seven years. Patient used varnishes, aniline dyes, bronze, oxalic acid, sulphuric acid, turpentine, wood alcohol, and ammonia. There was very little lead used. He worked in a poorly ventilated room. After he had been at work for several hours he noticed a sense of fullness of the head and became dizzy. There were frontal headaches, a weakness of the extremities, and palpitation of the heart upon exertion. He was unable to think quickly and did not feel capable of planning his work. He had a dull pain in the epigastrium, not related to meals, no nausea or vomiting. His bowels were constipated. His symptoms disappeared after leaving work. His examination showed no lead lime. There was no wrist drop or ankle drop and no frontal sinusitis. His mental condition was mostly subjective. The pupils and reflexes were normal.

CASE III.—R. S.; male; age twenty-six years; German; married. The patient was a chemist who worked formerly in the laboratory of the Standard Oil Company, where there was no exposure. From November 15 to December 23, 1915, he worked for a chemical concern where aniline was manufactured. Here, the chemical hazards were wood alcohol, aniline, dinitrobenzol, and nitric and sulphuric acids. He worked in the fumes of these chemicals, among which was that of aniline. His hours were irregular, with long periods of work in stretches up to eighteen hours at a time. Since he had begun work in this position he noticed his memory was failing and it was difficult for him to recall names and addresses. He felt mentally exhausted. There were headaches and a sense of fullness of the head. The patient was seen at the Cornell University Medical College Dispensary January 10, 1916, where it was determined after study that his condition dated from his exposure to aniline. His examination was normal, excepting for slight mental retardation. Since quitting his work there has been a gradual improvement in the patient's condition.

Case IV.—A. B.; female; age twenty years; single; Austrian Hebrew. Patient sorted leathers of all colors, but mostly black, and her hands became stained with the dyes while doing this. She had been employed at this work for about three years. For about a month she had noticed mild general pains, a sense of fullness in the head, and palpitation of the heart. Her memory had become poor and her bowels very constipated. She showed a cyanosis of the lips, face, and hands. The lungs were normal and the heart had no murmurs but was rapid. The reflexes and pupils were normal. The hemoglobin was eighty per cent. As her health did not improve while at her work she was advised to seek another trade.

Case V.—This patient is reported from memory, as the record has been misplaced. A. B., male; age about forty-five years; married; Russian Jew; occupation, furrier; worked on dyed furs. Past history was negative. The patient for a long time had had asthmatic attacks which would come on after handling certain dyed furs. There was dyspnea, cough, and a sensation of congestion. He found that the furs which produced these attacks had been dyed with aniline colors; furs treated with vegetable dyes had no effect. The patient was well developed and moderately well nourished, and had a moderate grade of emphysema.

The following case of aniline poisoning occurred in 1910 and was referred to me by Dr. A. I. Boyer. It brings out clearly the signs of a general and local reaction to the poison and illustrates one of the modes of entrance into the circulation.

Case VI.—Mrs. A. M.; age thirty-three years; occupation, housework. Family and past history were negative. The patient had some red curtains in her home which she decided to dye. One of the curtains had been darned with a red woolen yarn in one spot. At the drug store, as there was no cotton dye in stock, she purchased a dark green woolen dye of a certain popular brand. The curtains were placed in the boiling hot solution prepared. When removed the only portion colored was the spot darned with red woolen yarn. On removing and rinsing the curtains the patient's hands and arms to above the elbows were covered with the dye which would not wash off. She used a scrubbing brush and scouring soap vigorously. In twenty-four hours the arms had become swollen and red; there was an intense itching and burning; vesicles and blebs formed. The dermatitis lasted two weeks. Her lips became very blue and her urine was colored "green like the dye." There were several frontal headaches. Nausea and vomiting occurred. The patient had marked swelling and reddening of her arms above the elbows. Over this area were many vesicles and blebs. The lips were cyanotic and urine was colored dark green. The heart and lungs were negative.

Case VII.—This patient was seen by Dr. Lewis A. Conner, at the New York Hospital. J. B.; age thirty-one years; single. Entered the hospital June 7, 1916. Occupation, laborer in indelible ink factory. The hazardous chemicals used at this factory were aniline dyes and aniline oil. Methyl alcohol was also used extensively for cleaning hands. The past history was negative, excepting that there had been slight shortness of breath on exertion for ten years. In his habits he had been a heavy drinker up to five years previous. He now drank seven to eight glasses of beer a day. He had worked at various jobs as laborer; an indelible ink factory. On the day of admission the patient worked in the ink factory but, for the first time, filled bottles with indelible ink. While doing this work he was in a spacious room, sitting in front of a window. In order to cleanse his hands when through working, he was told to wash them with aniline oil and then in lime and soda, in addition to soap and water. He did as instructed, but also used hydrochloric acid. He left work and on his way home stopped for a glass or two of beer and felt in his usual health. About the time he left the street car, two blocks from home, he suddenly began to feel very dizzy and weak and had a headache. He walked two blocks with increasing discomfort, and was obliged to rest on the steps before going to his room. When he did finally reach his room he fell fainting on the sofa, but remained faint for only a few moments. He said he was not nauseated and did not vomit. He had no pains but the headache. There was intense dizziness and great discomfort. Only when he collapsed did he feel short of breath, and had a temporary cramp in the calves of his legs. A doctor was called and, later, the ambulance, when he was brought to the hospital.

On examination the patient was found to be a well built and well nourished man. There was extreme cyanosis throughout the body, but this was apparently borne with little discomfort. The cyanosis was most marked in the face and mucous membrane of the mouth. The skin was dry and cool. The respirations were slightly increased and the heart rate at one time was 156 beats per minute, but fell to normal on the second day. The heart was apparently normal in size and no murmurs were made out. Both hands were dark brown, which discoloration extended almost to the elbows. This was said to be due to the indelible ink. Blood examination, June 7, 1916: Red blood cells, 6,100,000; hemoglobin, 100 per cent.; white blood cells, 18,000; polynuclears, seventy-one per cent.; small mononuclears, fifteen per cent.; large mononuclears, seven per cent.; transitionals, seven per cent. There seemed to be only oxyhemoglobin band shown by spectroscopic examination. June 10, 1916: Red blood cells, 5,200,000; hemoglobin, ninety-seven per cent.; white blood cells, 8,000; polynuclears, sixty-four per cent; small mononuclears, twenty-six per cent.; large mononuclears, ten per cent. The urine was smoky and dark colored on the first examination. Among the substances which were examined for in later specimens of urine and not found were blood, bile, urobilin, methemoglobin, melanin, chloral, and phenol. The temperature chart showed a slight fever for five days, being 101° F. on the first day, gradually becoming normal. Patient was discharged fully recovered after seven days in the hospital.

Case VIII.—S. B.; male; single; age twenty-nine years; Russian; was employed as a chemist's helper in a chemical factory doing experimental work in aniline dyes. He was admitted to the New York Hospital on Doctor Roper's service September 3, 1915. His family history was negative. Six or seven years ago his head was injured in an accident; since that time he has had an internal strabismus. Venereal diseases were denied. He took an occasional drink of whiskey before breakfast, and two or three glasses of beer a day, but was rarely drunk. For ten or twelve years there had been a chronic cough with little if any sputum. No loss of weight, fever, night sweats, or dyspnea had occurred. Bowels were regular. His occupation up to eighteen months previous had been in a paper mill, then in a chemical factory where inks were made. Here, according to his present boss, lead was used. Paraphenylene diamin was another chemical much used in the ink factory. For the past week he had been working in a chemical factory where experimental work was done on aniline dyes. Here the substances used were hydrochloric acids, caustic, potash, aniline dyes, and aniline oil. In the workroom where he was employed the air was pretty well filled with fumes of aniline. Once a week the atmosphere was also filled with chlorine fumes. The patient stated that the workers in the factory frequently had attacks. A typical one of these would begin with listlessness, headache, nausea, occasional vomiting and fainting, also blue finger nails, and, later, blue lips, followed by weakness and constipation. These attacks were usually successfully treated at the factory by massage of the extremities, artificial respiration, stimulants in the form of coffee and aromatic spirits, and especially fresh air and cold water application. About 4 p. m. on day of admission, while at work, patient suddenly felt weak, faint, headachy, nauseated—no vomiting—and fainted completely, remaining unconscious for three or four minutes. After regaining consciousness he felt weak and headachy with no definite pain; no bowel or bladder incontinence occurred. His finger nails became very blue, and also his lips, and then remained so. Patient had never before been affected by the fumes so as to faint or feel faint.

Patient, on admission, was emaciated and showed marked pallor, while the lips and nails were markedly cyanotic. The pulse and respiration were moderately increased. On the hands were stains, dark yellow and red, due to his work with dyes. The face and forehead were yellowish in color, which the patient attributed to the fumes. His body was not yellow. The cyanosis cleared up in a few hours. His heart rate was moderately rapid, 112 per minute on admission, and 72 beats on discharge, but otherwise normal. The systolic blood pressure was 108 millimetres on first day. The lungs had good expansion on both sides, anteriorly fine râles were noted in the second and third left interspace, and posteriorly the breath sounds diminished at the right apex. The right pupil was larger than the left, but both responded to light, and there was internal strabismus of left eye, probably due to previous injury. No lead line was present on the teeth, but they showed lack of care and a moderate degree of pyorrhea was present. The knee jerks were overactive and there was discoloration about the toes, apparently due to dyes which had entered through leaky shoes. The examination of other parts of the body was negative. The patient had a temperature in the afternoons over 99° F. during stay of three days. Blood examination, September 4, 1915: Red blood cells, 3,976,000; hemoglobin, ninety-four per cent.; white blood cells, 12,000. The urine was negative. Amorphous urates present. Methemoglobin not tested for. Patient was discharged September 6, 1915, cured.

The histories and examinations of eight patients reported show the various types of aniline poisoning in different occupations. In Case I the poison may have entered the circulation by inhalation and absorption through the skin. The type is acute. The significant points are the cyanosis of the lips and hands, the dermatitis, the odor of aniline, and the marked reduction of oxygen combining power of the hemoglobin. The patient, under proper treatment, should recover without permanent injury to his health, as he has already changed his occupation, which is most important. Cases II, III, and IV have types of chronic poisoning. The poison may have entered the circulation in three different ways: inhalation of the fumes or dust, absorption through the skin, and possibly ingestion of food contaminated by the hands. In Cases II and III symptoms of mental confusion and insufficiency and frontal headaches predominated; in Case IV, cyanosis, poor memory, and general pains were present. Treatment in these cases calls for more protection to the workers and, best of all, a change of work.

Case V is interesting. This patient would have an attack of bronchial asthma whenever he worked on furs dyed with aniline colors. The vegetable dyes were not toxic to him. He was apparently a susceptible person for, as far as we could learn, none of his fellow workers were affected. A change of occupation was advised. The possible danger of home dyeing with the popular household dyes is shown in the poisoning of the patient in Case VI. The mode of entrance was through the skin. The vigorous scrubbing probably aided the absorption of the dye. There resulted both a local and general acute poisoning, as shown by the marked dermatitis of the exposed arm, as well as cyanosis of the lips, nausea, vomiting, and green colored urine. The affinity of certain dyes for certain materials was brought out strikingly when only the red woolen yarn was dyed green, while the color of the curtains was not changed. Instructions for using these dyes, with directions for protecting the user, should have a prominent position on the package. Case VII demonstrates the lack of care and knowledge in the handling of aniline oil. To allow the use of aniline oil in cleansing the hands was criminal and might have caused the death of workers. The record illustrates how the symptoms may occur some hours after exposure. The important symptoms were dizziness, weakness, headache, loss of consciousness, and general cyanosis. The urine was dark and smoky. The poisoning of the patient in Case VIII was due to improper ventilation and showed a total disregard for the danger from aniline fumes. The patient told of frequent attacks of poisoning among his fellow workers. In this patient the symptoms came on suddenly while at work. He had a headache, felt nauseated, and lost consciousness. His lips and finger nails were markedly cyanotic, while his face was pale.

The cases here recorded illustrate the great variety of industries and processes in which poisoning by aniline may be encountered. In the eight cases reported, the occupations given were as follows: laborer in dye factory; painter and varnisher in shop; chemist in dye factory; sorter of colored leathers; furrier working with colored furs; housewife attempting home dyeing; laborer in indelible ink factory, and a chemist's helper in a dye factory. Besides these patients, we had at the Cornell Medical College Clinic several with points in their records suggesting aniline poisoning, but, as they appeared only once at the clinic, no proper investigation could be made. Among them were bootblacks, printers, wall paper painters, a chemist's helper, and a hair dresser. To arrive at a correct understanding of the patient's condition, it is not enough to put down his occupation as laborer or furrier and get his symptoms. Every detail of the occupation must be obtained. The intelligence of the worker concerning his occupation was astounding, but obscure and important facts need a trained investigator who can study the home and the factory.

Certain distinctive points in the records of these patients reported should be named. The presence of cyanosis was noted in five patients. Mental confusion and insufficiency were complained of by three patients, but were mainly subjective; and two lost consciousness. Headache was present in six of the patients. The odor of aniline was marked on one patient. The green dye appeared in the urine of the housewife. Aniline dermatitis was noted in two patients. Certain dyed furs produced attacks of bronchial asthma in one patient. From these facts, a patient having cyanosis of the lips, mental confusion, frontal headaches, or a sense of fullness and throbbing of the head, combined, or in a group of two or more, should be questioned as to the possibility of aniline poisoning. To sum up the treatment, prophylaxis by proper ventilation and protection of the worker is very important. Acute poisoning requires oxygen and cardiac stimulation. In the chronic type, prevention, by correction of the working conditions favoring poisoning, is essential. Change of position should be advised if this can not be accomplished.

This paper does not aim to discredit aniline preparations. It attempts to bring out the essential points in aniline poisoning for the medical man. It offers suggestions to the manufacturer for protecting his employees' health and thus increasing the efficiency of his plant by decreasing the loss of trained workers.

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664 West 179th Street.

Abstracts and Reviews.

THE RELATION OF THE SPLEEN TO SOME OBSCURE CLINICAL PHENOMENA.[*]

By William J. Mayo, M. D.,
Rochester, Minn.

As the spleen had no external secretion and no known internal secretion, Doctor Mayo said, the results of its action could not be studied directly. The removal of the normal spleen, rendered necessary by traumatism, etc., introduced no serious bodily change. It was surprising, however, how many diverse clinical conditions were represented in the 167 cases in which the spleen had been removed and which had been classified for this comparative study; and yet the pathological diagnosis varied very little.

The normal spleen weighed 195 grams (Sappey). In practically all the diseases in which splenectomy was thought to be indicated, the spleen was enlarged, and this enlargement, on account of the concealed situation of the organ, had to be very considerable—perhaps twice the normal size—before one could know that the enlargement existed. Palpation gave the only definite information as to the size of the spleen; if it could not be felt, percussion was a poor and misleading substitute. Much might be expected from the röntgenogram in the future to make manifest the size and position of the spleen as it had so satisfactorily done with the kidney. Another source of uncertainty in diagnosis arose from the fact that the spleen alone was seldom responsible for the production of clinical phenomena; it was more often the agent than the cause of the illness.

The spleen was derived from mesoblastic tissue and was probably concerned largely with filtration of tain substances from the blood, and the product of its activities was delivered to the liver through the splenic vein; this suggested at once what clinical experience had shown, i. e., its relation to the blood and to the liver. It might, perhaps, be more aptly compared to the kidney, which was not a secreting but a filtering organ. The nerve supply of the spleen was from the sympathetic system and was very scanty, but it contained a considerable amount of nonstriated muscle fibre. The blood entering the spleen was peculiar inasmuch as it came in direct contact with the splenic pulp, the smaller bloodvessels having lost their elastic coats. This rendered the spleen fragile and led readily to traumatic or spontaneous rupture resulting in intraperitoneal hemorrhage or hematome within the splenic substance. The latter condition resulted in cyst, the most common type of tumor of the spleen (Powers). This peculiarity of the bloodvessels also rendered the spleen extraordinarily susceptible to the influence of radium, which acted with vigor on the single coated bloodvessels, nonstriated muscle, and the nuclei of cells.

The blood might properly be termed a tissue, consisting of erythrocytes, leucocytes, and platelets, in which the plasma was a fluid medium taking the place of intracellular substance. The white blood was the most primitive, derived from the mesenchyme cell. Fetal blood was produced by the lymphoid and adenoid structures of the body, including the liver and spleen. From this standpoint, leucemia could be considered a cancer of the blood in which there was an uncalled for production of functionless white cells, just as carcinoma was due to the unlimited production of embryonic epithelial cells and sarcoma of embryonic tissue cells. When the spleen was removed in certain enlargements, as in hemolytic icterus, it was found crowded with erythrocytes in various stages of disintegration, and that the specific splenic cells had phagocytic properties was known. Normal fragmentation depended on the natural life of the erythrocytes which had been estimated at from ten to fourteen days. It was quite probable that the life of the red cell was much longer than had been estimated. Singular difficulties confronted the surgeon in experimental work in his attempts to solve these problems. Not the least of these difficulties was the fact that the experimentation on animals was on the normal spleen.

The liver was the great organ of defense. Its extreme importance was shown in the fact that it was one of the few organs which had the power of regeneration. That the liver destroyed bacteria and protozoa and detoxicated poisons, both biological and chemical, which were brought to it from the portal circulation, was a known fact. The diseases of the liver were little understood and, while a vast amount of work had been done, the nature of its metabolic activities were to some extent a matter of conjecture. Among its most important diseases were those which resulted from the intrahepatic development of connective tissue causing cirrhosis, a process which might be widespread or locailzed. The cirrhotic liver might be and was enlarged more often than one was led to think because of the more complete understanding of the alcoholic cirrhosis of the Lænnec type, the so called hobnail or gin liver. Yet there was no fundamental difference between the atrophic cirrhosis and the hypertrophic cirrhosis of the beer drinker in which fatty tissues smoothed out the connective tissue contractions and increased bulk.

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[*] Abstract of the Wesley M. Carpenter lecture, delivered before the Academy of Medicine, October 18, 1917.

The cirrhosis secondary to splenic disease, if portal, was of the atrophic or hobnail type, possibly showing that the cause concerned protein, not fat metabolism. In biliary cirrhosis, on the contrary, the liver was enlarged. Three types of hepatic cirrhosis stood out prominently: the toxic, represented by the alcoholic portal cirrhosis; the protozoal, of which syphilitic cirrhosis was representative; and the bacterial, of which biliary cirrhosis from common duct infections was a type. In the portal cirrhosis, the connective tissue was related to the portal venous system and ascites was an early manifestation, while jaundice was a late one. In biliary cirrhosis, the connective tissue was associated with the biliary canals, jaundice was an early manifestation, and ascites a late one. In Banti's syndrome, the portal cirrhosis was a late stage of splenic anemia and even in advanced disease, the removal of the spleen often cured, the liver regenerating to a marked degree. In portal cirrhosis, supposed to be primary, the spleen might be enlarged to a considerable extent without being manifest until a late stage.

The biliary cirrhoses, in many cases at least, had their origin in infections of the common duct, associated with gallstone disease. In such cases, the spleen might or might not show great enlargement. In other cases in which no such infection existed in the common duct, the spleen might be found to be very large and suggested the possibility that it had carried to the liver toxic materials which had safely passed through the portal side, but had exercised a large influence on the hepatic cells and the smaller bile ducts. This was known to be the fact in connection with hemolytic icterus, as the removal of the spleen promptly relieved the jaundice. The enlarged liver thus might not be a true biliary cirrhosis, as was thought, but possibly in part at least an excess of function causing hepatic hypertrophy as well as cirrhosis in the attempt to care for the erythrocytic débris destroyed in the spleen and carried to the liver by the portal vein.

Enlargements of the spleen from chronic sepsis were not uncommon and might act as secondary distributing centres of infection. The speaker had removed eight spleens for this cause. Focal infections in various parts of the body might act as the primary source of the bacterial invasion. The enlarged spleen had been removed in three instances for tuberculosis supposed to be primary in the spleen. One patient died within the year from tuberculosis and it was concluded that there must have been other undiscovered foci. The remaining two patients had recovered and remained well. Protozoal disease, such as the plasmodium of malaria, the spirochete of syphilis, etc., produced chronic splenic enlargements from which it might be extremely difficult to dislodge the organism. Spirochetal hibernation in the spleen was not unusual and failure to eradicate the disease by salvarsan and prolonged mercurial treatment might result in a syphilitic spleen which permitted not only luetic reinfection of the body but also caused a high grade of chronic anemia. In four cases of this type, removal of the spleen had promptly cured the anemia and the lues had thereafter quickly responded to renewed treatment. In all of these spleens, either spirochetes were found, or gummata in spleen and liver were demonstrated, showing again the relation of the spleen to hepatic disease. The spleen had been removed in fifty cases for pernicious anemia. In each case, the diagnosis was well established and the spleen, with four exceptions, was above normal in weight. In some instances, the spleen was greatly enlarged, weighing up to 2,330 grams.

There had been no definite relation between the size of the spleen and the seriousness of the disease, nor was there any direct relationship between the result of the splenectomy and the size of the spleen removed. There was temporary improvement in every case following splenectomy, but there were some cases in which the cord changes progressed in spite of a great improvement in the anemia. None of the patients could be said to have been cured, but, all in all, in at least sixty per cent. of the cases the benefit was sufficient to justify the operation. In the total number of operations for pernicious anemia, three patients among the earliest cases died because of the operation; however, they were advanced cases and should have had preliminary transfusion. In the last thirty-two operations there were no deaths. In many cases, after initial improvement by transfusion and splenectomy, relapse had taken place followed again by improvement with transfusion. Some of these patients had been carried along for months in fair health by repeated transfusions, as many as thirty having been given to a single patient. Following each transfusion there would be marked benefit with gradual depreciation until transfusion again became necessary.

An interesting conjecture lay in the question whether or not the patient might live on the work of transfused blood as well as be stimulated to the formation of new blood. A probable explanation was that the life of the red corpuscles was much longer than had been thought and that the anemia returned in proportion as this fresh aid was used up. The significant blood changes in pernicious anemia, that differentiated it from secondary anemias, were the changes in the number and type of the red corpuscles and in the blast cells found in the blood. Therefore, neither stimulation nor treatment could reproduce that which had been lost. It was possible that certain types might be cured; yet so firmly fixed was the belief of the speaker concerning the incurability of the disease that if he had patients cured by splenectomy, he would be inclined to lift them out of the category of pernicious anemia and to group them either with hemolytic icterus or splenic anemia.

If there had been any one condition believed to be nonsurgical and incurable, it was splenomyelogenous leucemia. The theory had been that ninety-five per cent. at least of such patients operated on would die as a result of the operation and that the five per cent. who lived would not be benefited. No clinical experience, however, had been more striking than the result which followed the application of radium over a large leucemic spleen. Many times the spleen shrank so greatly as to disappear below the left costal margin and the white blood corpuscles dropped from hundreds of thousands to under 10,000. The speaker had seen a leucopenia produced, the white cells dropping from 600,000 to 3,700 in five weeks. Accompanying this extraordinary reduction in the size of the spleen and reduction in the number of white cells, an equally extraordinary improvement in the anemia took place and the patient was marvelously benefited. As the spleen gradually increased again in size, the white cells increased, the red cells decreased and the patient lost ground. Based on this experience, at Rochester they had in a number of instances reduced the size of the spleen with radium until the blood count approximated the normal, and then removed the spleen. It had been found inadvisable to force an extreme reduction of leucocytes before splenectomy. If the general condition of the patient were good, a leucocyte count of 30,000 or less was satisfactory. All the patients save two had been markedly relieved. In the nineteen cases there were no operative deaths. That these patients were cured was doubtful, but the experience had been interesting and suggestive.

Splenectomy had been performed in nineteen cases for hemolytic icterus. The results were astonishingly good. In fact, it could be asserted that no operation gave more gratifying results. The jaundice which the patient had had perhaps for years would be perceptibly less in forty-eight hours and within four days would have quite disappeared. Sixty per cent. of these patients had complicating gallstones, apparently due to the greatly thickened bile, the result of pigments derived from the disintegrated erythrocytes. Splenectomy, as a rule, was not difficult in these cases, for although the spleen might be quite large, it was seldom adherent to a marked degree. There had been but one operative death in this series. This patient was operated on during a crisis and death probably would not have occurred had the operation been performed in the interval between crises. Hemolytic jaundice was often confused with certain types of noninfective biliary cirrhosis and especially with the so called Hanot's cirrhosis. In four cases the spleen had been removed for biliary cirrhosis which could not properly be classified as hemolytic jaundice. All the patients were above thirty years of age. Were it not for the age, all of the cases could have been called Hanot's cirrhosis. The results in three were very satisfactory; the jaundice disappeared to a large extent and the patients returned to work.

Splenic anemia was at least a clinical entity, but had been confused with many varieties of splenomegalias, as syphilitic, septic, malarial, and hemolytic jaundice; pernicious anemia, etc. Little by little an irreducible minimum was being reached and a definite type established. These patients had large spleens, and a progressive anemia and cirrhosis of the liver developed as a terminal condition to which Banti's name had been given. The course of splenic anemia was chronic. There might be intervals of years in which the patient enjoyed a fair degree of health, but the debilitated patients eventually succumbed to intercurrent disease.

Hemorrhages from the stomach were of frequent occurrence in splenic anemia and sometimes hemorrhage was the first symptom to be noted. The hemorrhages were probably gastrotoxic in origin and while, as a rule, fatal hemorrhage did not result, frequent recurring hemorrhages caused great debility. Balfour, in a paper on the causes of gastric hemorrhage, called special attention to the relationship of the spleen and liver to the bleeding. In gastric hemorrhage one must think of the spleen and the liver as causative factors just as in the differentiation of the causes of jaundice the spleen must be thought of as well as the liver. Warthin and others found that many cases of splenic anemia showed thrombosis of the splenic vein after death and they believed that the thrombosis was the cause of the splenic condition. Balfour splenectomized a two and a half year old child presenting the complete picture of splenic anemia. Splenic anemia was cured by splenectomy in a high percentage of cases and it should be performed before portal cirrhosis or thrombosis of the splenic vein occurred. The spleen was usually large and, as a rule, extremely adherent and the operation was more difficult and dangerous than in any of the various other diseases for which splenectomy was indicated. In forty-three splenectomies for splenic anemia only four patients died.

Clinically, patients with enlargements of the spleen were to be seen in whom the enlargement apparently produced no symptoms, but these cases should be looked upon as incipient splenic anemia. Such causeless splenomegalias as the speaker had had opportunity to observe had eventually led to marked secondary anemia, although perhaps for years showing little effect on the patient's health. No good and much harm came from chronic splenomegalia and, other things being equal, such spleens should be removed on general principles.

The portal cirrhosis of the liver which so frequently accompanied the later stages of splenic anemia had led to the removal of the spleen in five cases of primary portal cirrhosis in which there was enlargement of the spleen. The results on the whole had been gratifying, although one patient died following the operation. The remaining four were in satisfactory condition.

Comparative Resisting Powers of the Paratyphoid Bacillus B and the Colon Bacillus in Water.—G. Daumézon (*Bulletin de l'Académie de médecine*, August 21, 1917) sought to ascertain the behavior of the B paratyphoid organism when present in river water and brought into sand filters. The two organisms mentioned, together with six others, were successively placed in mediums representing all stages of filtration treatment from river water to tap water. The results showed that the B paratyphoid and colon organisms offer prolonged resistance to the other six germs when protected from light in turbid water or in slime. In clear water their resistance is less in light than in darkness, and the paratyphoid organism seems to succumb more readily than the colon bacillus. Apart from the influence of fungi, protozoa, or bacteria other than those used in the experiments, however, the resisting powers of the B paratyphoid bacillus permitted it to pass unimpaired through any filtering mediums which the colon bacillus can itself traverse.

Medicine and Surgery in the Army and Navy

CARREL'S METHOD OF TREATMENT OF INFECTED WOUNDS.

By G. Loewy, M. D.,
New York,
War Demonstration Hospital, Rockefeller Institute.

Since the beginning of the war the highest possible surgical skill has gone into the effort to ameliorate the tremendous amount of suffering and to prevent the maiming and deformity that were not the actual effect of shell impact but of the infection that followed. "Conservation" is a principle of far greater importance in war surgery than in surgery in times of peace. The wounded are young and vigorous men; they must be returned to civil life or to military life with useful limbs after the shortest possible time of treatment. The greatest difficulty of the problem came from infection. In the early part of the war the aftertreatment of wounds followed accepted surgical procedures and, all the war inflicted wounds being highly infected, the results were deplorable. There were pussing wounds, secondary abscesses, osteomyelitis, joint complications, amputations for gangrene, and many deaths. The experience of war, however, has shown that conservation is now possible with a method which gives to the surgeon the means for handling and controlling infection.

The principles for the treatment of wounds have been developed in the course of two years by direct experiments on infected wounds. Researches were conducted in the laboratories of the temporary hospital No. 21 at Compiègne, which was largely aided in its work by the Rockefeller Foundation. Dr. Alexis Carrel was in charge of this work and associated with him were three surgeons, Doctor Dehelly, Doctor Guillot, and Doctor Woimant; two chemists, Doctor Dakin and Doctor Daufresne, and Captain Lecomte du Nouy, who made the mathematical and physical researches. Doctor Carrel's purpose was to devise a method to prevent or stop suppuration, to sterilize the wound, and to close it. The method is due to a combination of processes which makes it possible to employ antiseptic substances under such conditions that they are entirely efficacious.

The method involved no new principles. The road has been opened by Pasteur and Lister and the surgical technic used is known to every surgeon. Neither was the method characterized by the use of any new chemical substance. The antiseptic properties of hypochlorite of soda have been known for a long time. The evolution is the systematization of these procedures in a new way. This systematization has been brought about by scientific investigation and the employment of two methods to utilize measurements, the bacteriological study of the condition of the wound and the recording of each step on a curve showing the different states of disinfection, and measuring the progress of healing by means of a precise technic based on the discovery of some of the laws of cicatrization. The method, therefore, is dependent upon the employment, rigorously controlled by the microscope, of an approved agent, under conditions of contact, concentration, and duration, established by direct experiments upon infected wounds. The antiseptic chosen is the Dakin solution of hypochlorite of soda, neutral to powdered phenolphthalein. Docor Carrel gave the name "Dakin's solution" to sodium hypochlorite solution deprived of its alkalinity in order to distinguish it from Labarraque's solution, which contains a great deal of alkali. Its advantages are high bacterial power, dissolving action on necrotic tissues, and ease and cheapness of preparation. The concentration has been empirically placed between 0.4 and 0.5 per cent. If the percentage of sodium hypochlorite is less than 0.4, the antiseptic power of the solution is too low; if greater than 0.5 the solution is irritating.

The action of Dakin's solution was studied on bacteria and on tissues by the comparison of the curves of sterilization and of cicatrization. These experiments showed that sterilization was obtained without any destructive action upon the living tissues, the action of the hypochlorite on an infected wound comprising two processes, chemical reaction, by which the bacteria, as well as the other organic materials of the wound, necrotic tissues and blood clots, are dissolved with a formation of chlorine nitrogen compounded of the nature of chloramines, and antiseptic action, not only of the hypochlorite itself but also of the chloramine compounds so formed. For superficial wounds Doctor Carrel has selected dichloramine-T, which is disseminated in an emulsion of stearate of soda, neutral, this paste giving up progressively the antiseptic, of which it contains one per cent. Several other substances experimented with were found to be far inferior. Dichloramine oil after several hours appears to have some slight disintegrating effect upon plasma clot and necrotic tissue, yet this effect is extremely slight and it has no solvent action on either plasma clot or necrotic tissue in vitro. It differs in this respect from Dakin's solution.[1]

Dakin's solution may be satisfactorily prepared in any one of several ways: 1. By double decomposition of calcium hypochlorite and sodium carbonate. This method, the one first used by Dakin, has been, because of the ease of obtaining the necessary chemicals, the most available. The alkalinity of the solution, after the precipitation of the calcium carbonate, is neutralized by the use of a mixture of sodium carbonate and sodium bicarbonate in the precipitation. In either case it is necessary to determine the percentage of available chlorine in the bleaching powder with which one is working. 2. By electrolysis of a sodium chloride solution. This method gives the product the nonirritating quality, but requires apparatus and electric current which are not always available. 3. By passing chlorine into sodium carbonate solution. The use of the chlorine measuring apparatus employed in this country makes this method the simplest and the most convenient.

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[1] From experiments to be published shortly by Herbert Taylor and J. H. Austin. The drawings illustrating the apparatus for instillation with the Carrel-Dakin fluid are reproduced from *The Treatment of Infected Wounds*, by Carrel and Dehelly, by courtesy of the publishers, Paul B. Hoeber, of New York.

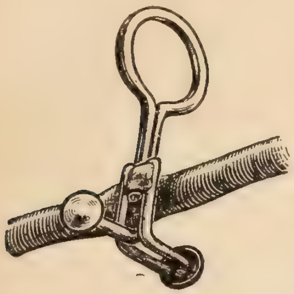

FIG. 1.—A Mohr pinch cock for regulating flow of Dakin liquid.

The first condition of an antiseptic substance is that it enters into intimate contact with the microbes infecting the wound, and this explains why the surgical and mechanical cleansing is so important. The soldier, after having received his wound, is a man in a state of incubation, inoculated with microbes; the cavity of the wound containing blood clots and muscular debris undergoing autolysis forms a splendid culture medium. The wound must be widely opened, and so maintained. An incomplete preparation of the wound tends toward a slow sterilization interrupted by reinfections due to the elimination of necrosed parts, which should have been excised initially. In case of fresh wounds the first step of the disinfection is to obtain thorough opening of the wound. There must be no hesitation in making very free incision, for a war wound is more extensive than it appears, and under an apparently small skin wound there may be a large area of destroyed muscular tissue. The entire wound and its ramifications are freely opened and the contused and necrotic tissues removed surgically, for if left in the wound the contused parts will die. The subcutaneous infiltrated tissues, bruised and necrotic muscles, are excised. Missiles and, above all, shreds of clothing, factors of gas gangrene, which are disseminated at the surface of the tissues, must be removed; pieces of clothing are likely to carry the spores of Welch bacilli. Blood clots are carefully taken away and complete hemostasis made by ligature or pressure, the hypochlorite dissolving slowly the blood clots in which bacteria are located. After careful hemostasis, one can see every part of the wound without a retractor. However clean the wound seems at this time, no suture must be practised.

If the patient is received a few hours after being wounded and a thorough cleansing has been ended by washing the wound with neutral soap the wound is as nearly aseptic as it can be by purely mechanical cleansing, and seems ready to be closed. Immediate closure should be done, however, only when the patient can be watched carefully for ten days, because there are no means of knowing in the first hours if the wound is sterile or not. The primary closure is not scientific procedure; it is dangerous, and the surgery of war must be, before all else, a surgery of security. In case of fresh fractures the incision should always be very free. The soft parts are laid open in such a manner that all portions of the seat of fracture may be explored. Free splinters are removed, but all adherent splinters are preserved; experience has shown that fractures so treated become sterile after chemical cleansing and rapidly consolidate. The treatment of old suppurating fractures is different and comprises three stages. Before surgical intervention it is necessary to reduce the patient's temperature and to diminish the number of bacteria by primary disinfection. When the infection is reduced as much as possible the necessary surgical cleansing is performed. Under anesthesia, foreign bodies and necrotic tissues are removed and the surgical act is followed by the introduction of tubes for a new and thorough chemical treatment.

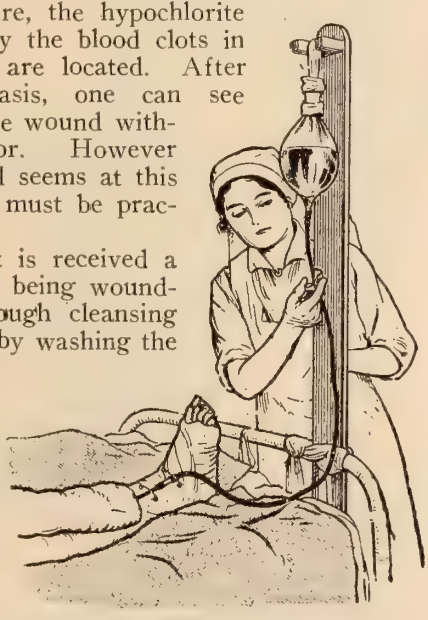

FIG. 2.—Nurse pressing pinch cock to promote flow of liquid.

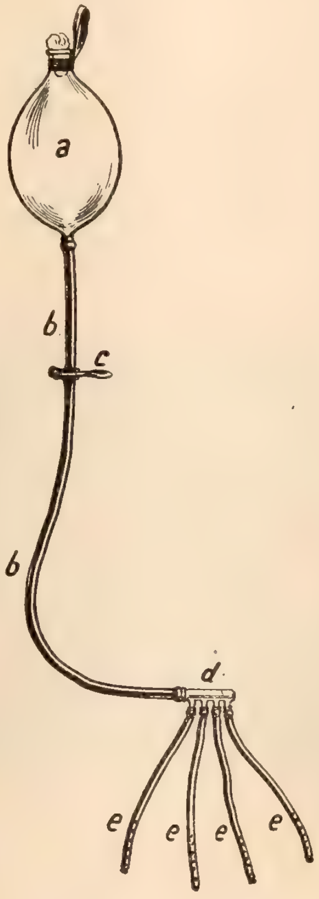

FIG. 3.—Apparatus for intermittent instillation of Dakin liquid. *a.* 1 litre ampoule. *b.* Irrigation tube of seven mm. in diameter. *c.* Mohr pinch cock. *d.* Glass distributing tube with four branches. *e.* Perforated delivery tube which rests on or in the wound.

After the surgical treatment the wound is ready for the contact of the liquid. In the sterilization of a wound the antiseptic plays a part comparable to that of the scalpel in a surgical operation; it acts like a "chemical scalpel." The tubes have been found so far the most practical way to carry the liquid in contact with the wound; these are lengths of rubber tubing of four millimetres interior diameter, cut thirty to forty millimetres in length. They are closed at one end by tying with a strong linen thread and perforated from the same end over a length of five, ten, fifteen and twenty centimetres by means of a punch, making a series of holes, one half a millimetre in diameter, perforating both walls one centimetre apart. These tubes are arranged in the wound in such a way that the liquid may readily spread over the whole surface. They are not applied over gauze, but directly to the wound, and compresses soaked in Dakin's solution are laid over them. Gravity plays a very considerable part in the distribution of the liquid, so the tubes must be arranged in such a manner as to utilize it, particularly in cases of wounds with inclined surfaces. Covered tubes with Turkish toweling are used in cases of superficial wounds, vertical sétons and wounds of the posterior aspect of the limbs, when it is important to distribute the liquid over the whole surface of the perforated part of the tube. All the tubes in the wound are connected by means of glass distributing tubes with the irrigating flask. The reservoir for the liquid usually employed is a receptacle holding a litre, or 1.76 pints; its inferior orifice has a diameter of seven millimetres, to which is attached an irrigating rubber tube with a calibre of seven millimetres, closed by a spring pinch cock. All these dimensions have been studied for the convenient working of the apparatus. The flask, graduated at fifty c. c. intervals, is made of white glass and hung at a height of from sixty centimetres to one metre above the level of the bed, according to the number of tubes in the wound.

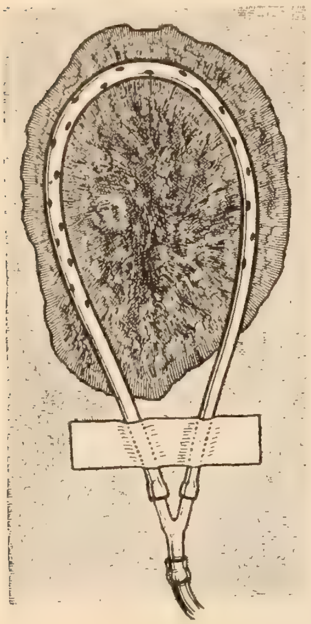

FIG. 4.—Superficial wound. The instillation is made through the perforated tube, the upper portion of which is attached to the skin by adhesive plaster, so as to prevent movement.

The concentration of the solution in contact with the wound changes rapidly, and, therefore, to maintain a concentration of the antiseptic it is necessary to renew it often by adding new fluid at the surface of the wound. It has been found empirically that it is sufficient to do this every two hours; the continuous flow would be the best, but this is not practicable for a large wound, with several tubes. Every two hours the nurse releases the spring of the pinch cock for a few seconds and gives to the wound from thirty to 100 c. c. of solution, according to the nature of the case. The total quantity of liquid irrigated in twenty-four hours varies from about 250 to 1,200 c. c. The only fixed rule is that the wound shall be kept constantly moistened by the liquid without the patient being made uncomfortably damp. At the time of the dressing, the surrounding skin is protected by means of squares of gauze soaked in yellow vaseline; the lower part of the limb should be protected and not the part which is above the wound. A pad of absorbent and nonabsorbent cotton covers the entire dressing, the layer of absorbent cotton being placed next to the wound. The dressing is changed daily.

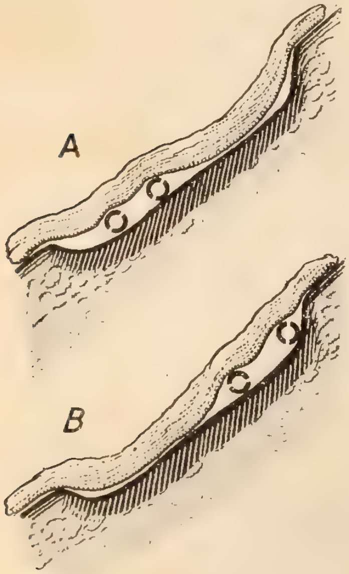

FIG. 5.—Wound on inclined surface. *a*. Tubes wrongly applied to lower portion of wound. *b*. Tubes correctly applied to upper portion of wound, so as to insure application of the liquid to the inner surface. The surface is covered with absorbent cotton.

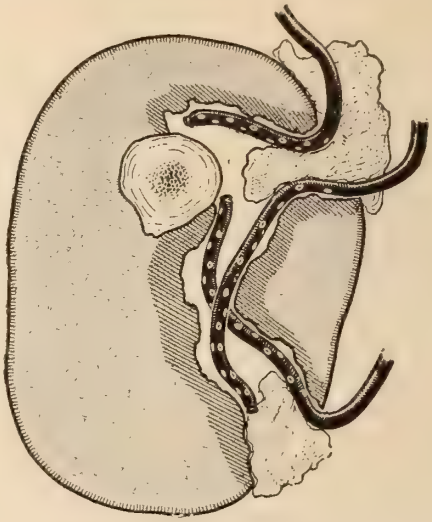

FIG. 6.—Comminuted fracture and perforating wound. Two tubes are placed in the anterior wound and one in the posterior wound. The tubes are kept in place by gauze which is stuffed in the orifices.

The third condition to be considered is that of duration of instillation. Time is a very important factor. The instillation of liquid is continued day and night until the wound is sterile. There is no method of knowing if sufficient time has been given to the chemical sterilization without a bacteriological examination of the wound. Clinical observation of modification in the appearance of the wound is insufficient to give information as to its real condition. The sterilization of the wound is controlled by a simple method, which can be done in every ambulance; and it is sufficiently precise to indicate sur-

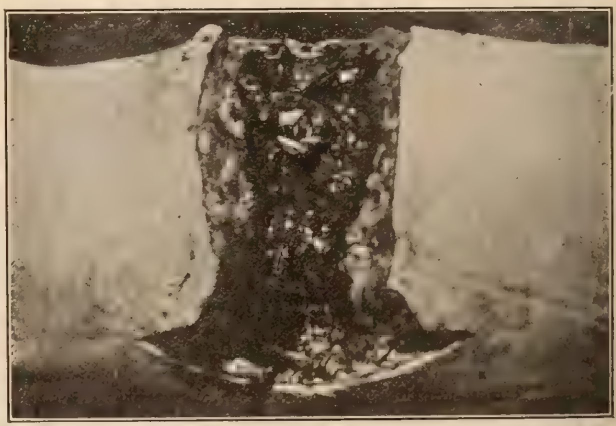

FIG. 7.—Large shell wound traversing the anterior aspect of the thigh and almost completely dividing the quadriceps femoris. Three and a half hours after the receipt of the injury, the wound was laid open and foreign bodies and torn muscular tissue removed. An extensive wound resulted, more than ten centimetres long and extending from one side of the thigh to the other.

gical asepsis, which is all the surgeon wants to know. Bacteriological examination is part of the treatment. Smears are taken every two days from the most infected parts of the wound, the instillation being stopped two hours before. They must never be taken from a region which is bleeding. When the sterilization approaches completion, it is wise to examine the neighboring skin. These smears are made on clean slides, then fixed by passing through flame and stained by carbolthionin. The bacteria are counted on the surface of the smear. With a Bausch and Lomb microscope, No. 10 ocular and 1.9 millimetre objective are used. The average number of bacteria in a field is then estimated and charted. In this way curves are obtained which give to the surgeon the necessary information about the condition of each wound. Thus it is possible to know if the antiseptic is being applied under proper conditions and when the wound can be closed. When only one bacterium is found in five or ten fields surgical asepsis is obtained and the wound can be sutured with safety.

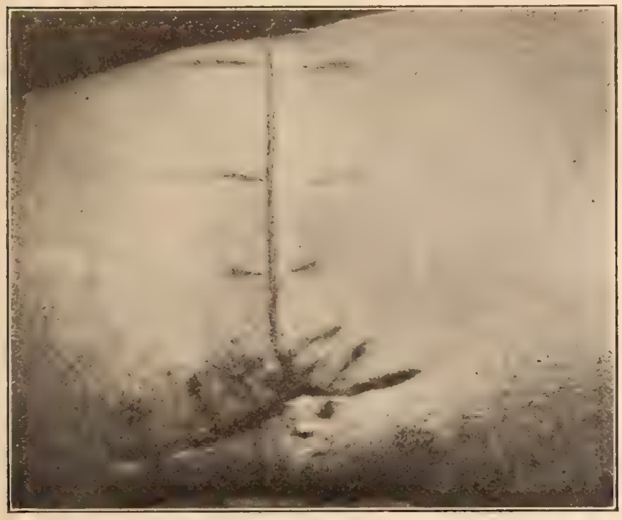

FIG. 8.—At the end of seven days the wound shown in Fig. 7 was surgically sterile. Then careful suture of the quadriceps, by catgut, was carried out and the skin closed. It healed by first intention, and shortly afterward the patient walked normally.

The length of time required for sterilization varies with different kinds of wounds. Wounds of the soft parts, the sterilization of which has been begun a few hours after instillation, are closed after two days if the bacterial count remains at one microbe in five fields. In cases of fracture it is preferable to wait until the wound has been surgically sterile for four or five days. Where sterilization has been begun after a period of suppuration, sharp ascents of the curve may be observed and one should find the secretions sterile for a week at least before deciding to suture. Wounds should be closed as early as possible. Those united before the eighth day contain noncicatricial tissue and before the twelfth day the skin is movable on the deeper structures. At this time they can be closed without anesthesia. Before the twelfth day they are closed by strapping or by elastic traction. After this time the skin becomes adherent to the subjacent parts and must be dissected up to a sufficient extent before suture. Closure is usually done upon the granulous area without drainage.

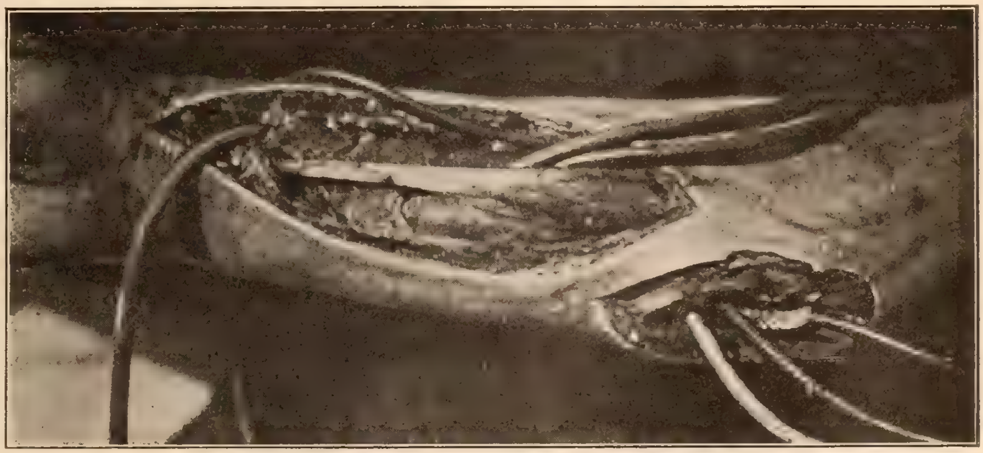

FIG. 9.—Wound of the forearm, the shell having penetrated the epitrochlear muscles and divided the radial artery.

The application of these procedures constitutes a "method," that is to say an entity, a combination in which each single part is essential to the rest. Of course, its interest to many physicians at the present time lies in the original use for which it was evolved. But there are vast possibilities for the method, which extend into every branch of surgery in which infection plays a part. A great many suppurating fractures, which would otherwise necessitate amputation, can be sterilized and closed. Sixty per cent. of the old suppurating fractures of the thigh, brought into the hospital at Compiègne for treat-

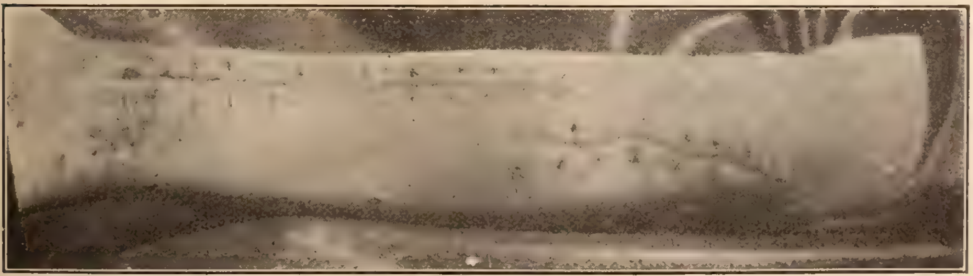

FIG. 10.—Wound shown in Fig. 9 closed after six days of treatment. This early closure allowed the best functional results.

ment were sterilized and closed. Almost three fourths of all the amputations performed for conditions following infection could have been avoided if sterilization of the wound had been effected. It must not be forgotten, however, that all the details of the method combine to produce in a certain way a certain result. Both mechanical and chemical treatment are important; if the surgical work has been inefficient, no method will serve to bring about sterilization. If the following treatment is not properly applied, no results are to be obtained. The method requires the perfect collaboration of doctors and nurses. The result has been conservation of life and limb, and, as Sir Anthony Bowlby said, "Whenever it has been thoroughly carried out it has accomplished all that is claimed for it by its author, and it has been of inestimable benefit to thousands of patients."

ORGANIZING SPECIALISTS FOR WAR SERVICE.

Eight Sections Organized.—How One Section Is Being Subdivided.

Recognizing the need for specialists, the surgeon general, with the General Medical Board of the Council of National Defense, through the great medical bodies of the country, established in his office sections for the care of the various medical and surgical specialties. Physicians of high professional rank, many of them authorities in their chosen field, and in civil life acknowledged leaders, were selected to direct these sections. This plan of classifying the personnel of the military medical corps, a new departure, is another example of the far sighted preparation now so conspicuous in every branch of the service. The various needs of the service demanded the establishment of eight sections: namely, internal medicine; general surgery; orthopedic surgery; venereal, skin and genitourinary surgery; surgery of the head; laboratories and infectious diseases; neurology, psychiatry, and psychology; and röntgenology. The Section of Surgery of the Head, made up of the subsections of ophthalmology, otolaryngology, plastic and oral, and brain surgery, developed from a similar organization of the General Medical Board of the Council of National Defense. In the office of the surgeon general, the section as a whole is under the direction of a lieutenant colonel of the regular corps and a member of the Medical Reserve Corps is assigned to each subsection. These officers act in an advisory capacity in the selection of personnel, etc., and outline the policies under which the work is to be carried on.

Those in charge of ophthalmology and otolaryngology found their chief function in acquainting the physicians of the country with the fact that the surgeon general was desirous of using the specialist as far as possible in his specialty, and in listing the names of the physicians who came into the Medical Corps with a view to working in their specialty. They have aided the surgeon general to select and assign the proper personnel to the base hospitals at the various cantonments. At the present moment the selection of the personnel for the base hospitals, which are destined eventually for duty abroad, engages their attention. The officers in charge of the subsection of plastic and oral, and brain surgery were confronted with the fact of the great scarcity of surgeons familiar with the special technic so necessary in the successful management of injuries of the face and head. It was necessary to use this small group of qualified surgeons to instruct others, and thereby build up a corps of sufficient size to enable assignment of specially trained surgeons to the various hospitals. A conference of the recognized authorities, held in Washington, developed the fact that the large universities were willing to assist in this professional training by tendering to the surgeon general the facilities of their medical departments and hospitals. Schools, with teaching staffs of surgeons versed in the details of special branches were established. The course of instruction includes anatomy, physiology, symptomatology, operative exercises on the cadaver and animals, splint making, clinical demonstrations, and didactic lectures. In the selection of students, the subsection of plastic and oral surgery first considered a group of surgeons commanding excellent technic but lacking in the necessary special refinements; second, the members of the dental profession, many having medical degrees, who have concentrated their studies upon peridental tissues, the jaw bones, and structures of the mouth, and consequently familiar with the special details of the treatment. The correlation of the technic so as to enable the individual surgeon to command the combined knowledge can well be accomplished in these courses.

In a like manner the successful neurological surgeon must, in addition to his general surgical training, have some knowledge of neurology, and be trained in the special technic of surgery of the nervous system. The imparting of this special training could best be accomplished by similar schools. With the assistance of the leading members of the profession throughout the country, a list of candidates for these schools has been compiled. These candidates in groups of twenty-five are assigned to the schools for a period of intensive fundamental training. When this course is completed, it is planned to give the more competent surgeons an opportunity to continue studies in the various clinical centres of the country.

When the troops are engaged and many beds of the various hospitals are occupied by soldiers with injuries of the head, assignment of these surgeons who have had special training, to assume the responsibility of these cases, should result in the utmost efficiency. In the unit for plastic and oral surgery a general surgeon will have associated with him a dental oral surgeon, who, having gone through a course of intensive training, will be fitted to obtain the very best results through their correlated skill. Likewise the officer of the subsection of brain surgery, necessarily somewhat divorced from the competent neurologist will have keen judgment and undertake with clearness his responsibility. The fact is evident that it is not the intention of the surgeon general to make special surgeons by means of a short course of instruction, but add the necessary special knowledge to the equipment of the surgeons.

Editorial Notes and Comments

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EDITORS
CHARLES E. DE M. SAJOUS, M.D., LL.D., Sc.D.
Philadelphia,
SMITH ELY JELLIFFE, A.M., M.D., Ph.D.,
New York.

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REVENUE TAX AND PROFESSIONAL INCOME.

Conservation of the nation's forces that they may be utilized to the best advantage is, we believe, the avowed and attempted policy of the Government. The best thought with its larger outlook has sought to adjust the expenditure of men and money according to the greatest usefulness for the longest time. This has resulted in reasonable exemption laws and a regulation of economic resources of the medical forces to provide for continued and permanent need at home in our own country as well as to meet and handle acute conditions abroad.

Clearer acumen and greater circumspection, however, should be displayed by our legislators lest they commit errors of unwisdom and injustice which bespeak a hysterical and misguided attempt to cope with conditions, such as some of the efforts at economy have produced among our citizens. The War Revenue Act, H.R. 4280, seems to show that our legislators have lost sight of a number of facts, when they arranged this revenue program. Section 209, page 48, provides: "In case of a trade or business [the terms "trade" and "business" include professions and occupations] having no invested capital or not more than a nominal capital, there shall be levied, assessed, collected, and paid in addition to the taxes under existing law and under this Act . . . a tax equivalent to eight per cent. of the net income of such trade or business in excess of the following deductions." This is supposed to accord with the provision made in Section 201 of the same act, which provides for graded taxation upon excess profits, in the case of domestic partnerships and citizens or residents of the United States, above the pre-war earnings. As a matter of fact it throws instead a full tax of eight per cent. upon the occupational net income of salaried individuals, members of professions, and similar workers beyond the limit to be deducted, in addition to the income tax levied under Sections 1 and 2, regardless of whether such occupational income includes or represents excess profits.

The result of this legislation is clearly that the medical man or any other professional worker who possesses merely the fruits of his own labor, often inadequately paid at that, must pay a higher rate of tax than a man who possesses more material wealth, but does not labor to obtain it. In other words the present law puts a premium upon laziness and a penalty upon industry.

This does not encourage the utmost output of professional labor, which stands in the best interests of the country in its present economic situation, when forces must be conserved and the effort of the best and most useful citizens must be made to count for the greatest value. It is needless to assert the sincere patriotism of the medical as of the other professions concerned, not only in devotion of their professional services as far as needed to the present exceptional task of the nation, but in giving cheerfully of their substance principally through the logically regular avenue of taxation. They have, however, the right and the duty to protest that this must be logically regulated and justly distributed, otherwise it curtails usefulness, rouses conscious as well as unconscious antagonism and disaffection that interferes with intended loyalty, and causes more of that unrest and friction which can but hinder the machinery. It must work harmoniously to be most serviceable in the winning of the war. This clause of the act, which affects those who are bearing a large share of the burden of war, glorious though it be, should be reconsidered and a more acceptable and more workable basis should be established.

PERFECTING MEDICAL ORGANIZATION IN CANADA.

We learn from the *Canadian Medical Association Journal* that a stronger effort than ever before advanced is now being made, especially in the province of Ontario, to unite the medical profession in Canada into a well organized body, so that more effectual support may be given to the national medical body of Canada, the Canadian Medical Association. Ontario proving successful in that line, it is hoped other provinces will soon tread the same path. The pivot upon which success is to swing, however, is the organization of local, or county, societies. The proposition calls for the establishment of county societies or the regeneration of already existing ones, where close watch can be kept to see that all candidates for membership are eligible; for through no other means, it is proposed, can any practising physician gain admission to either provincial or national association. Where he is best known is the best port of entry to organizations higher up.

That this is not altogether a new movement in Canada, but has been more or less before the profession for at least a dozen years, can be gathered by a cursory perusal of the various files of Canadian medical exchanges. It is rather astonishing that it has taken so long to bring even a semblance of organization from among what have been considered to be both good and strong provincial societies—and, too, there have been some very active county societies. Either there is a certain lack of cohesion, or lack of desire for it, among Canadian medical men or those composing different societies; or a real lack, not of leadership, but of a special organizing force, constantly on the job. Presidents come and presidents go; special committees follow suit, and organization work is handed on from president to president, and committee to committee, and the desired end almost seems as far off from completion as when it was started.

It would appear that something is wanting in the means to the end; there is an unstable state of affairs. The former unworkable financial arrangement obtaining between the national medical society and the provincial organizations is now going to be abandoned, and the line of conduct as pursued by the American Medical Association adopted. At any rate, we understand, that is what the profession in Ontario propose. From a reliable source it is learned that the national and provincial associations were urged to adopt that plan when the Canadian Medical Association began the reorganization business in 1905. Other counsels, however, prevailed, and only a continuation of the existing irritation resulted in a mixing of the finances of the national and the provincial organizations.

While we are not saying that all the American Medical Association has done has always commended itself to the body of American physicians, still a large part of the success of that organization must be attributed to the organizing force, at least in the formative period of that association, of a man constantly on the job, combining in his work the duties of general secretary and a general oversight of the conduct of the official organ of that association. "Too many cooks spoil the broth."

We butt in in a spirit of sympathy. We trust our Canadian confrères will make a complete success of the task which lies before them. The line between the United States and Canada is all but a thing of the past. In medicine we see the best in internationalism. Perhaps some day there will be an International Medical Association of the English speaking medical men of this North American continent.

SCHOOL FOLLICULOSIS.

When we evert the lower eyelids of a school child and find the transitional folds full of little rounded masses with no sign of inflammation, we must not jump at the conclusion that he has trachoma, for the chances are that he has not. This mistake is common, though perhaps not quite so common as it was a few years ago. Thousands of eyes have been operated on unnecessarily because of this error in diagnosis, and others continue to be called upon to submit to the same treatment for the same reason. No harm is done, probably, when the operation is performed skilfully, but the conjunctiva has been torn occasionally by careless or unpractised hands, with resulting adhesions, and it is not wise to expose a child to the uncertain psychic effects of an operation when it is not needed. Consequently we should take pains to ascertain positively whether trachoma is present before we operate.

Wherever children spend several hours almost every day crowded together, as in a schoolroom, a large percentage of them are apt to show little round or oval translucent follicles, sometimes yellowish in color, in the lower transitional folds. They arrange themselves in rows when the lower lids are everted, each follicle separate from the others, with no tendency to coalesce, though usually rather crowded near the canthi. Fewer and smaller follicles may be found in the upper folds. The eyes are unirritated. The conjunctiva over the follicles appears to be normal, or perhaps a slight redness may extend into the bulbar conjunctiva, but we cannot say that there is any conjunctivitis. Such a folliculosis is most common in children in the public schools, but is met with in the less crowded private ones. It is found in the city and the country, in every grade of society. The cause is unknown. Some think a follicular condition is natural to the conjunctivæ of young persons. Others believe it to be an expression of the adenoid activity incident to childhood, as it often occurs in connection with enlarged tonsils and adenoids and undergoes involution simultaneously with these. It has been ascribed to an irritant supposed to exist in the stagnant air of a crowded place, and the suggestion has been made that it may depend on a faulty secretion of some endocrine gland. Whatever its cause may be, this school folliculosis does no harm, disappears spontaneously, and leaves no trace.

It is needless to say that the condition resembles the virulent disease trachoma, and unnecessary operations, as mentioned above, have been performed by surgeons who were under the impression that they were dealing with trachoma. The differentiation is not difficult in most cases. True, a conjunctivitis may be added to the folliculosis, making a follicular conjunctivitis, and it is also true that sometimes there is great difficulty in differentiating a follicular conjunctivitis from a trachoma, but when no conjunctivitis is present the diagnosis is easy. We must make sure whether the upper transitional fold is implicated more or less than the lower, whether granules can be seen on the tarsal surface of the palpebral conjunctiva, and whether there are any signs of irritation of the cornea. If the upper transitional folds are full of large, pale granules which have spread into the tarsal conjunctiva, the condition is probably one of trachoma, and this diagnosis is certain if we can find some minute bloodvessels extending into the epithelium of the cornea from its upper margin. If the follicles are small, are congregated mainly in the lower transitional folds, and do not encroach on the tarsal surface of the conjunctiva, there is no conjunctivitis, the cornea is not affected at all, and the child has simple, or school, folliculosis.

THE WAR'S STIMULUS TO PSYCHIATRY AND PSYCHOLOGY.

Not the least hopeful of the signs of the times is the awakening to a practical interest in military activities. It means on the medical side a recognition of the importance of psychiatry and a furtherance of its establishment in its rightful place among medical branches. Medical authorities, military authorities, psychologists, and the government behind them all, which is seeking "to coordinate and mobilize the scientific resources and forces of the country in the interest alike of national defense and national welfare," are coming to an appreciation of the overshadowing presence of mental conditions wherever even surgical or organic medical conditions call for treatment or examination.

In the call to medical service of trained psychiatrists, with their units, as an indispensable feature in this nation's part in the war, there is a note that has been sounding in all the reports from the field of experience of the Allies and of the German armies. Neuropsychiatry has received an attention never accorded it before. Scientific thought has been preparing for it through the advance in rational interpretative treatment of psychopathological conditions. This has revolutionized the treatment of the so called insane and has been extending itself to the discovery and improvement or cure of the multitude of borderland cases, which are recognized as worthy also of attention and possible of cure. The war shows that these conditions demand effective, definite, and, as far as possible, rapid action. Psychiatry has an enormous but a specific task.

Mental Hygiene for July, 1917, contains a survey of the reports from the military field and some practical articles outlining the attitude which is being adopted toward these problems, stating these neuropsychiatric problems and offering suggestions toward a more effective handling of them. Some of these neurotic and psychical manifestations are solely somatic, others psychogenic, others again have to be approached under both aspects. Their variety and uniqueness afford a vast amount of instructive material, which goes far toward increase of interest and advance in this field of medicine.

The emphasis upon psychotherapy and the psychology of all these disturbances shows most distinctly the progressive trend. Observation and therapeutic experience with these cases recognizes the individual mental disposition and the development of symptoms, except perhaps in acute cases resulting from shock which are of temporary duration and emerge from a background of some latent condition of maladaptation or more marked psychopathology. The genetic character of mental disturbance is becoming recognized and applied in the greater care exercised in the examination of recruits and the elimination of those incapable of reacting to the added strain of war. On the other hand the therapeutic value of the strengthening power of these same conditions upon natures whose power of adaptation is thus merely toughened and deepened also bears testimony to reactive ability or disability rather than external circumstances in determining nervous and mental health or disease.

It is noted furthermore in the *Journal of the American Medical Association*, October 3, 1917, that a manual on psychanalysis has recently been published by the professor of psychiatry at Jena with a plea that this movement should receive attention in the present demand for psychotherapy to meet these war conditions. Psychiatry is responding actively to these notes of progress. How about our classical psychology? Is that, too, listening and noting the signs of the times and entering into these new opportunities for understanding actual human reactions?

THE WAR TAX.

The war revenue bill which became a law on October 3d contains many provisions which affect the physician. In common with all classes the special taxes laid on cigars, tobacco, beverages, public utilities, admissions, dues, and incomes will affect the physician. He will be affected in particular by the income tax, but comparatively few physicians will be affected by that amendment to the income tax which imposes a supertax on professional incomes and salaries in excess of $6,000 annually. A considerable number will also be affected by the partnership tax. The mere text of the measure alone filling forty-three pages, is almost as large as that of this issue of the JOURNAL. The measure was subjected to so many changes and amendments that it is involved in language and in many of its details the meaning is far from clear. Just precisely what attitude will be taken in enforcing these obscure provisions will not be known until the Bureau of Internal Revenue has formulated and promulgated its regulations for the collection of the taxes provided for. The reduction of the minimum amount of income subject to the tax, from $3,000 under the old law to $1,000 under the new, for single men, and from $4,000 under the old law to $2,000 under the new, for heads of families, extends the law to include many thousands of physicians who were exempt under the old law. Every physician whose income is above $1,000 must be sure to make the returns required on the official blank which may be obtained from the collectors of internal revenue, for a failure to make such returns will render the person liable to both fine and imprisonment.

SACCHARIN A SUBSTITUTE FOR SUGAR.

Sugar was the first of the daily necessities of life to show in its price the effect of the war. The food administrator has set a maximum retail price of eleven cents a pound for small retailers and ten cents for the larger dealers. Conferences are now being held with a view to the formulation of a system of allotment to begin with the manufacturer and to reach down through the trade to the consumer. In these circumstances the question of the availability of saccharin as a substitute becomes interesting. The use of saccharin in foodstuffs was prohibited by law in Germany and the United States before the war. This prohibition was apparently founded on the idea that saccharin had no nutritive value and would be used in foodstuffs solely for the purpose of replacing sugar, thus cheating the buyer of the expected nutriment. It is true that some objection has been raised to the continued use of saccharin on the ground that it tends to derange the digestive function and in some cases to cause renal irritation. But this view of the effects of the drug has not been uniformly accepted by the medical profession.

Unfortunately the cost of saccharin has increased even more rapidly than that of sugar, and as a sweetening agent it would be even more expensive than sugar without having its nutritive qualities. In the form in which saccharin would be purchased by the public, one grain tablets, saccharin would cost about ninety-one dollars a pound. Accepting the usual standards of comparison as to sweetness 300 pounds of sugar would be required to equal one pound of saccharin. But 300 pounds of sugar would only cost thirty to thirty-three dollars at retail. Therefore even if the two sweetening agents were equally desirable sugar would have the preference at the present prices.

News Items.

Lost on Transport "Antilles."—Two privates in the Medical Department of the United States Army, Melville E. Bradbury, of Boston, and Guy R. Bosworth, of Milburn, N. J., were among the Americans lost when the American transport *Antilles* was sunk by a torpedo on Wednesday, October 17, while homeward bound from France.

Meetings of Medical Societies to Be Held in Philadelphia During the Coming Week.—Tuesday, October 30th, Medico-Legal Society; Thursday, November 1st, Obstetrical Society, Southeast Branch of the County Medical Society; Friday, November 2d, Kensington Branch of the County Medical Society, Physicians' Motor Club (directors).

Mississippi Valley Medical Association.—At the annual meeting of the association, held in Toledo, October 10th and 11th, the following officers were elected: Dr. Francis M. Pottenger, of Monrovia, Cal., president; Dr. Frank B. Wynn, of Indianapolis, vice-president; Dr. Henry Enos Tuley, of Louisville, reelected secretary. Next year's meeting will be held in Louisville.

Microscopical Exhibit.—The New York Microscopical Society announces its annual exhibition, to be held at the American Museum of Natural History, on the evening of Saturday, November 3d, from 7:30 to 11 o'clock. Slides of particular interest representing the use of the microscope in the various arts, sciences, and industries will be shown, and there will be demonstrations by the Department of Health of the practical use of the microscope in safeguarding the public health.

New York Hospitals Face Big Deficit.—Due largely to war conditions, the United Hospital Fund of New York, which raises money for the free work of forty-six hospitals, is in danger of showing a deficit this year which is estimated at $1,000,000. The increased cost of living has cut down the sums usually contributed to this fund and there has been a material increase in the number of patients the various hospitals have had to care for. Among the hospitals which report deficits for the year ending September 30th are the New York Hospital, German Hospital, Volunteer Hospital, the Nursery and Child's, Polyclinic, and the Lying-In Hospital.

Red Cross Appropriation for Relief in Near East.—The Red Cross War Council announces the appropriation of an additional $900,000 for relief work in the Near East through the American Committee for Armenian and Syrian Relief. This appropriation is to cover relief work for the remainder of the year and makes a total of $1,800,000 which the Red Cross has appropriated for aid of the 2,000,000 people in western Asia. The American committee is carrying on relief work not only in Asia Minor and portions of Armenia and Syria in the Ottoman Empire, but also in a large section of Armenia, Russian Caucasus, Persia, Mesopotamia, and portions of Egypt, into which the refugees have fled in large numbers.

New Medical Society Organized in Philadelphia.—The Clinical Society of the Jewish Hospital has been formed in Philadelphia, with the following officers to serve for the first year: Dr. Moses Behrend, president; Dr. A. J. Cohen, vice-president: Dr. C. S. Hirsch, secretary-treasurer; Dr. Irwin Meyerhoff, recorder.

Minnesota State Medical Association.—Dr. Arthur J. Gillette, of St. Paul, was elected president of this association at the annual meeting held in St. Paul on October 11th and 12th, succeeding Dr. Harper M. Workman, of Tracy, Minn. Dr. O. G. Strickler, of New Ulm, was made first vice-president; Dr. E. H. Frost, of Willmar, second vice-president; Dr. M. J. Lynch, of Minneapolis, third vice-president; Dr. Thomas McDavitt, of St. Paul, secretary; Dr. Earle R. Hare, of Minneapolis, treasurer.

New Officers of the Association of Military Surgeons.—The following officers were elected at the twenty-fifth annual meeting of the Association of Military Surgeons held at Fort Benjamin Harrison, October 8-10, 1917: Dr. George A. Lung, medical director, U. S. N., president; Dr. Henry Allers, colonel, M. C., N. G. N. J., first vice-president; Dr. Henry P. Birmingham, brigadier general, M. C., U. S. A., second vice-president; Dr. J. W. Kerr, assistant surgeon general, U. S. P. H. S., third vice-president; Dr. E. L. Munson, colonel, M. C., U. S. A., secretary-editor, and Dr. W. C. Rucker, assistant surgeon general, U. S. P. H. S., treasurer.

Vermont State Medical Society.—The 104th annual meeting of this society was held in Barre, October 11th and 12th, under the presidency of Dr. P. E. McSweeney, of Burlington. Officers to serve for the ensuing year were elected as follows: President, Dr. C. W. Bartlett, of Bennington; vice-president, Dr William Lindsay, of Montpelier; secretary, Dr. William G. Ricker, of St. Johnsbury; treasurer, Dr. E. H. Martin, of Middlebury; auditor, Dr. W. J. Upton, of St. Albans; councilor for the first district, Dr. J. N. Jenne, of Burlington; councilor for the second district, Dr. A. A. Farmer, of St. Johnsbury; executive committee, Dr. W. G. Ricker, of St. Johnsbury; Dr. David Marvin, of Essex Junction; Dr. M. F. McGuire, of Montpelier. Dr. James M. Hamilton, of Rutland, was elected president of the House of Delegates. Next year's meeting will be held in Burlington.

American Association of Electrotherapeutics and Radiology.—This is the new name adopted by the American Electrotherapeutic Association at its recent annual meeting. The following officers have been elected to serve for the ensuing year: Dr. Frank B. Granger, of Boston, president; Dr. V. C. Kinney, of Wellsville, N. Y., first vice-president; Dr. William L. Clark, of Philadelphia, second vice-president; Dr. William Martin, of Atlantic City, N. J., third vice-president; Dr. Alfred T. Livingston, of Jamestown, N. Y., fourth vice-president; Dr. M. G. Campbell, of Atlanta, Ga., fifth vice-president; Dr. Emile Heuel, of New York, treasurer; Dr. Byron S. Price, of New York, secretary and registrar. Board of trustees: One year, Dr. Fred Harris, of Boston, and Dr. John W. Torbett, of Marlin, Tex.; two years, Dr. Jefferson D. Gibson, of Denver, Colo., and Dr. Edward C. Titus, of New York; three years, Dr. J. Willard Travell, of New York, and Dr. Frederic de Kraft, of New York.

Camp Upton's Base Hospital.—The new base hospital, a million dollar establishment consisting of seventy buildings, will be completed this week and ready to treat 1,000 patients. Major Jay D. Whitman, M. M. C., the commanding officer, will have a staff of seventy-five specialists. The chief of the medical service is Major Harlow Brooks, M. O. R. C., of New York, and the chief of the surgical service is Captain William Stickney, M. O. R. C., of Rutland, Vt. The other heads of departments are as follows: Major Howard Fox, M. O. R. C., of New York, hospital adjutant, chief of the service on men's diseases; Major G. Hammond, M. O. R. C., of New York, chief of the neurological service; Captain Russell L. Cecil, M. O. R. C., chief of laboratory; Major Edward B. Dench, consulting laryngologist; Captain Frederick G. Ritchie, chief of the ophthalmological service; Captain Aaron J. Rosanoff, psychiatrist; Captain John R. V. Wolfe, röntgenologist; First Lieutenant John H. Snapp, D. C., chief of the dental service. Each of these heads of departments has a staff of assistants who are all specialists in their respective lines. There will be a medical corps of 300 enlisted men and seventy-five women nurses.

Wisconsin Women's Medical Society.—Dr. Irene T. Stemper, of Oconomowoc, was elected president of this society, at the annual meeting held in Milwaukee on Tuesday, October 2d, and other officers were elected as follows: Dr. Ada Chandler, of Pardeeville, vice-president; Dr. Belle Nair, of Winnebago, secretary and treasurer; censors, Dr. Mary T. Honck, of La Crosse, and Dr. Ida L. Schell, of Milwakuee.

A Merger of Medical Journals.—*Pediatrics*, a semimonthly journal devoted to the diseases of children, has been purchased by the *Medical Review of Reviews* and will no longer appear as a separate publication. The *Medical Review of Reviews* will open a department of pediatrics. Dr. William Edward Fetch, for several years editor of *Pediatrics*, has been appointed a major in the Medical Reserve Corps of the Army and is now stationed at Fort Schuyler.

Fire at Camp Wheeler.—Fire which for a time threatened to spread to buildings occupied by more than three hundred patients in the hospital zone, at Camp Wheeler, National Guard camp for Georgia, Alabama, and Florida, Macon, Ga., on Tuesday evening, October 23d, was put under control after a part of the medical office quarters had been destroyed. The camp fire department, aided by soldiers with buckets, extinguished the flames. No one was injured and the damage, it was reported, was not large.

Venereal Clinic at the Queensboro Hospital.—In order to provide dispensary service in venereal diseases to residents of Jamaica and Flushing, a venereal clinic has been established in the Queensboro Hospital by the Department of Health. One of the wards has been divided by a central partition so that one side is used for an admission room, the other for the examination and treatment of patients. At present, the clinic is conducted on three days weekly, as follows: Monday and Friday, from 3 to 4:30 p. m.; Wednesday evening, from 8 to 9 p. m.

Schools for Gas Defense.—The commanding generals of all National Guard and National Army divisions have been instructed to organize "a school for gas defense" in their units, with a qualified medical officer as director and a chemist and a noncommissioned officer of the medical department as assistants. Additional instructors in the new military science have been ordered to each camp. Construction of a gas house in which the soldiers, wearing the regulation mask, are subjected to the deadly fumes, is going forward under the direction of Brigadier General I. W. Littel. Instructions to the camp commanders explicitly require that "every officer and enlisted man of your division" shall take the gas defense course. The Division of Gas Defense Service in the office of the Surgeon General, U. S. A., has been placed under the direction of Major E. D. Kremers, M. C., with Major Bradley Dewey, S. C., N. A., as assistant.

The Wesley M. Carpenter Lecture.—The annual Carpenter Lecture was delivered at the New York Academy of Medicine, Thursday evening, October 18th, by Major William James Mayo, M. D., of Rochester, Minn., whose subject was The Relation of the Spleen to Some Obscure Clinical Phenomena. (An abstract of this address appears in this issue of the JOURNAL, page 795). The president of the academy, Dr. Walter B. James, gave a brief biographical sketch of the late Dr. Wesley M. Carpenter and paid tribute to his generosity in providing this benefaction for the promotion and spread of medical knowledge. Some of the most noted men in medicine and surgery had delivered these annual lectures, and on this occasion the distinguished group was happily augmented by a name associated the world over with the highest type of surgical endeavor. Colonel Sir Berkeley George Andrew Moynihan, senior consulting surgical specialist on the fighting front of the British Army, especially in abdominal gunshot wounds, was present as an invited guest, and the audience rose in international greeting as the president introduced him, requesting him to make at least a short address. Sir Berkeley paid a tribute to the hospitality and kindness of Americans, but humorously deplored their imposing on a visitor the tragedy of making a speech for which he was unprepared. He recalled his first meeting with Doctor Mayo in 1903, when surgery was beginning the present great advance in knowledge of visceral conditions, with Doctor Mayo well in the van. The work at the Rochester clinic had been a revelation to the world and would remain as an imperishable heritage.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

THE TREATMENT OF BOILS.

By Louis T. de M. Sajous, B. S., M. D.,
Philadelphia.

Dry heat and other agencies or procedures causing local hyperemia have enjoyed considerable favor in the abortive treatment of furuncles. According to Bier, 1909, hot air is by far the most effectual among thermic agents causing an intense active hyperemia, and in 1903, N. Reich was already recommending heated dry air as an abortive measure, both on the ground that the resulting hyperemia increased the resistance of the tissues to bacterial invasion and with the presumpton that the heat applied was directly in jurious to the pathogenic organisms present. Reich's clinical results in early cases seemed to demonstrate the advantages claimed for the use of hot air.

Physical measures are apt to be overlooked by the practitioner where special apparatus is required, but in the hot air treatment of boils the necessary apparatus is simple, consisting merely of an inverted tin funnel at the upper opening of which is attached, preferably in a flexible joint, an outlet tube of convenient length for directing the jet of hot air against the tissues; the heated air is supplied by a double Bunsen burner or large alcohol flame placed below the funnel. In Reich's procedure two or three applications of air heated to about 120° C. are made on the first day of treatment and one application on succeeding days. At each sitting, which lasts only three to eight minutes, a zone of skin surrounding the furuncle is first treated before the hot air is directed over the boil itself. Uncomfortable tension in the infiltrated tissues is much reduced, according to Reich, by the first treatment; suppuration was prevented in all cases in which the treatment was begun early, and reinfection of surrounding tissues in no instance occurred. As Bier points out, tissues protect themselves against an excess of heat not only by pronounced sweating but also by a flooding of the part with rapidly flowing arterial blood, and it is the latter effect which he deems the actual curative agent in conditions benefited by heat. The heat applied should never be such as to cause an uncomfortable burning sensation, but for the best results, it is said, should be as great as the patient can bear without special inconvenience. The degree of heat thus borne varies to some extent in different individuals.

In the treatment of acute inflammatory foci, Bier prefers not to produce too intense an active hyperemia, on the ground that an excessively rapid blood flow will "disturb the natural process of reaction" in the tissues. He believes it to be a fact, however, that in the presence of inflammation agencies causing congestion produce a more passive type of hyperemia, with a slower flow of blood through the vessels, than they do in uninflamed tissues. Thus, when a cupping glass is placed over healthy skin and a moderate degree of suction instituted, an arterial hyperemia plainly results, judging from the bright red color produced, whereas if the same degree of suction is made over an inflamed area, the hyperemia appears much darker. Irrespective of the use of cupping glasses over boils to remove pus or necrotic tissue already existing, suction therapy is to be included among the procedures recommended for arresting boils in their early stages. Enderlen found that it would frequently abort an incipient process, and Bier states that "the suppression of such incipient acute inflammatory foci of infection will always remain the most fruitful field for congestion hyperemia." According to Enderlen, the cupping glass is best employed for about forty-five minutes a day, being applied for five minutes at a time with three minute intervals of rest. The suction should be induced only gradually, and should be carried only to the point of causing the cup to hold firmly to the skin, lest pain result. Furuncles, whether incipient or advanced, are said to heal, as a rule, in five days under this treatment. According to Bier, furuncles on the face, at times attended with danger, are more favorably influenced by a congestion bandage applied around the neck than by the cupping glass.

The last procedure requiring mention among the abortive measures is the local use of collodion. The zone immediately surrounding the centre of the boil is coated with the product at hourly intervals or at least several times in the day, a thick, contractile covering being thus formed over the inflamed area. The centre of the boil remains uncovered. According to Fuchs, 1911, who recommends the measure, the pressure it exerts around the furuncle, the centre of which becomes increasingly prominent, limits the peripheral inflammatory zone and thus projects the patient from general infection. The intensity of the central process then diminishes likewise. Pus may not form or after one to three days a small, yellow spot may appear, which opens, discharges, and then heals. It will be noted at once that this procedure acts in a manner opposite to the suction treatment, causing if anything anemia of the tissues rather than hyperemia. That an artificial anemia of tissues favors the subjugation of a bacterial inflammatory process in those tissues may well be doubted. According to Enderlen, even the slightest pressure on a furuncle is to be avoided in its treatment, tending to drive the bacteria more deeply into the tissues or to disseminate them. Bier has shown, however, that inflamed tissues retain blood with great tenacity when an attempt is made to drive it out; hence it is open to question whether the collodion actually does cause a marked anemia in the underlying tissues. Apparently the most likely explanation of whatever benefit may be derived from collodion is that it acts as splint to the inflamed tissues, keeping them absolutely at rest. The favorable action of rest in overcoming infective inflammation is generally recognized. Complete immobilization of the area may greatly facilitate a perfect walling off of the focus of infection.

(*To be continued.*)

Reactions in Treatment of Bronchial Asthma.—Francis M. Rackemann (*Journal A. M. A.*, September 15, 1917) reports two cases of bronchial asthma due to sensitization to the protein of horsehair, both of which were treated by ascending doses of horsehair protein injected subcutaneously. The initial doses were very minute, but in one case the fourth dose was apparently introduced into a superficial vein with the production of immediate symptoms of anaphylactic response. These included sensations of heat and fullness, symptoms of coryza with running of the eyes and flushed face, asthma, anxious expression, and general urticaria over the arms, chest, and back. Recovery was prompt, aided by a dose of epinephrin. In the second case a typical severe attack of serum sickness developed after the ninth dose of protein. At no time during the period of these reactions, or before in one case, could circulating antibodies be demonstrated in the blood of the patients.

Poisoning by Musterole.—David I. Macht (*Journal A. M. A.*, September 15, 1917) records the case of a young woman who, on the advice of friends, rubbed a small amount of musterole into the skin over one mastoid region for the relief of pain. The day following the application she developed a profuse scarlatiniform eruption over the face, neck, chest, arms, and back with marked itching and burning and irritation of the conjunctivæ. The preparation used is said to consist of oil of mustard, menthol, and camphor in lard or some similar fat. Mustard oil is known as a violent irritant and vessicant which, when absorbed, is capable of producing nephritis or albuminuria, as well as very serious skin eruptions from its local action. Its combination with fatty substances, as pointed out by Macht, is very likely to be followed by its absorption and the use of such a combination is not devoid of danger, and should be discouraged. Mustard plasters are quite as effective for purposes of counterirritation and are vastly safer.

Treatment of Intoxication by Asphyxiating Gases.—Huot and Voivenel (*Presse médicale*, August 6, 1917) describe a form of treatment which gave better results than other methods. Since the lungs are selectively injured by the gases, and the subject succumbs through acute pulmonary edema, he should be dealt with like a case of drowning. Ipecacuanha should be given at once until vomiting results, if necessary to the amount of four or five grams in one half to one gram doses. The patient should also be copiously bled; this may, if desired, be followed by introduction of saline solution to the extent of one third of the quantity of blood removed. Morphine is to be avoided, as it hinders the patient's instinctive efforts to clear the flooded pulmonary alveoli and bronchial tubes. Oxygen only comes third in importance, after ipecac and venesection, as a therapeutic measure. Subcutaneous injection of oxygen may be combined with the inhalations. In severe cases adrenalin was used in conjunction with other heart stimulants. In association with the customary precautions as to immobilization, maintenance of a constant temperature, milk diet, wet cupping, etc., these measures yielded an unusual percentage of recoveries.

New Method of Treating Pernicious Vomiting of Pregnancy.—A. Y. P. Garnett (*American Journal of Obstetrics*, August, 1917) deems pernicious vomiting a development of physiological vomiting of pregnancy due to failure of the patient to produce a ferment antagonistic to the toxemia of pregnancy. Curettage has hitherto been the last resort, usually postponed until the patient has become a poor operative risk. In the first of Garnett's two cases it was with the aim of preparing the patient for curettage that the new treatment, blood transfusion, was applied. In both cases a donor about ten days post partum was selected, the initial transfusion being of 250 c. c., carried out by the Kempton-Brown tube method. In both cases the condition was markedly improved in twenty-four hours. The first patient recovered uninterruptedly, while the second required another transfusion of 200 c. c. two weeks later, after which recovery took place. The writer believes it important to recognize the changes occurring in the blood and urine—albumin, acetone, diacetic acid—as soon as possible in such cases. The acidosis is not, however, a cause but a result of the toxemia.

Points in Treatment of Acute Gonorrhea.—Leslie G. Johnson (*Northwest Medicine*, August, 1917) says that the following is a safe plan of treatment for the general practitioner, though it will not give the results which a specialist can obtain. First examine the discharge to be sure of gonorrheal infection. Then give general directions, including the prescription of a diet without spices, rich pastries, or excess of tea or coffee; forbid all alcohol; prescribe an abundance of water to be taken between meals; keep the patient's bowels open; order a suspensory; and warn him to avoid sexual excitement, to keep off his feet, and to get as much rest as possible. If there is not too much inflammation have the patient urinate, cleanse the meatus and introduce very slowly and gently a soft nosed syringe into the anterior urethra with a ten per cent. solution of argyrol or the following solution:

℞	Protargol,	1.0;
	Glycerin,	15.0;
	Water to make,	125.0.

The solution should be injected until it begins to escape from the meatus, indicating that the anterior urethra is full. This injection is to be held until there is burning and then expelled at once. The injection should be repeated three times daily and the patient seen once a day. The patient should be warned against massaging the penis and urged to hold the solution as long as possible to the point of burning sensation. After two weeks of this treatment make the three glass test for posterior urethral infection. If this is absent continue the treatment until the discharge no longer appears during the day. If smears of the morning discharge and of the fluid from the prostate obtained by massage are then free from gonococci the patient is probably cured but he should be kept under observation for some time. One gram of potassium citrate should be given every three hours during the acute stage until the urine is alkaline and the edema and burning have been relieved. Then 0.6 mil of sandalwood oil in a soft capsule should be prescribed three times daily.

Treatment of Malaria.—E. Marchoux (*Bulletin de l'Académie de médecine,* August 7, 1917) from experience in the treatment of malaria contracted in the Salonica region, believes too much importance has been attached to subcutaneous or intravenous injections of quinine. A too rapid elimination of the drug occurs after these procedures, especially since freely soluble salts are used. Quinine sulphate acts much more efficiently than the more soluble salts, and alkaloidal quinine even more so. Quinine will not arrest a paroxysm, but when the schizonts are just undergoing division, one grain of quinine may prevent fever. When the schizonts are less mature it is better, to avoid ear symptoms, to give four 0.25 gram cachets in the course of twelve hours, the parasites disappearing in twenty-four to forty-eight hours without causing an attack. The sexual forms may cause a recurrent attack two or four weeks later. Rational treatment consists, therefore, in destroying the schizonts as fast as they are produced until the gametes are exhausted. The microscope permits of discovery of the parasites two or three days before the advent of fever, so that they can be destroyed as soon as they appear. Thus it would seem possible to sterilize the organism with only a few grams of quinine. All the patients should be collected in one hospital and their blood examined daily. Those with positive blood examination would receive quinine and be kept at rest, while the remainder could go out and work in the fields. Since the parasites require at least two or three days to multiply sufficiently to cause fever, the patient need be given a gram of quinine on only three days in each week. Suppression of four generations of parasites appears to Marchoux sufficient to sterilize the organism or enable it to overcome the few parasites remaining.

Indications for Mastoid Operation in Acute Otitis Media.—Edward Bradford Dench (*Journal A. M. A.,* September 15, 1917) emphasizes the fact that every case of acute middle ear infection is really one of mastoiditis, although the latter term has become one of terror among many physicians and the laity through inappreciation of this fact. When incision of the tympanum and proper drainage through this channel results in recovery a case of mastoiditis has been cured without the typical mastoid operation, or the practice of posterior drainage as it should be called. The indications for posterior operation are fairly clear in most cases and arise from inadequate drainage through the tympanic incision. If spontaneous severe pain persists for one to two days after free and satisfactory incision of the drum membrane posterior drainage is indicated. Early local mastoid tenderness is not an indication for posterior drainage, but antrum tenderness and recurrent mastoid tenderness, after a free interval, are absolute indications. Otoscopic examination showing evidence of insufficient drainage is a most valuable indication for posterior operation. Bacteriological examination of the discharge is of some value, for Streptococcus capsulatus infection is very prone to require posterior drainage. Sudden cessation of aural discharge and the persistence of a very profuse discharge for over three weeks are both indications of importance, as is the duration of the inflammatory process, which should not exceed three weeks after operation or five or six after spontaneous rupture of the drum. Cases with a history of repeated incisions of the drum for some pain and persistent discharge should be drained posteriorly, as should cases with marked impairment of hearing lasting for more than two to three weeks. Posterior drainage is also indicated at once when there is involvement of the static labyrinth or evidence of meningitis. In rather indefinite and obscure cases Röntgen examination will often show a persistent focus of purulent inflammation.

Treatment of Infected Wounds of the Knee.—F. Achille (*Gazetta degli ospedali e delle cliniche,* June 24, 1917) from experience on the Italian front is of the opinion that in cases without bone lesions, wide lateral arthrotomy with a counter opening posteriorly in the popliteal space should be the method of choice. When the radioscopic examination shows the existence of fracture of the articular heads or the presence of foreign bodies, it is better to open the joint by Mackenzie's incision. In every case it is necessary to immobilize the joint and for this purpose plaster of Paris may be used in rebellious cases uncomplicated by osteomyelitis. Small foreign bodies when imbedded in the bone are better left alone, as extraction may necessitate extensive resection of bony tissue. Recent wounds respond well to early incision and irrigation with hypochlorite solution. Amputation should be reserved for extreme cases, especially those where an ascending osteomyelitis threatens life.

Blood Pressure in Malarial Fever.—Monier-Vinard and Caillé (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris,* March 22, 1917) report a sphygmomanometric study of seventy-eight cases, for the most part only recently infected with malaria. A marked reduction in blood pressure was noted in all cases, the average systolic pressure being 105 millimetres of mercury with the Pachon instrument, and the average diastolic, 55 millimetres. During paroxysms the systolic pressure rose with the chill, and remained high until the stage of sweating. Commonly the pressure reached 180 to 200 millimetres, but it often rose much higher, even beyond the range of registration of the instrument. The diastolic pressure, on the other hand, always fell during the attacks, generally to 20 or 30 millimetres, and sometimes even to nil. The pulse pressure was thus very great, averaging 120 millimetres in violent paroxysms. In algid cases the diastolic pressure was very low and the systolic remained below normal. After a tertian attack the systolic pressure stayed somewhat low on the next day. In a period following cessation of febrile attacks both pressures very gradually rose. A peculiar observation was made in that at times, even in the absence of febrile attacks, the blood pressure underwent from one day to the next changes similar to those occurring during a paroxysm. This phenomenon generally disappeared after fifteen to twenty days of apyrexia. The authors deem these findings confirmatory of the postmortem investigations of Armand-Delille, Paisseau, and Lemaire, who found the adrenal glands frequently impaired in malaria. They approve of the intravenous administration of adrenalin in these cases.

Administration of Emetine.—P. Figdor (*Lancet,* August 18, 1917) points out that the subcutaneous injection of emetine and its salts almost invariably gives rise to severe local pain and tenderness, followed or accompanied by redness, swelling and deep induration which often makes muscular movement agonizing. If the solutions are injected deeply intramuscularly into the deltoids or gluteals all pain is avoided, while occasionally there is some slight tenderness for twenty-four hours at the site of injection. The injections can be given into alternate arms daily without any difficulty, the same site being used repeatedly at intervals of forty-eight hours.

Devices for Melting Paraffin for Burns.—Torald Sollmann (*Journal A. M. A.,* June 23, 1917) finds that an ordinary pint size electrical "food warmer" for heating nursing bottles is a convenient device for melting paraffin. If filled one half to two thirds full of paraffin it will melt it in three minutes and if the current is shut off the temperature will be just right for application after two minutes and it will stay so for ten minutes. Even better is an ordinary double glue pot. The outer pot should be two thirds filled with sodium acetate, which melts at 58° C. and retains about that temperature for three hours under the conditions mentioned. This "acetate thermostat" is specially valuable in shops and elsewhere where large numbers of men have to be cared for in a short space of time. It is cheap and requires no attention.

Volkmann's Contracture.—J. K. Simpson (*Journal of the Florida Medical Association,* August, 1917) says that this condition develops when an injury in the region of the elbow is put up in splints, adhesive plaster, plaster of Paris, or in the position of acute flexion. There is an acute swelling of the soft tissues due to extravasation and edema, followed by venous congestion and some thrombosis in the smaller vessels. At this stage there is intense pain, the fingers become somewhat cyanotic and edematous and later are numb and stiff. This is the time to treat Volkmann's contracture. Not a minute should be lost in taking down the dressing and putting the arm up in semiflexion with elevation, giving gentle massage, and possibly splitting the fascial covering of the muscles of the flexor group, either through open incision or subcutaneously. If treatment is not undertaken at this stage a permanent contracture develops with shortening of the flexor muscles, fibrosis of the muscles, shortening of the anterior ligaments of the finger joints, and lengthening of the posterior ones. At this stage probably the best form of treatment is lengthening of the contracted tendons by a sliding tenoplasty followed by extension of the contracted joints and fixation in a position of more or less extension, which is increased gradually by using Taylor's splint to provide elastic traction on the flexed fingers. Then physical treatment to restore the function of the damaged muscles should be instituted. In many of the cases there is also some involvement of the nerve in scar tissue which should be removed and the nerve covered by some protective such as fat or egg membrane.

Pure Phenol in Septic Wounds.—A. Ernest Maylard (*British Medical Journal,* June 16, 1917) urges the use of pure phenol for the treatment of septic wounds in which there are ill defined and attached portions of septic and dead tissues. Such tissues cannot always be successfully removed surgically as they are often difficult to recognize and define. The usual antiseptics and especially the newer ones now so popular do not penetrate these niduses of infection, but this can readily be accomplished by the application of pure phenol to the entire wound surface. This application not only effects complete sterilization of the wound surface, but also greatly relieves the pain. It has given excellent results in the severely infected military wounds.

Use of Traction Suture Plates.—R. R. Kime (*Journal of the Florida Medical Association,* August, 1917) recommends the use of aluminum traction plates in the closure of many abdominal wounds. The plates have the advantages of providing perfect coaptation of the wound edges, of minimizing the danger of infection along the suture lines, and of preventing the formation of ugly scars from the cutting through of traction sutures. The plates should be applied by means of a single silkworm gut suture for each plate, passed through the skin about one inch from the incision and carried deep into the subcutaneous fatty layer. In clean cases the wound is closed by the plates, but where there is drainage or the likelihood of infecton the sutures through the plates are not tied until the drainage is removed or the danger of infection seems to have passed. In hernia cases, and others where there is likely to be much strain, the sutures holding the plates should be made to include the sutured abdominal fascia by means of a figure of eight loop passed through the ridge of fascia at the suture line.

Continuous Aspiration in Empyema.—J. S. Dauriac (*Bulletin de l'Académie de médecine,* August 7, 1917), after two years' experience with this procedure, applied it with marked success in four cases of traumatic empyema, two due to deep shell wounds of the chest and two to bullet wounds. Recovery occurred on an average in two weeks. A rubber tube one and one half metres long was passed into the most dependent portion of the chest and the margins of the wound drawn together round it or the opening racked with small compresses. The free end of the tube, passed through the dressing, was adapted to the lateral outlet tube of Tuffier's spiral horn shaped device. One and one half metres above the level of the bed a two litre tank filled with water was placed, and from it the water dripped rapidly through a rubber tube into the horn, producing constantly a vacuum in the lateral outlet of the latter and the pleural tube. The rate of dripping was regulated with a Murphy device and pinch cock. If the apparatus at any time gets out of order, the patient is aware of it at once, becoming somewhat oppressed owing to the fact that the lung is no longer held by negative pressure against the chest wall. The dressings are never soiled, and there is no odor. The previously cachectic patients are very promptly restored to a healthy appearance.

Sluder Operation for the Removal of Tonsils.—Clarence Porter Jones (*Charlotte Medical Journal,* July, 1917) claims the following advantages for this operation: The hemorrhage is very moderate, the dull cutting blade crushing the bloodvessels; the tendency to subsequent bleeding is practically nil; there is prompt healing because of the slight traumatism; there is no scar left after operation, which can be performed very quickly within three to ten seconds after the ether cone is removed.

The Tonsil Question in Children.—G. W. Boot (*Annals of Otology, Rhinology, and Laryngology,* March, 1917) believes that if a child with acutely enlarged tonsils is put on syrup ferri iodidi for two or three weeks, a wonderful reduction in size often follows, and tonsillectomy may not be necessary. When tuberculosis of the cervical glands exists, he thinks it a mistake to remove the infected glands and leave the tonsils, believing the removal of the tonsils is really of more importance than the sacrifice of the cervical glands.

Pulmonary Tuberculosis Treated by the Induction of an Artificial Pneumothorax.—Paul H. Ringer (*American Journal of the Medical Sciences,* September, 1917), analyzing his results in thirty cases, obtained complete success in seven cases; complete success in stopping hemorrhage in three; partial success in two; prolongation of life for an appreciable period of time in four; and failure in fourteen. The failures were due in ten cases to the presence of adhesions which form the great impediment to the beginning and the completion of a pneumothorax.

Hypodermic Use of Chalmoogra Oil in Leprosy.—Nathaniel Bercovitz (*Journal A. M. A.*, June 30, 1917) followed the recommendations given by Heiser for the hypodermic administration of chalmoogra oil in a series of fourteen cases of advanced leprosy, both anesthetic and mixed types being included. The method of administration proved very satisfactory in causing no local irritation, no gastric symptoms and no systemic reaction except after the initial dose. Both forms of leprosy responded to the treatment quite favorably, the tubercular more promptly than the anesthetic. Anesthetic areas became hypersensitive and finally regained tactile sensation, large ulcers healed, and leprous nodules underwent degeneration and cicatrization under the influence of the oil.

Rubella, or German Measles.—Charles R. Box (*Practitioner,* June, 1917) says that the patient should be isolated and confined to bed until the temperature is normal and the rash and catarrhal symptoms have disappeared. Seven days from the appearance of the rash all infectivity has ceased, provided that there has been no persistence of faucial, nasal, respiratory, or other symptoms. A period of ten days is advised by the Medical Officers of Schools Association. As the incubation period is long, a quarantine of three weeks is necessary for contacts, or they may be isolated from the tenth to the twenty-first day from exposure. By keeping careful watch for mastoid and occipital glandular enlargement early warning may be gained of the imminence of the attack.

Cinnamon as a Prophylactic in Measles and German Measles.—W. B. Drummond (*British Medical Journal,* June 9, 1917) says that a course of cinnamon is an excellent prophylactic against measles, confirming a previous observation. Its prophylactic use in German measles was tried in the cases of twenty delicate children who were exposed to an infected nurse. Each of the children received powdered cinnamon with his food night and morning and no case of the disease developed among them. The treatment was continued for about three weeks. The drug, in the form of twenty-five drop doses of the spirit, is also one of the most effective remedies for acute coryza.

Immune Serum in Poliomyelitis.—Edward Taylor (*New York State Journal of Medicine,* June, 1917) treated nineteen patients by intraspinal and intravenous injectious of immune serum obtained from perons who had the disease within two years. Two died, one having been *in extremis* at the time of the first injection; three were not affected; six showed prompt checking of the further progress of the paralysis; and eight recovered completely and promptly. The serum was prepared by allowing aseptically collected blood to clot, removal of the serum, addition of 0.2 per cent. of tricresol, standing for twenty-four hours, and filtration through a Berkefeld N filter. It was then placed in glass tubes and sealed hermetically.

Cervical Repair Following Confinement.—Titian Coffey (*American Journal of Obstetrics,* August, 1917) advocates routine examination of all cases on the ninth or tenth day after confinement with a view to repair of the cervix if required. About eighty per cent. of all cervices are found damaged at this time, when the size of the cervix has practically returned to normal. Visual examination through the speculum is essential for finding out the character and extent of injury. At operation the patient is placed in the exaggerated lithotomy position and is given an external flush of 1:2000 bichloride solution, followed by sterile water, and an internal douche of one per cent. lysol solution. No internal scrubbing is permitted. A trivalve speculum is then carefully introduced, the cervical lips seized with a single grasp volsellum and drawn into view, and the trivalve speculum replaced by a light weighted speculum. The torn lips, carefully sponged off, are then injected with one per cent. novocaine solution, to which has been added one drop of 1:1000 adrenalin solution. Not more than ten c. c. is used. The edges of the cervical lips on the left side are now trimmed with curved scissors and gone over with a large, sharp curette. No. 2 ten day chromic sutures are then inserted. Generally an interlocking suture is used, beginning a little above the upper angle of the tear and running down to the tenacula, previously placed accurately in the centre of the lips. The opposite side having been similarly repaired, a uterine sound is passed, the perineal sutures removed, another lysol douche given, and the cervix pushed far back in the pelvic cavity. The patient is at once placed in the Fowler position, to insure drainage from the uterine cavity. The kangaroo walk is begun on the tenth or twelfth day.

Miscellany from Home and Foreign Journals

Immediate Effect of Cigarette Smoking.—John Parkinson and Hilmar Koefod (*Lancet*, August 18, 1917) conducted a series of observations on soldiers between seventeen and thirty-two years of age to determine the immediate effects of smoking. The men were in two groups, one consisting of ten perfectly normal men in military training; the other of twenty men complaining of undue breathlessness, and often also of precordial pain, palpitation, vertigo, and exhaustion. Observations were made before, during, and after smoking four or five cigarettes in about forty minutes. Observations were made before and after exercise both preceding and following smoking. Demonstrable effects were produced in nine of the ten controls and in all but three of the patients, all three being noninhalers. The average pulse rate rose nine beats in the patients and six in the controls after smoking. No irregularity was observed from smoking. The respiratory rate was not affected in either group, save for some slight reduction in the controls. In both groups the average systolic blood pressure was raised by smoking by about five to ten millimetres Hg. The effects recorded appeared within the first five minutes of smoking and persisted throughout without further increase. Exertion tests showed a higher pulse rate after smoking than before in the patients, and in half of them there was more breathlessness than before. In the controls the pulse rate was about the same following exertion after smoking as before and the respiration was unaffected except in two in whom there was slight increase of breathlessness. While excessive cigarette smoking is not the chief cause of "soldiers' heart" it would seem to be an important accessory factor, according to the authors.

Report on Poliomyelitis. — Charles Ogilvy (*Journal A. M. A.*, September 1, 1917) presents his observations in a series of 110 cases of poliomyelitis, observed from their onset to the present time and occurring in a community of about 35,000 inhabitants during the epidemic of last year. The first case developed on July 13th and the last on October 25th. The first was definitely traced to a carrier from an infected district of Brooklyn. Seventeen of the cases occurred in families or in houses where there were other cases, but only six developed long enough after the first cases to justify the belief that they were infected from them. A study of the incidence of the disease pointed to its being contagious, rather than due to insect carriers. Over seventy-seven per cent. of the cases occurred in children under five years old and only 2.7 per cent. in persons over fifteen years of age. The sexes were affected equally. Early diagnosis was not difficult, the symptoms being more or less similar in the majority of cases. There was usually a history of from one to four days of illness with fever, vomiting and pain in the head, neck, back, or extremities. The child was usually found lying on his side with his head thrown back. He was irritable when aroused and in eighty-one per cent. of the cases there was stiffness of the neck. The reflexes were usually disturbed. Diagnosis was made certain by lumbar puncture, which showed typically an increased cell count in the spinal fluid. In none of the suspected cases, in which the spinal fluid was found normal with a cell count of les than twenty, did poliomyelitis develop. The height of the fever and the number of cells in the spinal fluid were not found to bear any constant relation to the extent or severity of the paralysis which ensued. Paralysis occurred within the first few days of the attack, if at all, and when it had not developed by the fourth day it was unlikely to occur. In eight patients there was facial paralysis only, and in only two with other paralyses did facial involvement occur. There was a mortality of seventeen per cent. and all of the deaths but three occurred during the first five days of illness. Immune serum was given to fifteen of the patients, but no benefit was attributable to its use. Epinephrin was also used without benefit. The most important point in the treatment of the disease seemed to be very prolonged rest and immobilization of the affected parts of the body, and massage was not begun until the third or fourth month in the later cases with better results than were obtained by starting it earlier.

Fatigue and Alcohol.—A. F. Stanley Kent (*Lancet*, July 28, 1917) discusses the relation between these two factors with special reference to the question of the more or less continuous and frequently repeated use of alcohol by the industrial class of workers. This industrial form of alcoholism differs considerably from the occasional sprees common to persons in many walks of life and is a very serious problem from both the public health and the economic points of view. The gist of Kent's contention is that industrial alcoholism is largely the product of the conditions of life and work in the industries themselves, since it varies in form with the different types of work and affects women much as it does men when the former enter a provocative industry. The chief causative factors seem to be poor living conditions in the factories and the workmen's homes, insufficient time for meals and recreation, too prolonged periods of work without relief, and the deadly monotony of repetition. Of these factors the most important are those of living conditions, specially with reference to wages and the chances for wholesome recreation, for with coördinated improvement in these two factors in some works of large size the proportion of alcoholism has fallen remarkably. There is a further element to be considered, namely, that fatigue provokes indulgence in alcohol for the sake of the temporary sense of stimulation which its use gives, and, *per contra,* the use of alcohol is followed by an increased sense of fatigue after its initial effects have passed off. The chief remedies for industrial alcoholism would seem to be an increase in the wages of the workers, the provision of better home and working conditions, the shortening of the individual periods of continued work, and the provision of wholesome sources of recreation and amusement for the workers.

War Nephritis.—F. C. Davies and R. P. Weldon (*Lancet,* July 28, 1917) found definite evidence of renal disease in fifty-three out of 173 medical and surgical cases coming to autopsy, while during the same period there were 664 cases of war nephritis admitted to the same hospital. Of the fifty-three autopsies twenty-six were in cases which had been diagnosed as being war nephritis, giving a mortality of about four per cent. It is probable that many of the other cases with renal damage were also war nephritis, although they were not so diagnosed during life. The kidneys were studied microscopically in cases of renal damage and constantly revealed denegeration of the epithelium of the convoluted tubules without interstitial inflammatory changes or changes in the glomeruli or collecting tubules. The epithelial degeneration was usually very marked and contrasted sharply with the absence of inflammation. In practically every case there was also considerable fatty change in the tubular epithelium, but none in the glomeruli or collecting tubules. Aside from the microscopical changes the gross appearance was fairly typical. The kidneys were usually enlarged and flabby, the capsule stripped easily, and the cut surface seemed cloudy and had everted edges. Other organs were often involved in the fatal cases as shown at autopsy. The lungs frequently showed bronchopneumonia of greater or less extent, sometimes infarcts; there was usually pleural effusion; the liver was usually enlarged and somewhat fatty; the suprarenals were enlarged, specially in the cortical portion, where there was much fatty change; and the thyroid was sometimes a little enlarged. These pathological features corresponded well to the clinical phenomena. Thus the usual polyuria of the developed disease harmonized well with the intact glomeruli and damaged convoluted tubules; pulmonary symptoms were frequent, especially in the fatal cases; and there were the common symptoms of severe systemic intoxication.

Significance of Disorders and Diseases of the Heart in Soldiers.—T. Clifford Allbutt (*British Medical Journal,* August 4, 1917) emphasizes the fact that the main result of the investigation recently reported by Lewis and his associates on the subject of the disorders of the heart in soldiers is to strengthen the belief that true heart strain is of rare occurrence. All the evidence which has been accumulating goes to show that the normal heart does not suffer damage or undergo dilatation as the result of strain, and that some infectious process or some febrile condition is the true basis of damage to the heart as the result of exertion. The irritable heart of soldiers is not heart strain and it is proposed to call the condition "ponopalmosis," meaning palpitation on effort. The shape of the heart is not altered and the dyspnea present in such cases is not chiefly dependent upon the state of the heart. Transitory murmurs are common and they must be carefully distinguished from those that have true significance. The soft systolic murmur heard along the left costal arch and that over the pulmonary artery are of no importance; but murmurs heard in the mitral and tricuspid areas are very commonly due to some anatomical alteration. In convalescence from some infection such systolic murmurs signify valvular leaks and should be treated as such. They may disappear or persist, but in either case many years later cardiac failure is prone to develop if no care has been taken to save the heart from undue work. Another matter of importance is that of latent mitral stenosis. In many cases the first sound will seem "murmurish," not quite clear, or divided with the added sound before the true first sound. In such cases a faint, but distinct, thrill is usually present and sooner or later there develops a more and more definite presystolic murmur of frank mitral stenosis. This short presystolic thrill must be very carefully timed to distinguish it from the short systolic thrill which is so commonly felt in cases of "soldier's heart" and which is there possibly due to some relaxation of the papillary muscles.

Diagnosis of Acute Pancreatitis.—William Linder (*Journal A. M. A.,* September 1, 1917) emphasizes the importance of recognizing acute pancreatitis at an early stage of its development when the most good can be done by operation. In at least half of the cases the condition is associated with gallbladder disease and the association is of importance in diagnosis. In the moderately severe and the mild types the diagnosis is made by the careful analysis of each symptom and the correlation of all the symptoms. The most characteristic features are the following. Persistent pain is more intense than in perforated gastric or duodenal ulcer or perforated gallbladder. It differs from that of renal colic in that the patient lies perfectly motionless during the acute attacks in pancreatitis. The pain continues to increase in severity from the time of its onset, if constant, of a splitting character, usually located deep in the midepigastrium and radiates to the back, but never to the right shoulder. Vomiting accompanies and follows the pain, ceases within a brief period and is relieved by gastric lavage. Collapse and shock vary in intensity but occur at the onset and the shock is very prolonged. When it is not accompanied with signs of perforative peritonitis it is very suggestive of acute pancreatitis. There is a characteristic cyanosis and lividity of the face, the abdominal wall, and the flanks. On physical examination there is a tense, rapidly increasing distention of the abdomen, specially in its upper part, and tenderness is located in the midepigastrium. There is no rigidity at the onset, but it soon appears as a transverse resistance in the epigastrium and left rectus muscle. A tumor never appears earlier than the third day, when it is felt as an indefinite mass which has a dull tympanitic percussion note. There is also tenderness in the left costovertebral angle which is extremely characteristic. The temperature is normal or subnormal at the onset and fever develops only when there is suppuration or gangrene. On opening the abdomen the typical findings are an odorless, "beef broth" fluid in the peritoneum; spots of fat necrosis; marked cyanosis of the small intestine with absence of mesenteric thrombosis or mechanical obstruction; a granular or gritty feel to the omentum; and a soft, enlarged, thickened pancreas with areas of fat necrosis or of hemorrhage. Operation and drainage, if done early, offer a good prognosis, while if delayed the outlook is far less favorable.

Disturbed Pupillary Reactions Arising from Nearby Shell Explosions.—G. Guillain and A. Barré (*Bulletin de l'Académie de médecine,* August 28, 1917) noticed disturbances of the pupils in twenty cases in the absence of any apparent injury to the eye or wound elsewhere. In some instances the pupils were dilated from the first and failed to react to light or accommodation; in others, the pupils were unequal, and one or both failed to react to light. At times the Argyll-Robertson pupil apparently existed, or a paradoxical reaction to light was observed. Finally, in some there was anisocoria without any disturbance of the reflexes. In the lighter cases of concussion from nearby explosions of large shells, these disturbances caused no subjective inconvenience and did not interfere with vision. They usually passed off within three to twenty days, but in some cases persisted longer. In one case the pupils were still unequal fifteen months after the concussion, and the reflexes still sluggish. In six cases a xanthochromic cerebrospinal fluid, with slight meningeal hemorrhage, accompanied the pupil disturbances. It is not clear whether, in the majority of cases, the action of the concussion in causing the pupil disturbances is exerted on the cranial nerve roots or more peripherally.

Membranous Pericolitis and Irregular or Excessive Fusion of the Mesocolon and Mural Peritoneum.—A. E. Benjamin (*Saint Paul Medical Journal,* August, 1917) is convinced that the various congenital defects forming folds or bands about the bowel are influenced by the condition of the bowel itself. When stasis exists one may expect, at one or several colonic flexures, an inflammatory reaction and accentuation of the kink. These cases usually suffer from colitis and there is high toxicity of the colon contents. The parietocolic fold of Jonnesco may cause little interference with the colon; but when it is excessive or involves the transverse colon, sooner or later colonic muscle tone is impaired, colitis supervenes, and stasis results. When cecal dilatation occurs from an attendant hepatic kink, colic or gallstone symptoms are noted. The fold of Treves may so constrict the appendix as to cause an attack of appendicitis. Similarly the ileopelvic band of Lane, becoming thickened and shortened, may interfere with the function of the ileum. Occasionally bands occur on the left side, from fusion of the mesentery of the descending colon with the peritoneum. Lack of abdominal muscle tone, causing visceroptosis, may aggravate preexisting kinks. The harmful results of these congenital bands can often be prevented by their recognition in early adult life and the institution of proper diet and hygiene. The x rays demonstrate a surgical condition in many instances, yet all known medical and hygienic measures should usually be employed at first, unless actual obstruction or an emergency arises. Carefully chosen cases show marked results and positive cures from operation, which should be performed only to relieve the constricting bands, without uncovering an unnecessary amount of bowel surface. The patients should be allowed to lie face downward after operation, to lessen gas accumulation and minimize intraabdominal tension. Postoperative supervision of diet and habits is essential for good results.

Agglutination Tests for Typhoid in Inoculated Subjects.—R. P. Garrow (*Lancet,* July 28, 1917) criticises the contentions of Dreyer and Walker and their associates as to the value of the so called quantitative method of agglutination in the diagnosis of typhoid fever in inoculated subjects. He points out several fallacies which seem to have been overlooked or ignored by the authors of the method, such as the very considerable range of technical error, the unestablished value of fluctuations as diagnostic criteria, the "reduction factors," and the changes produced in the agglutinins of immunized persons by other intercurrent infections. There are also serious errors associated with the so called standardization of the standard cultures which cannot be overcome by present methods. Finally, in the interpretation of results much laxity has been shown by the supporters of the method, and upon close analysis of some of their cases it is evident that they have not proved them to be typhoid, even accepting their own criteria. The agglutination test can, however, be made of value from a quantitative standpoint for the examination of an individual case, or a series of cases occurring in a brief period of time by using the same culture for all estimations and maintaining similar ranges of dilution and other factors constant. But, even with these refinements, the value of quantitative agglutination tests for the diagnosis of typhoid fever in inoculated subjects has not been established and the blood culture remains the only absolutely certain method, although it often fails to result positively.

Left and Right Sided Diastolic Murmurs in Aortic Insufficiency.—F. Trémolières, L. Caussade, and J. Toupet (*Presse médicale,* August 9, 1917) assert that the prevailing tendency to look for the murmur of aortic insufficiency only in the second right intercostal interspace frequently results in an incomplete or mistaken diagnosis. Among sixty-six cases they studied, in only ten was the diastolic murmur heard loudest in the second right interspace; in twenty-six it was loudest to the left of the sternum, in twenty directly over the sternum, in nine at the ensiform, and in one at the apex. While in many instances the accompanying signs of aortic insufficiency obviate mistaken interpretation of the murmur, in some these signs are doubtful, and the diagnosis can only be reached by radioscopy, which shows an enlargement and special conformation of the heart, characteristic of aortic insufficiency. Skoda showed that murmurs are always loudest at the nearest point of the chest wall, and the aortic orifice is actually nearest to this wall beneath the left half of the sternum, at the level of the third or second left interspace. The cases in which the murmur proved loudest low down are accounted for by the course of the aortic infundibulum in relation to the chest wall. The classic aortic murmur, loudest to the right of the sternum, occurs, according to x ray studies made under the authors' direction, in cases in which the right side of the heart is dilated, the aorta being correspondingly displaced in that direction. This was shown in ten cases. In seventy per cent. of cases with murmur on the left side the aortic lesion was of recent origin—one to five years; in eighty per cent. of cases with the murmur on the right side, it dated back five to thirty years.

Proceedings of National and Local Societies

THE NEW YORK ACADEMY OF MEDICINE.

Stated Meeting Held October 4, 1917.

The President, Dr. Walter B. James, in the Chair.

Dr. Walter B. James said that it was easy to see from the size and enthusiasm of the audience the widespread interest in the subject of the evening, an interest characteristic of good Americanism. It was a great pleasure to him to be able to introduce to such an audience a gentleman who was better qualified than any other man living today to speak on the subject of the principles of the treatment of wounds—Dr. Alexis Carrel.

Treatment of Infected Wounds.—Doctor Carrel prefaced the exhibition of a number of lantern slides showing the extraordinary results of chemicotherapy at Compiègne, France, by a general explanation of the principles of the treatment. He said the method was the result of about two years' team work of a group of men in France with whom he had had the privilege of being associated. Work of that kind could be done only by men trained along different lines, and this group was composed of five surgeons, one physicist, two chemists, and two bacteriologists. They devised a method, the purpose of which was the prevention or the suppression of suppuration, the sterilization of the wound, and the closing of the wound. The result was success. The method was not characterized by any new principles, surgical procedure, or chemical substance. It had given new results, however, which had been surprising, because the old procedures were systematized in a new way. This was brought about by the institution of two processes. Science could progress only when the processes employed were effective; therefore the treatment of infective wounds could be said to have progressed.

The two processes were measuring the volume of infection and sterilizing the wound and applying the formula. The volume of infection, the regression of the infection, and the efficiency of the chemical substance were measured with accuracy for the benefit of a large number of patients, but it was only after many observations and clinical experiments that this was accomplished. The method of the sterilization of wounds could be defined as a combination of processes by which a wound was sterilized, brought under bacteriological control and closed. The four different processes were mechanical sterilization, chemical treatment, bacteriological control, and closing. Not one of these processes could be suppressed without suppressing the whole. A wound could not be sterilized unless it had been properly prepared mechanically; bacteriological control could not be effected without the chemical treatment; the wound could not be closed until bacteriological control had been established. In applying one process, every process should be applied and in the proper way. A different technic, however, was employed with wounds of differing types, such as superficial wounds, penetrating wounds, through and through wounds, and wounds of the extremities or amputation stumps.

Doctor Carrel then described the four processes in detail. These are given in the paper by Doctor Loewy, Doctor Carrel's assistant, in this issue of the Journal. There were three important considerations in applying the antiseptic solution: contact with every portion of the wound; suitable concentration throughout the entire wound, and prolongation of this constant strength for a suitable period. Time was a very important factor in restoring the wounded to health; the sooner the wound was closed the better. No special method was used in closing the wound, but usually one of three methods was chosen: strapping the wound with adhesive plaster, elastic traction where there was loss of skin, and stitching the wound without drainage which was done practically in every case. Where suppuration had continued for a long time before the patient was brought to the hospital, the wound was closed in two stages. Doctor Carrel then threw upon the screen reproductions of a number of charts of bacterial curves. Many of these were as characteristic as those of some infectious diseases, such as typhoid fever. There was usually a sudden drop after forty-eight hours of treatment. Where there was necrotic tissue the bacterial curve remained high for two, three, and six days and then dropped suddenly. In some of the cases of fracture there was a period of hesitancy before the curve dropped. When the wound still contained some foreign bodies there was a characteristic curve; it was high at first, dropping after ten days; operation at that time with removal of the foreign body caused the curve to go up again temporarily.

Serial pictures were then shown of the wounds when first brought into the hospital and at the time of healing. Ninety-eight per cent. of the cases of wounds of the soft parts were sterilized in from three to ten days. In wounds of the bone the percentage was not so high, but it usually required only fifteen days to complete the process. Ninety per cent. of all the wounds received were closed on an average in twelve days. When the wound came in in a suppurative condition it was eventually sterilized, but it took longer. It took fifty per cent. longer to sterilize a wound received at the hospital after twenty-four hours than one received in twelve hours. Sixty per cent. of fractures of the thigh, though already suppurative, could be sterilized and closed. The history of one case was particularly interesting. It was a badly comminuted fracture of the superior extremity of the humerus directly below the head. The superior opening was cleansed carefully after being freely laid open; a counter opening was made on the anterior surface of the upper arm to remove the metal, and all the small fragments of bone that were lying free were removed. Several small splinters had entered the medullary canal which in consequence had to be curetted so that there was an extensive loss of substance. Three instillation tubes having been placed in the wound, in twelve days the temperature was normal and no microbes could be detected on ten microscopic fields. On the fifteenth day, Beck's paste replacing the loss of bony substance, the wound was closed. On the twenty-first day union was perfect and movement was not restricted in the arm in any direction.

Doctor Carrel closed his address with a summary of his three years' work, at first with the ambulance service and afterward in the hospital at Compiègne. Suppuration of wounds could always be suppressed or prevented so that this condition should be a relic of the past in all hospitals; amputations on account of infection could be avoided in most of the cases, at least fifty per cent. of such operations being unnecessary; the treatment of all wounds could be shortened two thirds and this meant a great saving of valuable time. The method was precise and required care and special training, but that was observed everywhere as well as in science, in medicine and in surgery. By a little systematization, in specialized work, old results were improved tremendously, the duration of treatment shortened, and many deaths prevented.

Dr. Abraham Jacobi said that France had not only been a friend to America in sending her men to fight for us, but in sending us teachers, one of the most appreciated being the gentleman who had this evening made such a splendid demonstration of of what had been going on in the field of war. He felt that the president should tender the grateful appreciation of the Academy to Doctor Carrel for this opportunity.

Doctor James said that he hardly considered it necessary, after Doctor Carrel's address, for any one to tell him how deeply it was appreciated, but he put the motion requesting those in favor of the Academy of Medicine tendering hearty thanks to Doctor Carrel for his splendid presentation of the subject, to say, "Aye." The audience responded with one voice.

SECTION IN GENITOURINARY SURGERY.

Meeting Held April 18, 1917.

Dr. A. R. Stevens in the Chair.

Genitourinary Infection Including Tuberculosis and Cancer Secondary to Dental Infection.—Dr. Sinclair Tousey, of New York, stated that apical abscess forming usually about the apex of a dead tooth with a gangrenous pulp or "nerve" was one of the principal forms of dental infection. Pyorrhœa alveolaris in which suppuration destroyed the alveolar process forming the socket for the tooth was another common form of dental infection. The dental abscesses might exist for years without local evidence perceptible to the patient or the dentist. These concealed infections might even be found in persons whose general health had not been affected. While the latter statement must be taken with a grain of salt, it was undoubtedly true that the foci could usually be discovered by the x ray and cured by treatment or extraction before serious secondary lesions have been caused. Another remarkable feature of dental infection was the wide variety of secondary lesions. Myositis, arthritis, iritis, ulcer of the stomach, exophthalmic goitre, and pulmonary and articular tuberculosis were a few of the well known secondary lesions. Tuberculosis of the kidney suggested the presence of a primary focus in the teeth. In a recent case prostatitis with hematuria and no history of gonococcal infection suggested making an x ray examination, an alveolar abscess of a lower bicuspid was found and the root filling did not show all the way to the apical foramen. With abscess formation the unfilled part of the root canal acted as a culture tube for Streptococcus viridans. Spontaneous cure of such a tooth was most unlikely because the root canal could not collapse or fill up with granulation and subsequent cicatricial tissue, and as long as the infection continued the apical foramen was not likely to become sealed up by an osseous deposit. Such teeth were sometimes curable by drainage through the root canal and other treatment, but the dentist decided that this tooth, demanded extraction.

In another case foci of suppuration were found disseminated through both kidneys in which pyuria and hematuria contributed materially to the fatal issue. The history of the dental infection showed how innocent this might appear at the outset. The affected tooth was lame and a radiograph showed an area of rarefaction at the apex. The dentist thought this was due not to infection but to a bad mechanical condition, this tooth striking against one of the upper teeth. The case was treated by grinding both of the opposing teeth; for a year or two the case was temporized with until pain and swelling and a local abscess initiated sytemic infection. The early development of septic endocarditis made a fatal termination inevitable from the start. Doctor Tousey believed that dental infection might be suspected as the portal of entry in cancer infection and recommended x ray examination of the teeth as a prophylactic measure and as a means of treatment through removing the cause and obtaining an autogenous vaccine.

Differential Diagnosis of Lesions of the Urinary Tract from Those of the Gastrointestinal Tract.—Dr. L. T. Le Wald, of New York, presented slides to illustrate difficult questions in a large proportion of which he had succeeded in making a differential diagnosis. Some of these cases were worked out first from the urological end with Doctor Bugbee, and next, the findings being inconclusive, he went on to examine the gastrointestinal tract, and between these two methods succeeded in making a definite diagnosis in a marked number of the cases, and even in the doubtful cases helped in deciding the question of accurate incision, where the tumor could be removed from behind without opening the peritoneal cavity, for example. The first radiogram represented a lesion in the lower abdomen. Various clinical diagnoses had been made, including movable kidney and tuberculous peritonitis, and it was finally decided to make an x ray examination. In this way the tumor was definitely diagnosed as a fecal concretion and was treated by proctoscopic methods, without the necessity of a laparotomy.

The next case was that of a young man who was operated upon for inguinal hernia, but still complained of pain in the right side. After operation, Röntgen examination showed a stone in the pelvis. The hernia had had nothing to do with the symptoms for which the patient was at first operated upon. Another patient complained of typical attacks of pain on the right side, suggesting appendicitis. The appendix was removed, and before the wound was healed the patient again had one of her typical attacks. Then the x ray showed calculus plugging the ureteral orifice. The kidney was disorganized and had to be removed. Had an x ray examination been made prior to her first operation, she would have been saved that operation. Another patient had had a sinus for nine years, supposed to be due to a tuberculous rib. When an x ray examination was made, it at once revealed the fact that the condition was due to calculus in the kidney, which was removed and the sinus healed. In another case in which the patient had had a sinus for years, no x ray had been made. When x ray examination was made, it was found that he had a perinephritis and a sinus. He was operated upon and the sinus healed. It was often difficult to make a positive diagnosis, even with the catheter in the ureter and a stereoscopic view. If there was any doubt, a lateral exposure should be made to see if the catheter came in contact with the suspicious shadow.

In another case of hydronephrotic kidney there was such a marked displacement that it was thought that the ureter was perforated by the catheter. However, it was a complete displacement of the ureter by a hydronephrotic kidney. It was not certain whether a perforation had ever occurred by instrumentation. An interesting case for differential diagnosis was that of a girl of eighteen with a tumor on the left side. It was decided that it could be removed better by a posterior incision. It proved to be a peculiar retroperitoneal fibrous mass close to the suprarenal body. At a glance at one plate of the bismuth series, it might have suggested a carcinomatous stomach. Another disturbance of the stomach outline was shown due to a mass on the left side. The patient was sent to the hospital by his physician with a diagnosis of enlarged spleen but the x ray indicated a tumor of the left kidney, and operation proved it an echinococcus cyst. The differential point was between tumor of the spleen and kidney. In tumor of the spleen, the splenic flexure of the colon would be pushed down, but in this case it was pushed forward. The next slide illustrated a peculiar calcified mass from the pelvis, due to an ovarian cyst which was ruptured immediately after marriage. The clinical diagnosis of the next case was tuberculous peritonitis, but on x ray examination it was correctly diagnosed as a hairball in the stomach.

One of the most important questions of the day was the diagnosis of gallbladder lesions. The problem in the next case was to diagnose between the kidney shadow on the right side, the lobe of the liver, and the gallbladder. The shadow of a distended gallbladder was demonstrated on a number of plates, and after operation the jaundice, from which the patient had been suffering, cleared up. A case was then shown of echinococcus cyst of the liver in which the liver was displaced downward, and another echinococcus cyst pushing the liver upward. A motheaten appearance of the stomach due to a carcinoma was presented in another case; a similar appearance on the other half of the slide was due to a cyst of the pancreas, i. e., it was an extrinsic rather than an intrinsic tumor of the stomach. The diagnosis was made by lateral projection in different positions. The next case was that of a young man who had recently been shown by Doctor Downs before the surgical society. Having seen one or two other cases of this sort, there was no hesitation in attributing the shadow to a concretion in the appendix. The shadow was proved to be outside of the ureter by stereoscopic radiograms after an x ray catheter had been inserted by Doctor Bugbee.

A case was shown with an almost similar shadow, caused by a concretion in the appendix. Relationship to the cecum was demonstrated and the condition was satisfactorily determined. A third case of a shadow due to concretion in the appendix of a child was shown. The case was one of Dr. J. F. Bell's, in which the x ray examination was made to determine whether a pneumonia or appendicitis was present.

The question of ptosis of the stomach or kidney was a very puzzling one. In one case, there was a stomach residue at six and three-quarter hours and the patient was cured of her symptoms by suspension of the stomach by Doctor Draper.

On the other hand, a case was shown with a drop of two inches and a definite tilting of the kidney when the patient stood up, as demonstrated radiographically with opaque catheters in the ureters with comparison plates made with patient flat on his back. This case was one for suspension of the kidney.

Prostatic Calculi and Pyonephrosis with Calculi.—Dr. Byron C. Darling, of New York, stated that there were two kinds of prostatic calculi, according to Doctor Chetwood: first, phosphatic deposits in the mucous membrane, more exactly calculi in the posterior urethra; and, second, true prostatic calculi which are deposited in the follicle of the glands of the prostate, due to precipitation of salts of the secretion. Prostatic calculi were not very common. The shadows cast by the x ray were fairly clear. The usual picture was that of finely divided calculi in the prostatic region, varying to coarser divisions as the deposit increases. One case showed a single dense mulberrylike shadow in the region of the prostate. Another showed an enlarged prostate well filled with calculi, which was diagnosed in Boston as carcinoma, and concurred in by Doctor Keyes, who had an x ray examination made as a matter of routine. Another case showed a large bladder stone, as well as a considerable amount of prostatic calculi. One case showed an oval shaped calculi about one half inch long, low in the right pelvis, which by rectal examination was found to be in a seminal vesicle.

Turning to pyonephrosis, several cases showed large kidneys, with many calculi deposited in the calyces, and usually a calculus outlined the pelvis of the kidney. At the time the examination was made, the calculi were usually multiple. The symptoms were not severe and extended over many years, so that the condition was not suspected unless an x ray examination was made. In one such case, the patient felt a pain while making a stroke in golf, and later an abscess developed. X ray examination showed a large kidney with many calculi in the calyces. In cystic kidneys, in one case even in the absence of an injection of silver salts, the collection of fluid showed shadows so dense as to suggest calculi. In tuberculous caries of the spine in the dorsolumbar region, an abscess might form which in its deposit of calcified material assumed the shape and position of a kidney. In one case, this condition was bilateral. The destruction of adjacent vertebræ was an easy guide to diagnosis.

(*To be Concluded.*)

Letters to the Editors.

TO THE MEDICAL PROFESSION FROM A WOMAN.

535 Park Avenue, New York, *October 16, 1917.*

To the Editors:

Many years ago I read a dedication by Robert Louis Stevenson of one of his books to a physician whom he loved. He said that he regarded medicine as the best of all professions for two reasons: "first, because it keeps a man's mind constantly engaged in watching the operations of natural law, the surest road to truth; and second, because it keeps a man's human sympathies active and alive."

I have always rejoiced to believe that Stevenson was right—and I count it one of the greatest privileges of my life that as a physician's wife I have been permitted to enjoy the personal friendship of many able and distinguished members of the profession in this country and in Europe as well. I am therefore addressing some of my oldest friends in addressing this group of men whose incomparable usefulness in American life today gives them an influence which cannot be measured, an influence which is felt in the remotest crannies of our national life. Yet, it is true that as a class, in spite of a mighty record of progress, the medical profession is strangely conservative, even, at times, reactionary. It is difficult to understand why this should be true among men who year after year have seen their own traditions swept away to be constantly replaced by new methods and ideas, but that it is true I think no doctor will deny. It seems to me that you have shown this ultraconservative spirit very clearly in your attitude toward the advancement of women. I hardly like to remind you how much you objected to the entrance of women doctors upon the social scene. Yet hospital practice is still closed to them and their opportunities are limited in many ways. Miss Louisa Lee Schuyler once told me that in her efforts to establish the first training school for nurses in this country, the chief opposition she had to overcome was that of the doctors themselves.

In the present struggle of women for political equality, by far the larger number of medical men have either remained coldly aloof or have actually opposed us. Yet you of all men have received ample proof of women's capacity for public life. Sixty-five years ago the doors of opportunity were still shut to women. The trained nurse was unknown. The first woman was making her heroic struggle to get a medical education in spite of scorn and contumely heaped upon her. Today you could not carry on your profession in peace or in war without the aid of women!

For how many years have they been helping you in your efforts to educate the public, to improve the general health, to establish hospitals and clinics and institutions of every kind, to nurse the sick and safeguard the well? On how many boards of managers and trustees have they rendered yeomen's service in furthering your ends? What hospital but would close its doors tomorrow if the women left? How many health laws have they striven to help you gain? Where would your fight against vice be without them? Which of you could even run a private practice of any size without the devoted assistance of some woman? Most touching instance of all, thousands of women are now risking their lives under the hellish machines of modern war, enduring incredible labors and fatigues in order that your work of mercy on the battlefields may go on. French and English nurses have died at their posts beside the operating table. Yet when the New York surgeons organized their various units, not an office nurse but answered, "Here am I, send me." Shortly after the Presbyterian Hospital Unit, under Dr. George E. Brewer, reached its destination in France, the place was bombed. Doctor Brewer's chief nurse, Miss Beatrice MacDonald, struck by flying shrapnel, lost her right eye and was otherwise injured. Her friends have been axiously expecting her return with each ship. But last week a letter was received from her, saying, "Do not expect me. I can still be useful here. I am going back to my post." Thus women are shedding their blood on the battlefields today side by side with men. But better than any one else in the world you know that all the blood that ever was shed by men on all the battlefields since time began is little compared to that which women shed for the race! If blood be the price of a voice in government we have paid it in full!

It is as certain as anything can be that women will direct their political energies upon the social problems with which you, the medical profession, are most deeply concerned. Can you afford any longer to refuse your aid to a cause which means the sure advancement of human health and wellbeing? Women have justly earned the right to your support. Does it not savor more than a little of ingratitude that you should still be holding back? Not one medical society in New York has yet endorsed woman suffrage. You, who spend your lives in watching the operations of natural law, cannot fail to see now that the enfranchisement of women is growing out of the tree of democracy as surely as the oak tree each year puts forth new branches. And with those human sympathies, which Stevenson found so active and alive, you must also see that your support would be but a just recognition of women's services to the whole medical profession during the last half century. May I not urge you to come out and give us your support now, not only with individual voice and vote, but by collective action in the medical societies? I cannot believe that men, who are always ready to listen to appeals for aid and sympathy, will turn deaf ears to a cry for fair play.

Antoinette Rotan Peterson.
(Mrs. Frederick Peterson.)

Book Reviews.

[*We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.*]

Science and Learning in France. With a Survey of Opportunities for American Students in French Universities. An Appreciation by American Scholars. By Various Authors. John H. Wigmore, Editor. The Society for American Fellowships in French Universities. 1917. Pp. xxxviii-454.

Peculiarly appropriate at this time is this book which the Society for American Fellowship in French Universities has compiled with such care. Now that Germany is closed to the civilized world, the natural trend is toward France, and how well the seeker after knowledge will be rewarded there is told in this volume. As we turn over the pages and read name after name glorious in the realm of learning, we feel bewitched by the achievements of France. Just as Napoleon and his marshals rode as conquerors through the capitals of Europe, so have Pasteur, Buffon, Claude Bernard, Binet, Charcot, Cuvier, Lavoisier, Marie, Pinel, and Voltaire conquered the capitals of thought and founded empires that other scientists scarcely less distinguished have added to and ruled. When we consider that clinical instruction in Paris is imparted by such men as Dejérine, Marie, Babinski, Widal, and Janet, we can begin to realize the attractions this city offers to the physician.

Two essays make up the introduction: The Mind of France, by Emeritus President Charles W. Eliot, of Harvard, and The Intellectual Inspiration of Paris, by George Ellery Hale, Foreign Secretary of the National Academy of Sciences. Much valuable information may be found in the appendices, including directions of an explicit nature to the would be student, so that he may go to Paris fortified by the combined wisdom and experience of a thousand predecessors. As one reads the book gratitude goes out toward all the brave soldiers who are protecting the intellectual and artistic splendor of Paris from the desecrating Huns.

After Office Hours.

In Whoopers and Twitters in the *Smart Set* for November, Henry L. Mencken tells the awful truth about the poetry of today.

* * *

Following the example of other prominent writers who are taking a fling at occultism, Booth Tarkington in the November *Metropolitan* discusses the problem of life after death. And all the time he spent in writing such an article, he might have been writing a Penrod story.

* * *

Six years ago Lord Dunsany was bandied about from press to press in New York and no critic, except Nathan and Mencken, and nobody pays any attention to them, could see him. Now his plays pack the Little Theatre and his latest writings are fought for by the magazines. *Vanity Fair* for October has one of these, together with a picture of Dunsany.

* * *

The demand of the people for ever widening fields of phantasy to which they may escape from the cold realities of daily life is exemplified in the change of the *Argosy* with its issue for October 6 to a weekly. What an inundation of fairy tales is let loose on the reading public every month from the presses of the popular magazines. For intance, there is the *Detective Story* magazine, issued every Tuesday. Think of it, every week its readers are fed up with mysteries. Is there any variation of scheming butler, society thief, stolen will, or any mysterious murder left which they cannot see through at a glance?

Meetings of Local Medical Societies.

Monday, *October 29th.*—Poughkeepsie Academy of Medicine (annual).

Thursday, *November 1st.*—New York Academy of Medicine (stated meeting); Brooklyn Surgical Society; Practitioners' Club, Buffalo; Geneva Medical Society; Glens Falls Medical and Surgical Society; Physicians' Economic Society of New York.

Friday, *November 2d.*—New York Academy of Medicine (Section in Surgery); New Utrecht Medical Society; New York Microscopical Society; Gynecological Society, Brooklyn (annual); Practitioners' Society of New York; Corning Medical Association; Alumni Association of Roosevelt Hospital.

Saturday, *November 3d.*—Benjamin Rush Medical Society, New York.

Official News.

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending October 15, 1917:

Burkhalter, J. T., Surgeon. Granted five days' leave of absence from October 8, 1917.

Lanza, A. J., Passed Assistant Surgeon. Directed to proceed to Valley County, Montana, for duty in a tuberculosis survey.

Lumsden, L. L., Surgeon. Directed to attend the meeting of the American Public Health Association at Washington, D. C., October 17-20, 1917.

Michel, Carl, Assistant Surgeon. Granted five days' leave of absence from October 10, 1917.

Miller, K. E., Assistant Surgeon. Directed to attend the meeting of the American Public Health Association at Washington, D. C., October 17-20, 1917.

Mountin, Joseph, Scientific Assistant. Relieved at Des Moines, Ia. Directed to proceed to Waco, Tex., on special temporary duty.

Nydegger, J. A., Surgeon. Directed to represent the Service at the North Atlantic Tuberculosis Conference at Baltimore, Md., October 17-18, 1917.

Oakley, J. H., Surgeon. Authorized to travel in the State of Texas on extra cantonment sanitation duty.

Olesen, Robert, Passed Assistant Surgeon. Relieved from duty at Louisville, Ky.; directed to proceed to various points on the Atlantic and Gulf Coasts on special temporary duty.

Phelps, E. B., Professor. Directed to proceed to Petersburg, Va., on special temporary duty.

Robinson, Dana E., Surgeon. Directed to proceed to Chillicothe, Ohio, for duty in connection with sanitation of extra cantonment zone.

Schereschewsky, J. W., Surgeon. Directed to represent the Service in the Section on Industrial Sanitation at the meeting of the American Public Health Association, at Washington, D. C., October 17-20, 1917.

Smalshaf, A. J., Assistant Sanitary Engineer. Directed to proceed to Little Rock, Ark., on special temporary duty.

Stimpson, W. G., Assistant Surgeon General. Granted ten days' leave of absence to be taken when convenient.

Stromquist, W. G., Sanitary Engineer. Directed to proceed to St. Louis, Mo., for duty in studies in rural sanitation.

Tarbett, R. E., Sanitary Engineer. Relieved from duty at Little Rock, Ark., and directed to proceed to Spartanburg, S. C., for duty in sanitary surveys of cotton mill villages.

Trask, J. W., Assistant Surgeon General. Directed to represent the Service at the meeting of the American Public Health Association at Washington, D. C., October 17-20, 1917.

Births, Marriages, and Deaths.

Married.

Barnhart-Everett.—In Battle Creek, Mich., on Monday, October 15th, Dr. Samuel E. Barnhart and Miss Frances K. Everett.

Bestor-Loveland.—In Hartford, Conn., on Saturday, October 13th, Dr. Eugene L. Bestor and Miss Louise A. Loveland.

Dick-Clark.—In Muncie, Ind., on Thursday, October 11th, Dr. Peter B. Dick and Mrs. Frances E. Clark.

Died.

Bernhardi.—In Chicago, Ill., on Monday, October 8th, Dr. Carl O. Bernhardi, of Rock Island, Ill., aged thirty-seven years.

Burritt.—In Clarkson, N. Y., on Friday, October 12th, Dr. Herbert M. Burritt, of Hilton, N. Y., aged forty-five years.

Crooker.—In Augusta, Me., on Tuesday, October 9th, Dr. Leander J. Crooker, aged eighty years.

Daley.—In Bennington, Vt., on Wednesday, October 10th, Dr. Emmett Burr Daley, aged sixty-two years.

Farnsworth.—In Troy, N. Y., on Friday, October 12th, Dr. Floyd S. Farnsworth, of Plattsburgh, N. Y., aged fifty-eight years.

Ferree.—In Pittsburgh, Pa., on Monday, October 15th, Dr. Robert B. Ferree, aged fifty-four years.

Gibbs.—In Huntington, Mass., on Tuesday, October 16th, Dr. Linnaeus V. Gibbs, aged seventy-six years.

Huffman.—In Galion, Ohio, on Sunday, October 7th, Dr. Obadiah L. Huffman, aged fifty-six years.

Logan.—In Cincinnati, Ohio, on Thursday, October 11th, Dr. Wade M. Logan, aged sixty-nine years.

Marvin.—In Harrison, Ohio, on Wednesday, October 10th, Dr. Jerome P. Marvin, aged seventy-two years.

McCormick.—In Roxbury, Mass., on Wednesday, October 10th, Dr. Thomas J. McCormick, aged forty years.

Nourse.—In Darnestown, Md., on Wednesday, October 11th, Dr. Charles H. Nourse, aged seventy-three years.

Pilcher.—In Warrentown, Ga., on Monday, October 8th, Dr. Wyman W. Pilcher, aged forty-eight years.

Richard.—In Cincinnati, Ohio, on Saturday, October 13th, Dr. G. J. Clemons Richard, aged eighty-nine years.

Simison.—In Lafayette, Ind., on Monday, October 15th, Dr. J. Frank Simison, of Romney, Ind., aged fifty-eight years.

Stevens.—In Worcester, Mass., on Wednesday, October 17th, Dr. William Caldwell Stevens.

Thompson.—In Girard, Ohio, on Tuesday, October 9th, Dr. William S. Thompson, aged forty-seven years.

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Original Communications

ANTITOXIN FOR GASEOUS GANGRENE.

By CARROLL G. BULL, M. D.,
New York.
(From the Laboratories of the Rockefeller Institute for Medical Research.)

Since the isolation and description of the gas bacillus (Bacillus welchii) by Doctor Welch in 1891, many conceptions of the manner of the pathogenic action of this organism have arisen. Some observers have attributed the general symptoms in Bacillus welchii infections to an intoxication, but the poisoning meant was one ascribed on the one hand to decomposition products of the infected tissues, or, on the other, to endotoxins. Other views are that the local destruction of tissues, as well as the general intoxication, is to be ascribed to the fatty acids, chiefly butyric, which arise as byproducts of bacillary multiplication. The acid theory has a number of advocates, among them McCampbell, Stewart, West, and Wright. A gas pressure theory has recently been advanced by Kenneth Taylor. This author considers that gaseous gangrene is the result of the mechanical action of the gas formed in the infected tissues, especally in muscles. It is argued that the pressure exerted by the gas interferes with the circulation to such a degree that the tissues die through lack of nutrition, the dead tissues become secondarily infected, and poisonous decomposition products intoxicate the patient. Another view is that infections by Bacillus welchii arise only after the gangrenous condition has been established through the pathological actions of other organisms, the gas bacillus being unable to initiate the condition.

Experiments recently reported (1, 2) seem to render all of the above theories untenable and to establish the fact that the local destruction of tissues and the lethal effects of Bacillus welchii infections are due to a specific bacterial toxin. The work just referred to shows that under suitable cultural conditions Bacillus welchii produces a soluble toxin which, after separation from the bacilli, is capable of causing the essential lesions of gaseous gangrene and possesses the physical and biological properties of an exotoxin. By immunizing animals with the bacteria free toxin an immune serum has been obtained which has the power of neutralizing the toxin both *in vitro* and *in vivo,* as well as preventing and controlling infections with the bacilli. It is indicated, therefore, that Bacillus welchii should be classed with Bacillus diphtheriæ and Bacillus tetani as a toxin producing organism, and that infections with this organism can also be successfully prevented and controlled by neutralizing its toxin with a specific immune serum. Some of the experimental results purporting to support the toxin theory of the pathogenicity of Bacillus welchii will be here briefly considered.

Identity of the toxins produced by different strains of Bacillus welchii.—It is a well known fact that individual strains of the Bacillus welchii group may possess widely different morphological and cultural properties, and that, according to previous work, a great majority of the strains are immunlogically individualistic. The results obtained through efforts to produce agglutinating serums may be cited to illustrate the latter point. By inoculating animals with the bacillary bodies it has been possible in a limited number of instances to obtain serums which agglutinate the homologous strain in comparatively high dilutions, while other strains are not agglutinated at all or only in the undiluted serum. Judging from these facts, it was questionable whether all strains of this group of organisms produced identical toxins, i. e., toxins which would be neutralized by a monovalent antitoxic serum. From the point of view of developing a specific immune therapy, this question demanded investigation. To this end twenty-nine strains of the gas bacillus have been collected from widely different sources and tested for toxin production, considering especially the character and severity of the lesions produced on animal inoculations, as well as the effect of a monovalent antitoxic serum on their pathological action. Twelve of the strains were isolated from cases of gaseous gangrene occurring among the wounded on the western battle front; two were obtained from cases of gaseous gangrene in New York City, while the others were isolated from local saprophytic sources—milk, garden soil, feces, etc. The results were that each strain so far studied secretes a toxin which is neutralized by an antitoxic serum obtained by immunizing animals with the toxin from any individual strain. The toxins were qualitatively indistinguishable, varying, however, in potency. It is fair to conclude, therefore, that the same toxin is common to all members of the Bacillus welchii group.

Prophylaxis against intoxication.—A series of guineapigs was given subcutaneously a prophylactic dose of antitoxin. Each animal received 0.25 c. c. of antitoxin per 100 grams of body weight. The

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susceptibility of the prophylactic series of guineapigs to the intravenous injections of the toxin was compared with that of normal animals at different intervals after the antitoxin had been given. Two days after the administration of the antitoxin, the prophylactic guineapigs manifested pronounced immunity to the toxin, thirty-two acutely lethal doses being harmless when injected directly into the circulation. This immunity gradually became less pronounced and was about exhausted at the expiration of fourteen days.

Considered independently, the fact that animals can be passively immunized to Bacillus welchii toxin is of great theoretical significance, and when it is remembered that the toxin is a powerful aggressin, preparing the field for bacterial multiplication, its practical importance becomes evident.

Prophylaxis against infection.—A series of guineapigs, ranging in weight from 250 to 350 grams, was given subcutaneously on the inner aspect of one hind leg one c. c. of antitoxin per 100 grams of body weight. The resistance of the prophylactic series to infection with fresh cultures of the virulent bacilli was compared with that of normal guineapigs of the same size. The prophylactic guineapigs were inoculated in the leg opposite to the one in which they had received the antitoxin. Through this procedure it has been found that a highly effectual passive immunity to gas bacillus infection can be conferred upon experimental animals. Three hundred acutely lethal doses of the virulent bacilli failed to produce infection in the protected guineapigs five days after the antitoxin had been administered. As late as the tenth day the antitoxin series was fifty times as resistant to infection as normal guineapigs. The immunity had disappeared on the thirteenth day, the serum treated animals manifesting no higher resistance to infection on this day than normal controls.

Curative power of the antitoxin.—The next step was to determine the influence of the antitoxin upon the infection when it is once established. For this purpose guineapigs weighing from 500 to 600 grams were used, smaller ones being so susceptible to the infection that there is little opportunity for treatment. The amount of a standard culture of the bacilli that would infect and kill all of a series of guineapigs between thirty and forty-eight hours was first determined. The infecting dose was calculated on the basis of body weight, and it was found that about 0.035 c. c. of culture per 100 grams of weight would infect and kill all of a series of guineapigs ranging in weight from 500 to 600 grams within the time limit mentioned. The procedure was to infect a number of animals at one time and with the same culture. Twenty-four hours were allowed for the infection to develop. At this time the condition of the animals was noted, especially the extent of the local lesions and the symptoms of general intoxication. One or more of the guineapigs were given antitoxin intravenously, while a larger number were left as untreated controls. One experiment is given here for the purpose of illustration.

Guineapig, 1, weight 510 grams: 0.18 c. c. of culture was injected into the muscles on the inner aspect of the hind leg. Twenty-four hours after inoculation, a large gaseous phlegmon, involving the infected leg and the adjacent abdominal wall, had developed; crepitation was readily elicited, and the pig exhibited symptoms of severe intoxication—rough coat, rapid respiration, and drowsiness. Three c. c. of antitoxin were injected into the jugular vein. At the expiration of two hours the general condition was much improved—the animal was more active, took food, and the coat had become smoother. The next day the local lesion was subsiding, crepitation could not be elicited, and the toxic symptoms had disappeared. Three c. c. of antitoxin were given subcutaneously with the idea of preventing a recrudescence of the infection. The general condition improved from day to day, while the infected leg became gangrenous, sloughed, and was infected with pyogenic organisms. Healing finally occurred, but the leg was deformed by the scar tissue. Guineapigs 2, 3, and 4, weighing 560, 580, and 605 grams, respectively, were inoculated with the same culture as the first guineapig and with the same quantity per 100 grams of weight. Twenty-four hours after inoculation each guineapig exhibited pronounced local lesions and symptoms of general intoxication. These animals were not treated, and all of them were dead forty-eight hours after they had been inoculated. Autopsies revealed typical lesions of gas bacillus infection. Similar experiments were performed a number of times, with the same general results.

DISCUSSION.

The experimental results briefly presented in the foregoing, are very suggestive. The fact that one and the same toxin is common to all strains of the gas bacillus, Bacillus welchii, group greatly simplifies the problem of specific therapy, since it will not be necessary to produce a polyvalent antitoxin, or to determine the peculiarities of the infecting strain in each case before treatment can be rationally applied. If the different members of the group were as individualistic with regard to toxin production as they are with regard to other antigenic factors, e. g., agglutinogens, both specific prevention and therapy would be impossible. Considering the widely different sources of the strains already studied, it seems reasonable to conclude that one toxin is common to all strains of the group.

The results obtained with the preventive and therapeutic applications are very encouraging. They derive significance, in the first place, from the fact that gas bacillus infections in guineapigs and other susceptible animals are comparable with infections with this organism in man. The experimental infections in the guineapig differ, however, from the natural infections in man, since man possesses a higher natural resistance to infection with this organism, and such massive infections do not occur in nature. The protected guineapigs manifested perfect immunity to hundreds of lethal doses of the bacilli several days after the antitoxin had been administered. It seems reasonable, therefore, to predict that the infection in man will not develop as long as his body fluids and tissues contain an adequate quantity of the antitoxin.

The possibilities of passive prophylaxis have natural limits of time, depending upon the rapidity of elimination of the foreign serum. The experimental data presented in this paper and practical experience with antidiphtheritic and antitetanic antitoxins indicate that, in all probability, a passive immunity to Bacillus welchii infection of at least two weeks' duration can be conferred upon man. An immunity of ten days' duration from the time of exposure to infection will be sufficient in the great majority of instances, since only sporadic cases of Bacillus welchii infection arise after this time, the greatest number occurring forty-eight hours after exposure. In the light of the results obtained in treating the infection in guineapigs, it is reasonable to hope that the antitoxin will be of value also as a therapeutic agent. The indications are that early infections can be readily arrested and the more advanced and severe ones ameliorated, if not wholly checked, so that surgical interference may be resorted to with greater possibilities of effectiveness. It can be stated here, parenthetically, 1, that the antitoxin is being prepared on a large scale in horses, and that very potent serums have been obtained; 2, that a few cases of gaseous gangrene in man have already been treated, in which the efficacy of the antitoxin was unmistakable. The antitoxin was administered intravenously and locally about the wound.

SUMMARY.

1. Twenty-nine strains of the Bacillus welchii group have been found to produce toxins which are qualitatively indistinguishable.
2. It has been possible to confer on guineapigs a passive immunity of about two weeks' duration to Bacillus welchii toxin through a protective administration of the antitoxin.
3. Guineapigs which had received a prophylactic dose of Bacillus welchii antitoxin exhibited pronounced resistance to infection with the virulent bacilli for a period of twelve days.
4. The opinion has been expressed that it will be possible to prevent gas bacillus infections in man through a protective use of the antitoxin, and that developed cases of the infection may be controlled by therapeutic application of the same agent.
5. A few cases of gaseous gangrene in man have been treated in which the efficacy of the antitoxin was unmistakable.

REFERENCES.

1. C. G. BULL and IDA W. PRITCHETT: *Journal of Experimental Medicine*, 1917, xxvi, 119. 2. C. G. BULL: *Journal of Experimental Medicine*, 1917, xxvi, 603.

Urochromogen Test.—T. L. Goodman (*Texas Medical Journal*, September, 1917) points out that in this test only one solution, a 1:1000 solution of permanganate, is required. Two small test tubes are filled to approximately one c. c. with urine and diluted with two c. c. of water. From three to five drops are placed in one dilution, the other serving as a control. A positive reaction imparts a deep orange color to the urine. The test, if positive, shows no change after standing several minutes. By observing this fact, all diseases except typhoid and tuberculosis have been eliminated. The test is more sensitive and more constant than the Ehrlich Diazo reaction and is not affected by the taking of drugs.

WEIGHT OF CLOTHING AND ITS RELATION TO WEIGHT OF THE CHILD IN THE FIRST FIVE YEARS OF LIFE.

By J. P. Crozer Griffith, M. D.,
Philadelphia,
Professor of Pediatrics, University of Pennsylvania.

In a study of the literature upon the weights of the body during infancy and childhood, a certain hiatus becomes at once apparent. There are numerous extensive observations upon the weight during infancy, especially in the first year of life. There are also standard and often quoted observations upon the weight of school children from the age of five or six years onward. I need only refer, as regards the latter, to the published tables of Bowditch (1), Porter (2), and Peckham (3). There are, however, but few reported studies upon the weight of those from one to five years of age, notably among them being those of Camerer (4), Perret and Planchon (5), and Holt (6).

Another discrepancy is also noticeable, viz., whereas the weight of children of the school age, as given in the statistics mentioned, includes that of the body clothing, that is to say, the gross weight, the weights published by other investigators, especially for younger periods, are of the children nude, i. e, the net weight. Any graphic weight curve from birth through later childhood is thus rendered misleading unless this fact is borne in mind and the proper anthropometric corrections made at the age of five years. Bowditch, as a result of studies upon large numbers of children, estimated that the total weight of the clothing at five years equalled 2.8 pounds, or 6.45 per cent. of the gross weight, for boys, and 2.84 pounds, or 6.79 per cent. for girls; at eight years, four pounds or 7.23 per cent. for boys, and 3.5 pounds or 6.54 per cent. for girls; at eleven years, 6.7 pounds or 9.88 per cent. for boys, and 4.9 pounds or 6.88 per cent. for girls; and at fourteen, 8.1 pounds or 8.15 per cent. for boys and 7.5 pounds or 6.76 per cent. for girls. It would seem, therefore, that according to these statistics the absolute weight of the clothing of girls during the periods studied after five years is less than that of boys, and the ratio to the gross body weight also less. The only observations at all analogous with which I am familiar, which include children as young as three years and bear upon the absolute and the relative weights of the clothing, are those of Schmidt-Monard (7). These were made upon a large number of children and consisted in the weighing of different articles of the apparel, such as the shoes, stockings, etc., as well as the total weight of the entire clothing. His results give the weight of the clothes at from three to six years as seven per cent. of the weight for boys and six per cent. for girls; and from six to fourteen years as 7.75 per cent. for boys and eight per cent. for girls. These ratios appear, however, to be those of the weight of the clothing to that of the children undressed. Children younger than three years were weighed nude, and the absolute and relative weights of the clothing are not given.

In the matter of comparison between the different periods of early life, it is manifest that it would be better to have all subjects weighed nude, or all with clothing. Although the latter can be readily done and is constantly done in the case of infants in the first year, it is practically an impossibility with older children in the physician's ordinary clinical work. Indeed, even the weighing of the infant nude is an inconvenient and time consuming procedure when it become desirable in the course of office practice to determine whether or not the weight corresponds to the normal average figures. It is clearly, therefore, most desirable to know what the average clothing at different ages may be expected to weigh and what proportion the weight of the clothing usually bears to the gross weight in the case of infants and children up to the age of five years, at which period Bowditch's figures become available.

Curiously enough, a search through a considerable number of textbooks and medical journal articles upon pediatric subjects has revealed an utter silence upon this point, although, of course, statements may have been overlooked. There is undoubtedly a reason for this in that the absolute weight of the infant or young child is of much less importance than the question of his steady loss or gain of it. This fact does not, however, in any way militate against the great value and convenience of being able to determine whether the patient, as seen clothed and for the first time, does or does not possess a weight equal to that which the average subject should have. Occasions have repeatedly occurred where knowledge of these matters would have been a source of great satisfaction and convenience to me. For my own sake, therefore, and believing that others may have felt the same need, I have had made a series of weighings of infants and young children up to the age of five years, dressed in what might properly be denominated average clothing. The weighings were conducted by Miss M. Morris, the nurse in charge in the out patient department of the Children's Hospital, of Philadelphia. Each child was weighed with clothing, after the removal of hat, overcoat, and the like, and then was weighed again undressed, the difference giving the weight of the clothing worn. The average age at which the long clothes of early infancy were discarded appeared to be about three months, some retaining them until four or four and one half months. This fact explains to a large extent the much higher ratio of the weight of the clothes to the gross weight observed before this period. The total number of subjects examined was 222. The season of the year was the autumn and winter, at which time the clothing would of necessity be somewhat heavier than that in summer, and a weighing at each season would have been of advantage. The difference, however, is not sufficient to affect the results very greatly. As average results were sought for, children who to the experienced eye were evidently much underdressed or overdressed were weighed, as were the others, and the results recorded, but placed in a separate list, and are not included in the calculations. The number of these thus excluded was twenty-eight, leaving a total of 194 upon whose weight the final estimations are based.

The children represent fairly the poorer and middle classes, and the weight of the clothing was probably much the same as in the large majority of the upper classes. The prevailing fashion among some of the latter of dressing their children very scantily even in winter would affect the average to some extent as applied to these. The children were for the greater part in fair physical condition. Yet they were not entirely well, or they would not have visited the hospital, and in many cases they were very decidedly under weight. This would, of course, influence the ratio between the weight of the clothing and the gross weight, but would not affect in any way the absolute weight of the clothes. I have calculated, therefore, not only the ratio which the average weight of the clothing bore to the average gross weight of the subjects examined, but, of much more importance for us, the ratio of the weight of the clothing to the gross weight of the normal child. These latter figures, involving the weight of the normal child, have been obtained in the following manner: Average net (nude) weights for the different months and years of infancy and early childhood were adopted after the comparative study of the statistics of various investigators upon the subject. The data need not be entered upon now. The mean gross weight for any given period was then obtained by adding the net weight for the beginning and end of the period and dividing it by two, and then adding to this the average weight of the clothing for this period as determined from my weighings. Thus, for example, for the period from nine to twelve months the mean gross weight would equal one half of the sum of the net weight for nine and for twelve months, respectively, plus the average weight obtained for the clothing from nine to twelve months, but not including the latter.

The following table gives in convenient form the number of cases of each age studied, the average gross weight of the subjects, the average weight of the clothing, the ratio between these, the gross weight of the normal dressed child, and the ratio of the weight of the clothing to this:

OBSERVATIONS UPON THE WEIGHT OF THE CLOTHING AND THE GROSS BODY WEIGHT OF 194 CHILDREN.

Age.	*No. of Cases.*	*Average gross weight of children examined (dressed).*	*Average weight of clothing.*	*Ratio of weight of clothing to gross weight.*	*Average mean gross weight of normal children.*	*Ratio of weight of clothing to gross normal weight. %.*
Birth to 3 mos.	10	7 lbs. 13 oz.	1 lb. 14 oz.	24.38	11 lbs. 12 oz.	15.96
3 to 6 months	19	10 lbs. 15 oz.	1 lb. 13 oz.	16.58	16 lbs. 1 oz.	11.28
6 to 9 months	13	14 lbs. 1 oz.	1 lb. 14 oz.	13.15	19 lbs. 6 oz.	9.68
9 to 12 months	10	15 lbs. 2 oz.	1 lb. 13 oz.	12.13	21 lbs. 15 oz.	8.23
1 to 2 years...	21	18 lbs. 10 oz.	2 lbs. 2 oz.	11.27	26 lbs. 6 oz.	8.05
2 to 3 years...	34	23 lbs. 13 oz.	1 lb. 15 oz.	8.0	31 lbs. 7 oz.	6.16
3 to 4 years...	35	29 lbs. 7 oz.	2 lbs. 0 oz.	6.7	36 lbs. 8 oz.	5.48
4 to 5 years...	37	32 lbs. 11 oz.	2 lbs. 7 oz.	7.37	41 lbs. 7 oz.	5.88
5 years	15	38 lbs. 3 oz.	2 lbs. 9 oz.	7.1	43 lbs. 9 oz.	5.82

Fractional figures such as the above are not adapted for practical use, and I would suggest the approximate figures in the table on the following page as convenient and sufficiently accurate.

To be still more approximate, it may be stated that the clothing in the first year averages in weight one and three quarters pound; from one to four years, two pounds, and from four to six years, about two and one half pounds. The weight ratio is sixteen per cent. in the first three months, but after this approximately eight to ten per cent. in the balance of the first two years, and from six per cent from two years to five or six years.

Approximate Absolute Weight of Clothing at Different Periods and Relation of This to the Gross Normal Body Weight.

Age.	*Weight of clothing. (lbs.)*	*Ratio to weight of normal child dressed. (per cent.)*
Birth to 3 months	1¾	16
3 to 6 months	1¾	11
6 to 9 months	1¾	10
9 to 12 months	1¾	8
1 to 2 years	2	8
2 to 3 years	2	6
3 to 4 years	2	6
4 to 5 years	2¼	6
5 years	2½	6

When a child evidently of approximately normal weight is brought to a physician, the ratio which it has been shown the weight of the clothes bears to this is of value in determining the net weight of the subject. When, however, the individual is evidently much above or below normal weight, a percentage calculation based on these figures is clearly misleading. For this reason a knowledge of the *absolute* average weight of the clothes for any given age is much the more serviceable. I would, therefore, call especial attention to the absolute weights of the clothing as recorded.

The studies of Bowditch already referred to bearing upon the relationship of the weight of the clothing to the sex of the child suggested an investigation into the conditions obtaining at younger periods than the five years at which his figures begin. With this in view in 100 of the weighings made, the sex of the children was recorded. The first year of life was not included in this number, inasmuch as the clothing is identical for the two sexes. The series extended over the period from two to five years, some change in dress according to the sex being frequently made during the second year. The number of girls weighed at the age of five years was, however, too small to allow of any conclusions, and the figures consequently cover the period from two to four years, inclusive. The mean weights as deduced in the first table for the normal, clothed children are assigned in this connection to the boys, although this is not strictly correct, and the girls are assumed, as is generally done, to be at this period about one pound lighter. The ratios are then determined by dividing the average weight of the clothing for the sex by the average net weight of the child plus the weight of the clothing. The results are shown in the following table:

Relation of Weight of Clothing to Gross Weight by Sex.

Age (years).	*No. of cases.*		*Average weight of clothing (ounces).*		*Ratio of weight of clothing to normal gross weight (per cent.).*	
	Boys.	*Girls.*	*Boys.*	*Girls.*	*Boys.*	*Girls.*
2	15	15	29	31	5.79	6.56
3	21	8	30	31	5.15	5.47
4	12	18	33	39	5.02	6.03

Bowditch found the absolute weight of the boys' clothing greater than that of the girls during later childhood. My own figures for earlier periods show the clothing of the girls slightly heavier. The number of cases is, however, not sufficiently large to justify conclusions other than that the difference in the weight of the clothing of the two sexes at this period is inconsiderable.

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1810 Spruce Street.

DIAPHRAGMATIC BREATHING.*

By Irwin H. Hance, M. D.,

Lakewood, N. J.

The subject of this paper, in the opinion of the writer, has a broader significance than ordinarily conveyed. The mechanics of breathing is thoroughly understood, but we may improve upon its application by developing the power and use of the diaphragm to a greater degree than is usually done. The continuous voluntary act of breathing from birth to dissolution, has caused us to overlook the training of this muscle by voluntary action by which a more powerful muscle may be secured, a more perfect rhythm attained, and the bad habit of breathing transformed involuntarily into a good one. Further, the properly trained muscle is capable at will of directing the currents of air into the lower, middle, and upper portions of the lungs, and even of inflating one half of the chest, the other remaining passive.

Respiration is an involuntary act controlled by the respiratory centre in the medulla; the true muscles of respiration, diaphragm, serratus posticus superior, and the external intercostals, receive their nerve supply from the spinal column, thereby imparting to them the same voluntary action under stimulus as any other voluntary muscle of the body. Anatomists and physiologists are agreed that two groups of muscles act in ordinary and forced respiration, the internal true muscles of respiration and the external auxiliary muscles, overaction of the latter group being always called into play in dyspnea. In infancy and early childhood when no mental influence or habit has perverted the normal rhythm and muscular act of breathing, the internal muscles of respiration perform the completed cycle; this is also to be noted during complete surgical anesthesia. From six to eight years of age the child begins to lose this form of breathing and in adult life the lack of voluntary control of the diaphragm is generally noted. Ask a man voluntarily to contract his diaphragm as he would his biceps. Scarcely one in a hundred can do it without contracting many of the other external muscles.

Respiratory rhythm is the measured motion of the diaphragm and the other internal muscles of respiration evoked through the stimuli transmitted from the medulla and the sympathetic, thereby producing a shallow or deep inspiration and a passive or forced expiration. When the diaphragm is thoroughly developed and trained to respond to stimuli from the cerebral centre, this rhythmic motion adapts itself to the occasion, whether walking slowly or fast, running, or in repose, thereby conserving unnecessary expenditure of energy and minimizing the strain placed upon the other organs.

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For perfect rhythm in walking, the respiratory muscles should be trained to act in the proper rhythm, thereafter they involuntarily perform the act easily. Does not this explain what is spoken of as "second wind" in walking or climbing? It is Nature's insistent call for help; as usual she responds well but slowly in combating the irregular action of untrained muscles. Here is the crux of the writer's thought: First develop and train the diaphragm and when properly instructed teach the proper rhythm of breathing for the varying demands upon the pulmonary function. By the aid of proper exercises performed during this training the general physical condition will be greatly strengthened.

All breathing is diaphragmatic in the broad sense that the function of breathing depends upon this muscle allied with the other smaller internal muscles. The nomenclature of the different types of breathing as generally used would tend to obscure this fact and a better understanding of the subject would be attained by using the terms "abdominal" and "thoracic" breathing to designate the manner in which the lungs are filled. In the former, air currents expand the lungs from the lower zone upwards, in the latter, from the upper downwards, figuratively dividing the chest into upper, middle, and lower zones. In practice these two divisions also tend to show the power of the diaphragm in directing the currents of air into the different sections of the lungs. For the clearer understanding, a third term is used, "diaphragmatic breathing," in which a very short beginning of abdominal breathing commences the inspiratory act, quickly followed by directing the air currents into the middle and then the upper portions of the lungs. This is the most perfect example of the full finished deep breathing.

With the knowledge that air currents can be directed at will into the different zones of the chest and after observing the almost universal faulty act of breathing when a physician asks his patient to breathe deeply, the writer, thanks to his instructor, has worked out the following method: To begin, the pupil assumes the correct straight position seated in a chair or reclining; all the muscles must be in a state of easy relaxation, particularly the nasopharyngeal and throat muscles since only thus can nasal resonance be produced as the air passes over the floor of the nares into the larynx. This sound serves as a guide in the future education of the pupil, for thoracic breathing gives an entirely different type of resonance. The pupil is then instructed to inspire, hold, and expire with the diaphragm alone, each part of the completed act taking the same length of time, a short one while mentally counting, "One—two," relatively six seconds. In a short time the pupil quickly learns to appreciate the limit of his use of the diaphragm, beyond which he is straining other muscles as well. After the diaphragm is under thorough control, pumping or jerking the muscle is undertaken, just like the sudden contraction of the biceps. In breathing thus the air currents are directed first and also more forcibly into the lower half of the lungs, the upper half receiving a smaller volume of air and being much less expanded. When this, which may be designated abdominal breathing, is well performed the second part of the training is taken up: Begin as in abdominal breathing while counting, "One—two," then by a process of stepping up direct the currents of air from the lower to the middle and then to the upper zones of the chest until the diaphragm has contracted fully and the lungs are filled to capacity. Subsequently the pupil can be readily taught to keep the upper zone of the chest full while gently breathing in and out as in abdominal breathing.

Having mastered this, which may appropriately be called diaphragmatic breathing, the third and last part becomes easy. It is the reverse of both the other forms as the expansion begins at the apices and the lungs are filled to their full capacity from above downward. To accomplish it properly the major currents of air are directed through the nares upward into the attic of the nose, the smaller volume of air being carried over the floor of the nose. In other words, the entire nasal cavities are filled with the incoming air which rapidly fills the lungs from top to bottom. This is properly called thoracic breathing and is generally emphasized by teachers above the other two. Everybody is so habituated to this form of breathing that it is very difficult for a pupil to overcome the habit of breathing with the upper chest during the earlier lessons. Men and women all think that this is the greatest illustration of deep breathing, whereas this act of inspiration is seldom completed without greater or less tension upon the external muscles unless one has secured the earlier control of the diaphragm as taught in abdominal and diaphragmatic breathing.

A word in regard to the expiratory act: This is wholly passive and when completed all the muscles are in a state of complete relaxation as in the primary posture. Forced expiration brings into play the abdominal and other muscles; this must be avoided in the earlier lessons. A natural question is, Is the excursion of the diaphragm the same in each form of breathing? An x ray photograph will show that it is. What need is there for such training and the daily use of pulmonary exercises? Training and daily use strengthen the respiratory muscles; correct the habit of poor or very often bad breathing; increase the capacity of the lungs; dilate more fully all alveoli; necessarily improve their functions, and thereby influence favorably the functioning power of other organs. Physicians too often overlook conditions which are neither pathological nor clearly abnormal, leaving it to the layman to devise some method by which subnormal defects are corrected, thereby improving organic functions. Recognizing this, physicians, particularly the neurologist and the stomach specialist, are awakening to the fact that deep breathing exerts a favorable influence upon patients under treatment for other than pulmonary conditions.

The fact that the total minimal surface over which the blood is exposed to the alveolar air amounts to ninety square metres, or about 1,000 square feet, the size of a room fifty by twenty feet (1); that our observation shows such a large percentage of bad breathers; that the proper development of this fundamental function of the whole body is largely ignored until pathological conditions or maldevelopment directs attention to it; and that the above method has greatly improved some conditions bordering on the pathological and cured some asthmatics induced the writer to study its value during the past three years. It is superfluous to dilate upon its effects in health, save to draw attention to one fact: As an exercise it compels the pupil to concentrate his thoughts entirely upon the correct performance of the act, otherwise the breathing becomes involuntary at once and as a result of this pulmonary training there is a marked improvement of the power of mental concentration in everything. In disease, however, apart from the general beneficial influence of any regular muscular exercise and the resulting betterment of the functions of all organs, there should arise a more stable CO_2 and O ratio since deep breathing means a freer circulation of blood in the alveolar vessels and a better, more uniform interchange of gases. One might picture mentally the difference in the capillary circulation of the lungs before and after pulmonary training, as one can demonstrate visually the changed surface capillary circulation before and after hydrotherapy has been applied. The effect upon inflammatory exudates, extrapulmonary and intrapulmonary, would be to hasten their absorption.

The following history of the writer's personal experience shows its influence upon the irregular action of the heart without discoverable lesion:

Case.—Dr. X., age fifty years, had a healed tubercular lesion at right apex of twenty-five years' standing, and distinct right subclavicular depression. Nine years ago he was annoyed by occasional lost heart beat which grew steadily worse until it occurred regularly every four to ten beats. He experienced slight vertigo at times on taking the erect position from a stooping one. Three years ago he lost consciousness and would have fallen but was supported by a friend. Several specialists could detect no heart lesion. The pulse rate was naturally rapid and was influenced by excitement, exercise, or worry, amounting at times to palpitation. His physical powers had steadily diminished during previous five years. Blood pressure was 110 millimetres. He smoked at times excessively. Urine examination was always negative and all organs were functioning properly. The diagnosis was functional disturbance of the heart. Result of daily systematic exercises was noted as follows: Interval of dropped beat became lengthened until at the end of five months the heart action was normal and there was no recurrence for three years. During exercise pulse was lowered three to six beats and was not accelerated by ten minutes' rhythmical breathing accompanied by muscular exercises, and his general condition was so greatly improved that he climbed a mountain 4,800 feet high over a stiff trail without any undue fatigue and no heart strain.

Finally the writer offers for serious consideration the possibilities and advantages of thoracic breathing in pulmonary diseases. Tuberculous involvement of the lungs is mostly met with as apical lesions. Artificial pneumothorax has demonstrated its value in bad cases of splinting the lungs by compression, thereby giving complete rest. Abdominal breathing simulates this to a certain degree, giving relative rest to the apices and expanding the bases. Most people either in repose or on exertion use thoracic breathing. Therefore may not the inflamed area be benefited by securing a modified degree of rest and transferring the burden of work upon the less used portion of the lungs? The practical demonstration of this is shown on the spirometer, with which the writer can show a capacity of 150 to 170 cubic inches for abdominal breathing, whereas he records 220 to 225 cubic inches in thoracic breathing; further, a close examination of the subclavicular depression in the case mentioned can be wholly obliterated by thoracic but only partly by abdominal breathing. Improvement of the general physical condition would be shown by its use.

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INFLUENCE OF LABOR ON THE BRAIN DEVELOPMENT OF THE CHILD.

By Maximilian P. E. Groszmann, Pd. D.,
Plainfield, N. J.,
Educational Director of the National Association for the Study of the Education of Exceptional Children.

Under this title, Dr. Arthur Stein, New York, presented an interesting paper at the New York convention of the American Medical Association in June, 1917. He showed that certain cases of idiocy may be only apparently congenital, but were really acquired through obstetric traumatism in the form of prolonged and unassisted labor, and were therefore preventable. Cerebral hemorrhages and contusions which are apt to follow on compression of the infantile skull in the internal passages prepare the soil for feeblemindedness. This important etiological factor, the author showed, has not been credited with proper influence, and as there exists no close relation between obstetrical clinics and institutions for the feebleminded, no definite conclusions can be drawn at the present time. Doctor Stein's suggestion that a special committee should study the subject from all available sources, is a good one. My own observations of mental defect have led me to believe that obstetrical traumatism is indeed a very important factor in its production. Instrumental cases furnish their quota. Even when the effect is not feeblemindedness, in the full sense of the word, distinct disturbances of the mental equilibrium of the child will often follow in the wake of difficult and ill regulated labor.

A few other causes of mental defect or disturbance may here be suggested. One is the mother's functional weakness, either on account of local inefficiency, or through cardiac exhaustion. There are women who cannot carry a child longer than eight months. I have had the case of a child under recent observation who is a mongol, and is one of five children, all eight months' babies. He is the only defective one of the group, the four others being apparently normal. In his case, the mother had emotional disturbances and a fall directly before his birth.

Two other conditions which ought to be carefully studied in their relations to the production of children who are physically or mentally defective are stillbirths and miscarriages. When stillbirths occur in a family, there is always suspicion of functional weakness which may have an effect upon the children who are born alive. Although these escaped the fate of their stillborn brothers and sisters in their intrauterine existence, they will show the stigmata of weakness and inefficiency, sometimes from the day of their birth, sometimes later. Miscarriages are likewise symptoms of functional inefficiency and indicate congenital conditions which must leave their imprint upon those children who manage to get born. But there are the cases of intentional abortion. Not only will such an interference with the natural function of woman and the process of gestation have a most disastrous effect upon the female reproductive organs so that even when the mother is ready to assume her maternal responsibility, the child, or children, then allowed to be born may be weaklings and imbeciles, but the attempt at abortion is not always successful. The unwelcome child, born against the intention of its mother, will almost invariably be affected and present symptoms of physical, mental, and moral degeneration. All these children are punished for the sins of their parents.

Not that these things are unknown to the profession, but they require more detailed study than they have received, a more complete and convincing compilation of facts and statistics should be made, and a courageous stand must be taken to combat the evils here alluded to and which are only too often hidden away in the family closets.

MANIC DEPRESSIVE PSYCHOSES ASSOCIATED WITH MALIGNANT CONDITIONS.*

By Samuel L. Immerman,
Philadelphia,
Assistant Physician, Philadelphia Hospital for the Insane.

Various physical conditions cause alterations in the mental state. This is seen in the changes in disposition in the sufferers from dental caries and dyspepsia and in the depression sometimes seen in pulmonary, cardiac, and hepatic diseases. According to Klippel (1) the most frequent mental disturbances in carcinoma are acute confusional insanity and deliria, occurring terminally in the cachectic state. In the cases here studied, we are dealing not simply with depression, but with actual psychoses. It is certain that carcinoma does not cause manic depressive insanity, but it is interesting to note that the patients suffering from internal malignant conditions showed no change in their then existing mental state, while those suffering from external malignant conditions were depressed.

After studying the cases, the question will arise: Is the association of epithelioma with depression merely a coincidence, or is there some more intimate connection between the epithelioma and the depression? Of course, it must be admitted that the cases here studied may be too small in number from which to draw conclusions. It might be said that the epitheliomatous growth serves to occupy the field of the patient's attention, and gives a predisposed patient something to worry about. In this connection it will be recalled that the first patient in the beginning did not feel concerned about his epithelioma; and that the second, a recurrent maniac, began with an attack of mania, while he had his epithelioma, which attack ended, however, in depression. If anemia or the absorption of a toxin is a factor in the causation of the depression, then we might be led to look for depression in the cases of internal malignancy also. The age of involutional melancholia is the age of malignancy; an epithelioma may be the exciting cause of a mental attack in a predisposed individual; any further connection between epithelioma and melancholia is not apparent. The occurrence of the two together may well be a coincidence, although it cannot be denied that there may be a more intimate but as yet inapparent relationship between melancholia and the depressive phase of manic depressive insanity on the one hand and epithelioma on the other.

Case I.—J. S., aged fifty-five years; bookbinder; married; born in Ireland; thirty-three years in the United States. In 1913 he had a wartlike growth behind his left ear which was successfully treated by a solution but later returned. Not yielding to medical treatment, the patient resolved in March, 1914, to see a surgeon. On a certain Friday in March he did not feel himself, and the next day was unable to go to work. A peculiar feeling of depression came over him which he could not explain. He saw the surgeon the next week; operation was advised, which advice the patient accepted. He entered the hospital a few days later and did not feel worried about the operation, but on the contrary felt confident of its successful outcome. After the operation he was treated by x rays until October, when further treatment was declared unnecessary on account of cure.

Meanwhile, in the hospital and during all this time after leaving the hospital, the patient felt very depressed. He felt as if he would never more be of any value in the world; he had a "lost feeling." This unwarranted pessimism did not in any way centre about his epithelioma; he did not anticipate that it would return and disable him. He thought perhaps his sins might not be forgiven, and watched for a visible sign from God. He joined the church in the hope of obtaining relief. He went to his employers and confessed that he had stolen goldleaf from them, and returned the equivalent in money. He quit his work. In 1915 he twice attempted suicide and was removed to a private sanatorium and thence to a State hospital. In the fall of the year the former operative region broke down again, and he was sent to the Philadelphia Hospital for the Insane.

On admission the patient was depressed. The epitheliomatous ulcer grew larger and caused facial palsy. His physical condition to a certain extent occupied his attention and he expressed the opinion that if the epithelioma were cured he would feel better mentally. At present the new growth is all but healed by treatment by fulguration. The patient felt much better, he no longer entertained ideas of selfdestruction, but he did not have the feeling, which he said he had been led by some people to expect, a man had when he knew that his sins were forgiven. He himself explained that since the growth was not the original cause of his depression, the fact that it had healed did not help him entirely to get rid of his depression.

This seems to be a case of true involutional melancholia. The patient, then, was probably destined to a psychosis, perhaps this psychosis, no matter what the exciting cause. Though his physical condition was in a general way the exciting cause of his mental breakdown, it is interesting to note that he did not actually worry about his physical condition, his peculiar depression he was unable to explain.

Case II.—J. J. J., aged fifty years, saw filer, was first admitted to the hospital in June, 1896. A brother died insane at the age of fifty years; one brother was epileptic; grandfather died of carcinoma; father died at the age of sixty-three of erysipelas; mother died at the age of sixty-three of phthisis. In 1893 the patient was queer from drink for three months. He drank heavily preceding his attacks.

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*Read before the Psychiatric Society of Philadelphia, January 12, 1917.

Four months prior to admission he became talkative, had religious delusions and delusions about money, became hostile toward his wife, and heard God's voice. The attack was brought on by the death of a child in April. The patient remained exalted with flights of ideas until November, when he was discharged. The patient was again admitted in 1902. In January he showed undue activity; became exalted; made numerous purchases; had delusions of grandeur, and was suspicious of his wife. He was well enough to be paroled October 16th. In December, 1910, the patient was admitted to the skin ward. He had been restless for four weeks; showed exalted ego and flight of ideas; was suspicious of his wife; talked of God and the devil. He had a beginning epithelioma, which had been giving him trouble for about a year. Owing to his mental condition he was transferred to the insane department. By the end of 1911 the patient was fairly quiet. The ulceration on his face had progressed considerably despite treatment. In the early part of 1912 the patient began to become depressed. This depression varied in intensity at times. He died December 1, 1913, after the epithelioma had made considerable progress.

In this case of recurrent mania, the last attack ended in depression before and during which the patient had a progressing epithelioma.

Case III.—F. K., aged forty-eight years, was admitted to the Philadelphia Hospital for the Insane in June, 1911. A week before admission to the hospital he had been picked up on the street by the police and sent to the House of Correction and thence to the Philadelphia Hospital for the Insane. On admission he was in a state of profound depression, amounting almost to complete apathy, and it was only with difficulty that he could be urged to answer questions. He was selfaccusatory, apprehensive, and hallucinatory. He imagined that he had enemies and said they were talking about him. He was properly orientated. At this time we could learn from him but little of his life history. He was married, and had a grown up daughter, but said that he had not lived with his family for some time. He was a hard drinker and had had gonorrhea and syphilis. His depression continued for two and a half years, when he became less apathetic and more responsive, but psychosensory disorders continued until the end of 1915.

In 1916 he appeared normal and lucid in every respect. There were no stigmata of degeneration apparent. When a boy he had been sent to a reformatory. For many years he had been an inhabitant of the Tenderloin. He had lived with a woman who aided him in his crimes, and the two seemed attached to each other. He had served a number of jail terms, the longest being five years. He used cocaine and morphine. The absence of stigmata of degeneration and the patient's pleasing exterior were in marked contrast to his record. He expressed remorse, and said if he ever left the hospital he would go back to a straight life. In May, 1916, he had an attack of difficulty in urination, and the passage of blood and blood clots from the urethra. He had had similar attacks at intervals for fifteen years. The symptoms were very severe, and continued practically until the time of his death on September 1, 1916. His mental condition throughout his illness had remained normal with the exception of slight delirium preceding uremic coma. At autopsy the bladder was found almost completely filled by a large papilloma which had undergone malignant change.

This patient, who had previously suffered from involutional melancholia, was mentally clear at the time he was suffering from an internal malignant condition, the symptoms of which were very severe and trying.

Case IV.—F. H., aged fifty-four years, born in Switzerland; mother died of neoplasm. He had been in the venereal wards in 1895; he was admitted to the Philadelphia Hospital for the Insane in August, 1915. The exact date of onset of his illness is unknown, but in 1906 when in the surgical ward he showed no mental abnormalities. He was excited at times, at other times depressed, hallucinatory, and delusional. His delusions were fixed and systematized and concerned religion. The Wassermann reaction in the blood was positive. Our diagnosis was mania. In April, 1916, the patient complained of abdominal pain. Examination showed a very large liver which had not been present on admission. The patient died April 27, 1916. Autopsy showed a small, nonobstructive, medullary carcinoma of the stomach, with extensive secondary involvement of the liver.

As far as could be determined, the patient's mental condition after the onset of his malignancy remained the same as previous to it.

In addition to the above, nine patients suffering from malignant conditions were examined mentally. Eight of these were in the general hospital. Two patients, men, were senile dements. One with a facial epithelioma was depressed; the time of onset of his mental condition is unknown. The other, who had a facial epithelioma which had started on the inside of his cheek, had begun to be depressed six years before the onset of his malignant condition. The other patients were women. Of these, one had a carcinoma of the breast; one a sarcoma of the jaw; the others had uterine carcinomata. Only three had insight into their condition—two uterine cases and the case of sarcoma of the jaw. These three were brave and cheerful. The others, who had no insight, showed no abnormal affectivity.

REFERENCE.

KLIPPEL: Les Accidents nerveux du cancer, *Archives générales de médecine*, 1892.

1111 South Fortieth Street.

A NEW TYPE OF ROTARY MESH FILTER FOR USE IN DEEP RONTGEN THERAPY WITH SPECIAL REFERENCE TO VESICAL NEOPLASMS.*

By William H. Meyer, M. D.,
New York,
Director, X Ray Department, New York Post-Graduate Medical School and Hospital.

Judging from the type of cases recommended for Röntgen therapy, the surgeon's viewpoint apparently classifies as suitable for such procedure two types of cases: the hopelessly inoperable case of malignancy with extension to surrounding organs and multiple metastasis, and those cases of epithelioma, sarcoma, and carcinoma in which wide extirpation is doubted with danger of recurrence. If it were not true that the x rays are of use in at least giving a moderate measure of relief to the unhappy individuals of the first group, then the Röntgen therapist would be justified in refusing treatment, as the surgeon refuses operation; but one cannot forget that though rare, yet an occasional inoperable case has become again operable under proper radioactive treatment and even with this hope gone, the relief of pain, the clearing up of foul discharge, the filming over of large ulcers, and the contraction of larger tumor masses are sufficient justification for radiotherapeutic procedure.

The list of vesical neoplasms suitable for present day Röntgen therapy is small and includes as palliative with the hope of symptomatic relief if not cure the inoperable epithelioma, sarcoma, and carcinoma; prophylactic preoperative and postoperative radiation for malignancy—this to be done thoroughly by multiple area crossfire massive dosage that recurrence may not be stimulated instead of checked; and prostatic hypertrophy. In the last, if the symptoms are not acute, if a palliative course of treatment is indicated, or if operation is not considered or refused, there is positive justification in Röntgen therapeutic procedure. Failure of the Röntgen rays in this direction will occur when the prostate is of a dense, fibrous character with calcareous deposits and calculi, or when existent malignancy has escaped detection and too small dosage applied. The method of x ray treatment of vesical neoplasms varies but little from that employed in other parts of the body. We have the anterior abdominal and posterior regions for multiple area crossfire with the added advantage that the perineal route affords. My own experience with cases of prostatic hypertrophy treated with the Röntgen rays dates back some eleven years and in arranging these for review they fall into four groups according to the method of treatment pursued at the time. 1. Cases treated with numerous small doses scattered over a period of months and years with medium high penetration and little or no filtration; in some of this series the testicles were included in the rayed area. 2. Cases treated with fractional dosage over a long period, but with tubes of higher penetration and with filtration; testicles protected. 3. Cases treated with multiple area, crossfire, heavy dosage, filtered hard rays with from six to ten treatments with a like number of areas all within a few months' time. 4. To the last I am now adding a fourth series of cases treated by the same crossfire method, but with double dosage as made possible by a new type rotary filter. The number of treatments are less with a corresponding shortening of elapsed time.

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*Read before the Section in Genitourinary Diseases, New York Academy of Medicine, April 18, 1917.

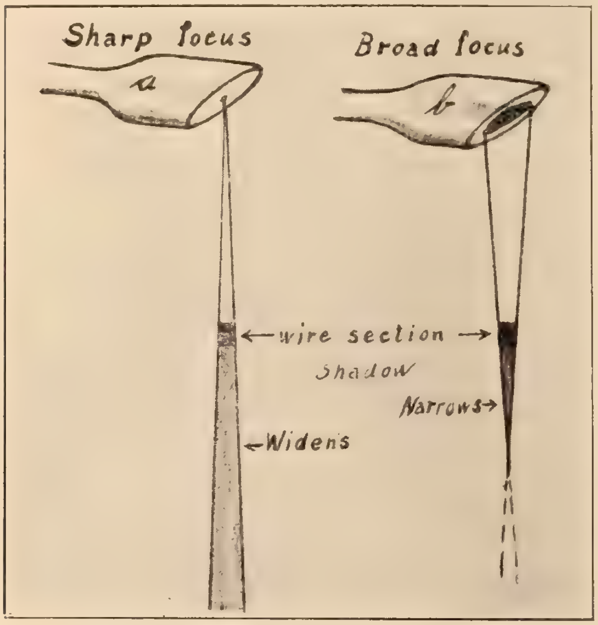

FIG. 1.—Simple schematic illustration of the effect produced by exposing a section of fine wire to rays from a sharp and broad focus tube illustrated respectively in sketches a and b. Note the diminution of the dense shadow with broad focus. For penumbral and secondary ray effects, see Fig. 3.

In the light of present day massive dosage I wonder at the results obtained in the early cases. Fifteen or twenty minutes once or twice a week, alternating the suprapubic with the perineal route of exposure and continued over a period of years was and is unfortunately with some, even today, the formula. The results speak well for the x rays and future of Röntgen therapy, if not for the method and operator. Even with the earliest crude technic, certain beneficial effects followed irradiation. An improvement in the general physical condition of the patient produced in turn a better control of micturition and improvement in expulsive force followed by reduced frequency of urination. All this might be ascribed to primary stimulative effect of radiation, but I have noted since using the intensive method, particularly with the rotary mesh filter, that an exacerbation of symptoms may occur and continue a few weeks after exposure. This is undoubtedly due to the vascular engorgement and lymphatic infiltration induced by massive dosage. I have seen this happen again and again in cases of lymphoma, Hodgkin's disease, adenitis, splenomegaly, etc., in fact in a certain class of cases whenever massive dosage by multiple area crossfire was employed. This primary exacerbation, however, is rapidly followed by contraction of the tumor and in the case

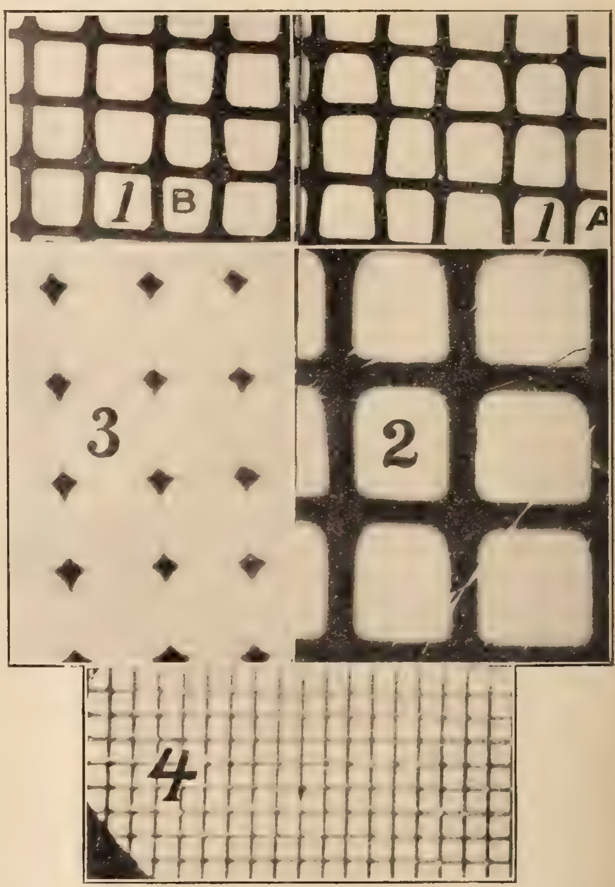

FIG. 2.—Shows five separate exposures—1, 2, and 3—laid together for better comparison. The same wire mesh used in each. In 1A and 1B, made with respectively sharp and broad focus tubes, but little difference is noticeable in the images because the mesh is in contact with the plates. In 2 the target mesh distance was seven inches and the target plate distance was fourteen inches; focus sharp. Note the sharpness of the image. In 3 target mesh distance seven inches and target plate distance ten inches; focus broad. The faint and narrowed shadow of the same cross wire mesh is confirmatory of sketch B, Fig. 1. 4 represents a contact impression of a fine wire such as used in succeeding experiments 4 and 5 and as originally employed by Alban Koehler, for which see text.

of simple prostatic adenoma, contraction and shrinkage of the mass produces in turn a reduction in the amount of residual urine.

In consideration of the investigations of White, Hunter, Griffith, and others, namely, that castration is followed by shrinkage and atrophy of the prostate gland, in my early cases I included the testicles in the areas rayed; thus the results attained may have been partly due to the sterility produced simulating the effect of castration. However, the general acceptance of the conclusion of Perthes and others that the use of the tubes of higher penetration and filtration give deep therapeutic effect, led me to seek direct instead of reflex effects and thus exclude the testicles from the areas rayed and aim direct for the prostate in these cases. The result appeared about the same as in my earliest cases with the questionable advantage of avoiding sterility.

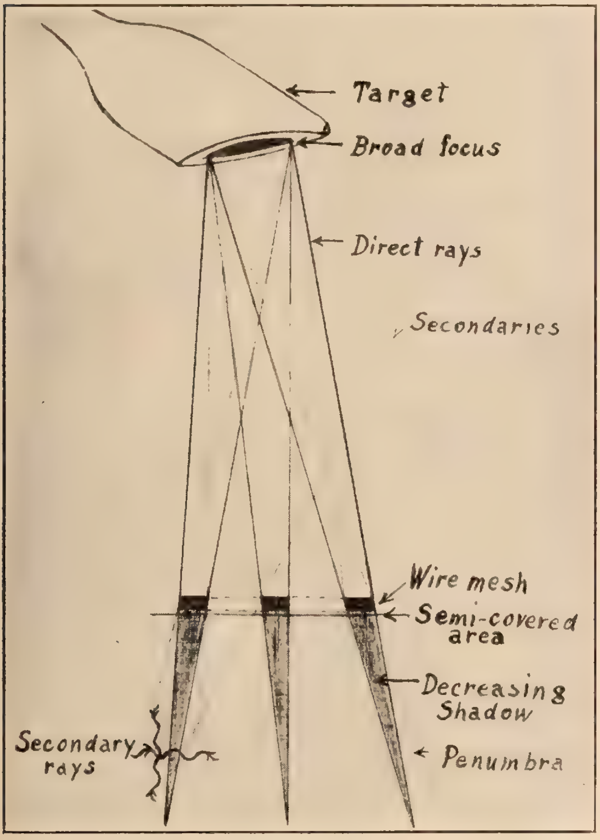

Fig. 3.—Schematic illustration of the effect produced by exposing several sections of a fine wire mesh to rays from a broad focus tube. To the diminishing dense shadows noted in Fig. 1b, are added the effects of indirect penumbral and secondary rays.

The introduction of massive dosage by multiple area crossfire with hard filtered rays so ably described by Gauss and Lembcke, has brought about a marked change in technic in deep röntgenotherapy. With such technic and wherever deep röntgenotherapy is indicated, the number of treatments is counted no longer in tens and results are more quickly attained and with greater certainty. What the single massive dose by strong filtration, according to the technic of Frederick and Kronig, may accomplish in lesions other than uterine myomata still remains to be seen.

A perusal of the literature with reference to Röntgen ray treatment of deep seated neoplasms, benign or malignant, vesical or otherwise, leads one to the following conclusions: 1. Statistics are only in the making and röntgenotherapy is in its infancy. Filtration and massive dosage by multiple area crossfire has just passed inception fully realized only since the introduction of the Coolidge tube. 2. By physical and pathological, chemical and microscopic examination certain changes must be ascribed to the action of

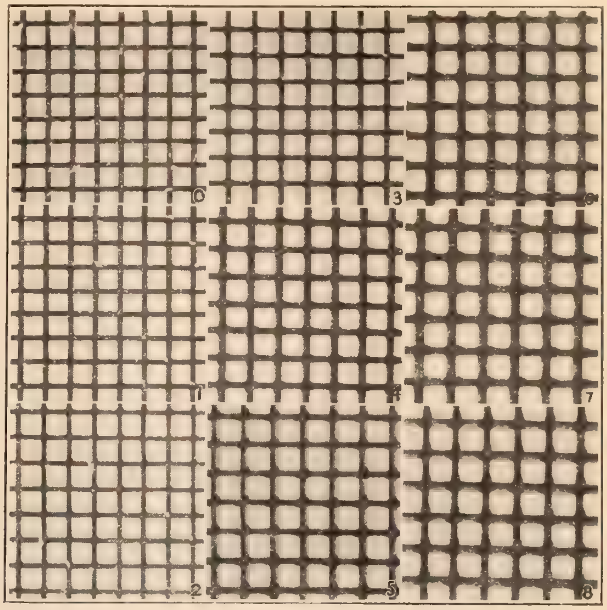

Fig. 4.—Represents nine consecutive exposures on a single plate. The (wire mesh) target distance is constant. The first exposure, marked O, was made with the mesh in contact with the plate, and each successive exposure with the plate removed from the wire mesh the number of centimetres indicated by the number of the exposure. Each of the nine exposures was made with the same sharp focus tube. Note the continued sharp image throughout the exposures. The gradual increase in the size of the mesh spaces, as well as the wire shadow, is easily discernible with increasing plate mesh distance.

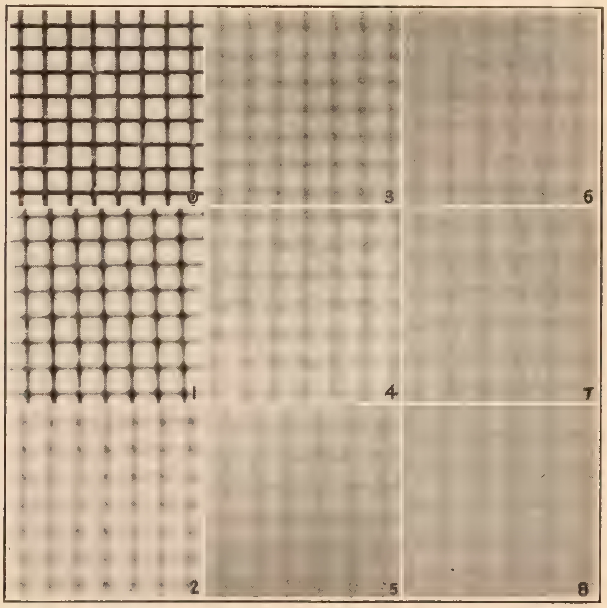

Fig. 5.—Exposures were made in identically the same way as Fig. 4, with the exception that a broad focus tube was used instead of a fine. The consecutive exposures show conclusively the diminution of the size of the wire shadow with the concomitant increase in size of the mesh spaces as the distance increases.

the Röntgen rays These changes are dependent upon the quality and quantity of radiation and the character of the cellular elements involved. 3. The effect of treatment by Röntgen radiation is most pronounced and successful in the more superficial or easily reached structure. 4. The difficulty of producing similar effects in deeper seated lesions is not alone due to altered type of radiation and different structure, but mainly to insufficient dosage. It is with the past that the practical röntgenotherapist has busied himself. From the time of Perthes's announcement of the improved transmission rate from tubes of high penetration and by the use of filters, deep dosage has been increased with further improvement from massive dosage and multiple area crossfire; and still the absorption rate in deep seated lesions has hardly been brought to equal that which we know is required to destroy or inhibit even the most superficial neoplasm.

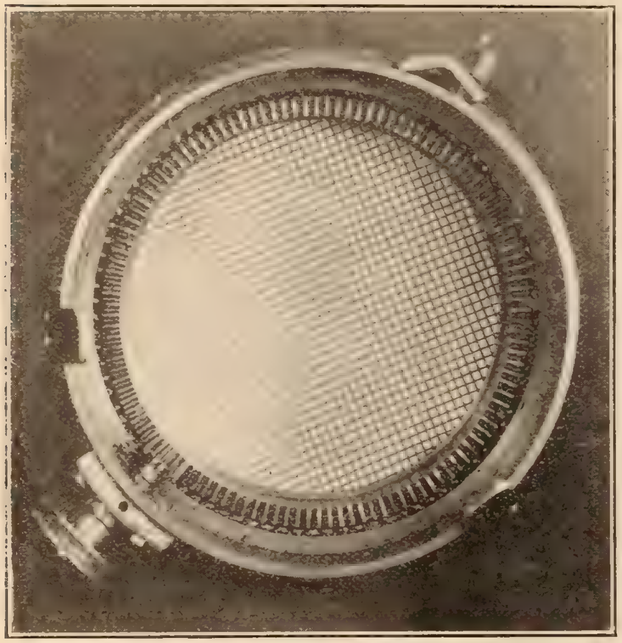

Fig. 6.—The inside of the rotary mesh filter, the black cross lines showing the lead filling, the white spaces the aluminum filter. The driving mechanism is visible around the edge. For further description see text.

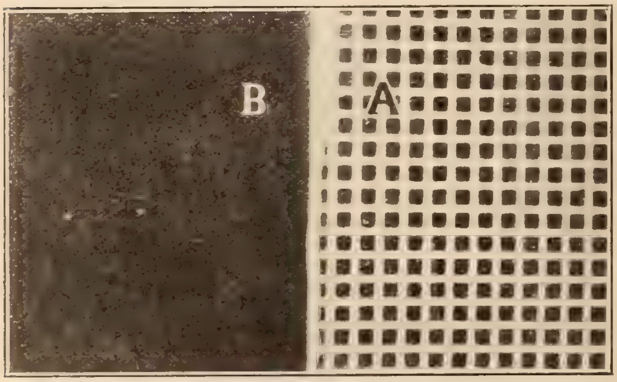

Fig. 7.—A. An exposure made through a portion of the mesh of the filter (idle), and in close contact with the plate, the white lines indicating the blocking of the rays by the lead filling, the black squares the effect of the filtered rays. B. An exposure with the rotary mesh filter in action and shows diffuse and fairly even shading of almost continuous radiation.

It is the energy transformed that does work, the energy directed and transformed at the proper site. Thus, whether Röntgen effects are due to direct or secondary radiation or both, to physicochemical effect, electrionic disturbance and ionization, absorption rate is the key and measure to x ray dosimetry. If we take as an example Perthes's inference that one millimetre thickness of aluminum is roughly equivalent in absorption rate to one centimetre of water and that in turn is equal to one centimetre of flesh, then a study of the transmission and absorption rates through either water or aluminum must give a fair idea of the altered type of radiation at various depths of the human body. Whether we believe in the correctness of Perthes's assumption or not is of small moment compared to the fact that it affords a method of deep dose estimation. Another irrefutable fact is the close association between the superficial reaction and the absorption rate in the

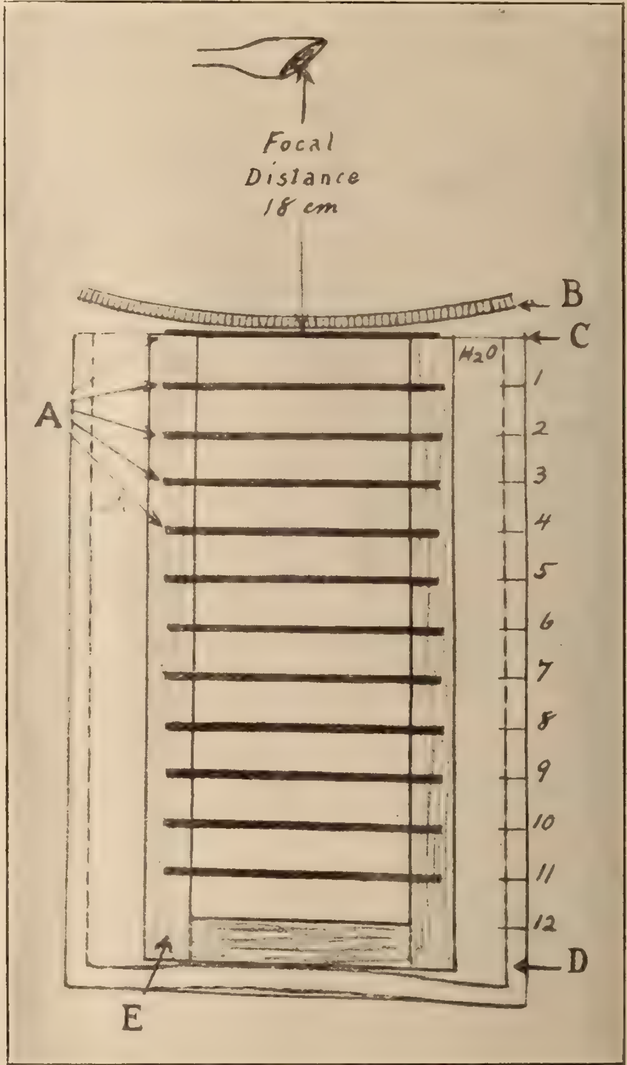

Fig. 8.—E represents a wooden frame so notched as to receive the Kienböck test strips, indicated by the letter A. Each strip is one centimetre lower than its immediate predecessor. This frame is submerged in water contained in the jar D; the water at a level with the uppermost strip and in close apposition with the rotary mesh filter B.

upper centimetre depth of tissue as measured through water or aluminium. Why a greater pastille dose is possible with a hard tube and why two and one half to three pastille doses may be given with filtered rays without grave danger are both easily comprehended when viewed from the standpoint of absorption. Also the thousands of x units administered through numerous surface areas become comprehensible when the low deep absorption rate is considered.

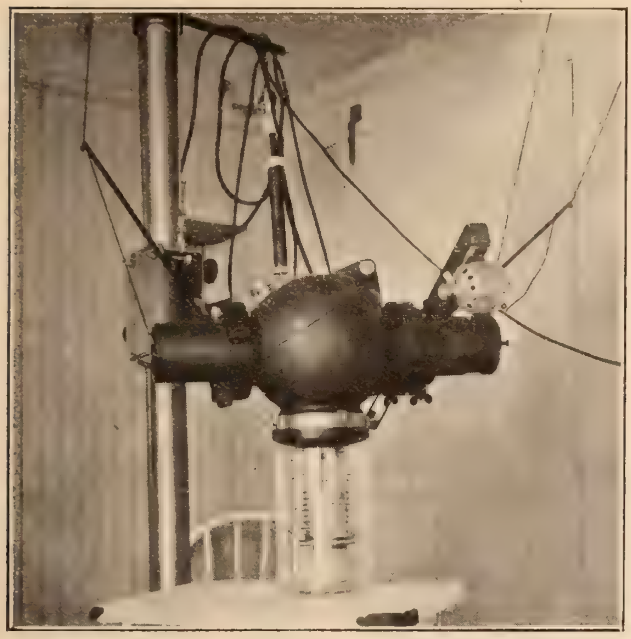

FIG. 9.—The actual testing conditions described in Fig. 8; also a side view of the filter attached to a new type of tube box, the belting and motor for driving the filter are seen on the right hand side.

I believe in high penetration only so far as to attain the maximum absorption within the depth of tissue we wish to influence. If we can bring a similar absorption rate to bear on the deeper seated lesions, we may expect successful results similar to those attained in the more superficial conditions. It follows that a method improving the deep transmission and particularly the deep absorption rate of the Röntgen rays is applicable to any condition in which deep Röntgen therapy is indicated. In connection with this I wish to present for the first time a new type of filter which in similar form I have been testing for the past eight months. A few slides of drawings, tests, and photographs will best illustrate the theory and principles of operation and construction. It is nothing new to state that under certain conditions the shadow or image cast by a small object on plate or screen may be nearly or entirely lost.

In relation to the x rays this effect is dependent on several factors: the size of the focus; distance between focus and object; distance between the object and plate or screen, and secondary radiation. With the more nearly parallel rays of long focal distance we are not here concerned and will consider only the shorter focal distance which incidentally is that best suited to the point in question.

Fig. 1, a schematic drawing, illustrates the effect produced on a photographic plate by a small object when exposed to a tube of respectively a sharp and a broad focus. It is well known that with a tube of sharp focus the greater the distance between the object and the screen or plate and the less the distance between the object and the source of light, the greater will be the increase in the size of the shadow cast by the object. Thus, the shadow cast by a wire section becomes progressively larger as the distance between wire and plate is increased. With a broad focus, however, there is a different effect, and from the drawing it will be seen that the shadow of the wire gradually diminishes with increasing distance. A glance at the drawing gives a graphic explanation of this phenomena without considering the blurring of the image produced by secondary rays. The next plate, Fig. 2, is in experimental proof of this point. The exposures were with sharp and broad focus at different distances. A medium sized wire mesh was held at a focal distance of seven inches in each of the four exposures. 1 shows the image of the wire when exposure is made with the plate in contact therewith. With sharp or broad focus the shadow is about the same. 2 shows the shadow cast by the same wire with a sharp focus tube, with the plate at a distance of seven inches from the wire mesh. Note that both the apparent size of the wire as well as the mesh spaces are increased. 3 shows the shadow of the same wire but with a broad focus tube and the plate but three inches from the wire mesh. Note that though the mesh spaces are larger, the image of the wire is very nearly lost. 4 is a contact impression of a fine wire mesh such as originally employed by Alban Koehler. He lays a narrow metal wire mesh in close contacts with the skin and multiplies his deep dosage by giving five or six times the usual erythema dose. Naturally a superficial necrosis results, but consists of small quadrangular ulcer areas each surrounded by a strip of unaffected nor-

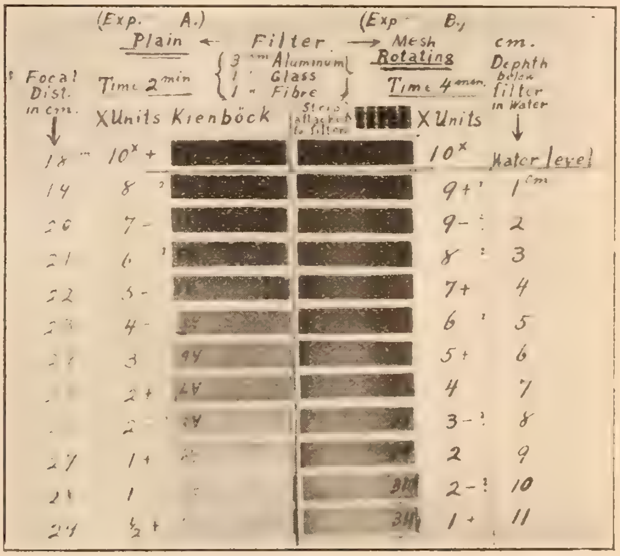

FIG. 10.—The result of two experiments carried out as described and shown in Figs. 8 and 9. Experiment A, with plain filter. Experiment B, with the rotary mesh filter. The two central columns are the Kienböck strips; the columns on either side of the strips represent the approximate Kienböck readings; the column to the extreme left, the strip focus distance; the column to the extreme right, the centimetre depth of the strips in water. The comparative tints of the transmitted intensity of both tests is clearly shown; the marked improvement with the rotary mesh filter is quite evident.

mal skin, from which rapid regeneration takes place. The strenuousness of such treatment has never allowed it to become very popular but the principle appears sufficiently good to warrant further trial and investigation. These lead to the conclusion that beyond a given depth beneath a properly constructed wire mesh the effect of the mesh, as far as the projection of its shadow by the rays is concerned, becomes practically nil when a broad focus is used.

Fig. 3 is a schematic illustration of the rather complex effect produced by interposing a cross wire mesh in the path of rays from and in close proximity to, a tube of broad focus.

Again, as in Fig. 1, the gradual diminution of the distinct shadow is noticeable. The cause of the faint and fading penumbra is revealed. The secondary and stray rays still further obscuring the direct shadow are respectively illustrated. The whole combining to produce a diffuse and fairly even intensity beyond the apex of the dense cone of shadow produced by the obstructing wire mesh.

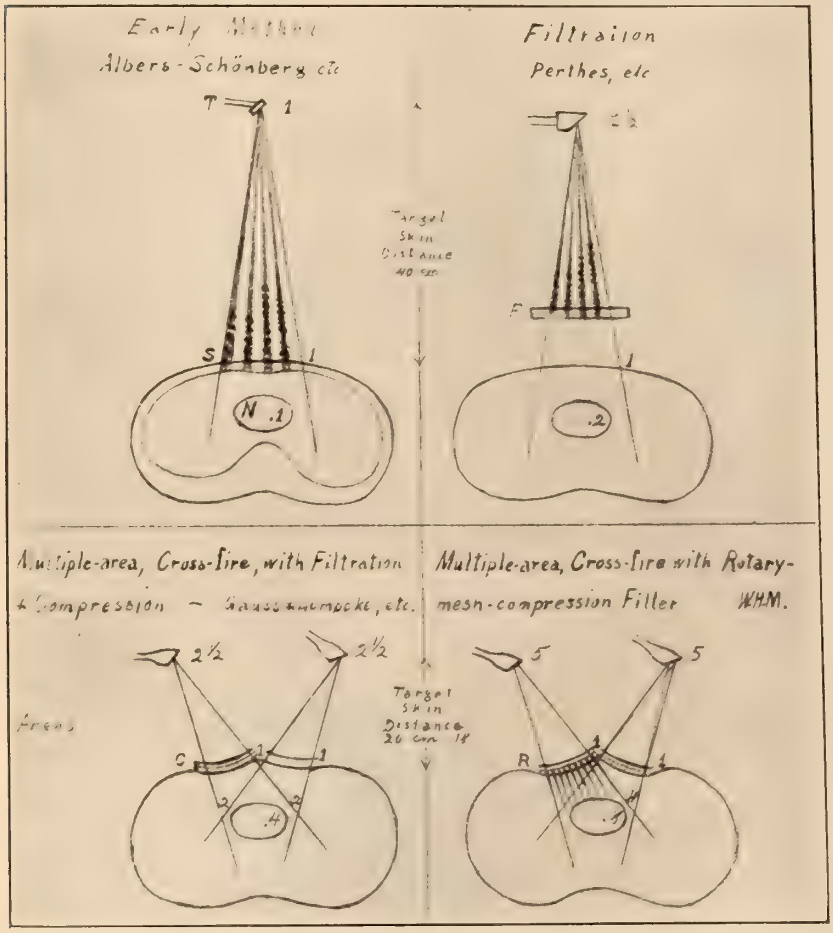
Early
Albers-Schönberg etc
T
1
Filtraiton
Perthes, etc
Target
Skin
Distance
40 cm
F
S
1
N .1
.2
Multiple-area, Cross-fire, with Filtration
+ Compression — Gauss-Lembcke, etc.
Multiple-area, Cross-fire with Rotary-
mesh-compression Filter W.H.M.
2½
2½
5
5
Target
Skin
Distance
26 cm
C
R
1
.4

FIG. 11.—The upper left hand sketch represents the earlier method of Röntgen ray treatment, without filters and long skin focal distance; T, target; S, skin surface of a transverse section of the abdomen; N, neoplasm; it will be noticed that the soft rays as represented by the shaded areas, between the target and skin surface are absorbed by the skin, therefore dosage is limited by the biological reaction produced by these rays. In the upper right hand sketch the arrangement is the same with the exception of the interposition of the filter; F, the filter absorbing most of the soft rays, the dosage now is limited only by the superficial biological reaction of the more penetrating rays. The lower left hand sketch illustrates a simple crossfire method, using a shorter focal distance and compression, c representing filter and compressor combined; otherwise the principle is the same as in sketch B. The lower right hand sketch, D, illustrates the same arrangement as in sketch C, but with the author's rotary mesh compression filter which makes it possible to almost double the dose time heretofore employed, using the same filter thickness.

Fig. 4 illustrates radiographically the effect of progressively increased distance between the wire mesh and plate; the distance between focus and mesh remaining the same, eighteen centimetres. Due to the sharp focus, the shadow of the wire mesh and squares both become gradually enlarged, as the distance is increased. 0 is with the plate and mesh in contact; 1 is with the plate removed one centimetre from the mesh; 2 is with the plate removed two centimetres from the mesh; 3, 4, etc., are with plate removed to the number of centimetres indicated. Note that both the size of the mesh spaces as well as the shadow of the wire progressively increase with increasing distance. Fig. 5 shows radiographs produced under similar conditions as in Fig. 4, but with a medium broad focus tube. As before there is a progressive increase in the size of the uncovered squares, but accompanied by a diminution of the width of the wire.

The haziness of the image in both instances is naturally partly due to secondary radiation. With a very broad focus as used in Fig. 2, test 3, the wires are hardly visualized beyond the sixth centimetre. Fig. 6 is a photograph of the filter, the lead mesh so constructed that the square of the covered area equals the square of the area exposed, the lead imbedded in three millimetres of aluminum and the latter acting at the same time as filter. The whole rotates on an eccentric in such a manner that the area immediately beneath the filter is alternately exposed and covered for one half the total time. This being true, the dose time can be double that of a plain filter, yet the skin receives but a single dose. Again it can be seen from Fig. 5, as well as from Fig. 2, test 3, that the effect of the mesh is practically nil beyond the fifth or sixth centimetre, so that in theory at least at and beyond this depth there is almost continuous exposure.

Fig. 7 shows the shadow cast by the rotating filter A as compared with the same idle B. Notice that the first shadow is very nearly even throughout, though very close to the plate. This mesh has nothing in common with the Buckey diaphragm; the aim with the latter is sharpness of image with avoidance of secondary radiation, whereas in the rotating mesh filter under consideration, the reverse is sought, secondary rays not excluded. Fig. 8 is a drawing illustrating the method of testing the transmission rate at various depths. A frame F is so constructed and notched as to hold the Kienböck photographic strips A in successive depths each one centimetre lower than that immediately preceding. Each numbered strip in its black envelope is wrapped in waterproof, sealed, and the whole submerged in water, so that the uppermost strip is on a level with the surface. The tube with filter B attached to the tube box is brought to within a focal distance of eighteen centimetres to the water surface and uppermost strip C. Fig. 9 shows the actual arrangement in carrying out the test. The glass jar of water with the Kienböck photographic strips in place in the holder can be seen; the tube is encased in a new model box; the experiment is in order for testing the transmission rate with the rotating filter which is attached to the base of the tube box, its lower surface in contact with the uppermost Kienböck strip.

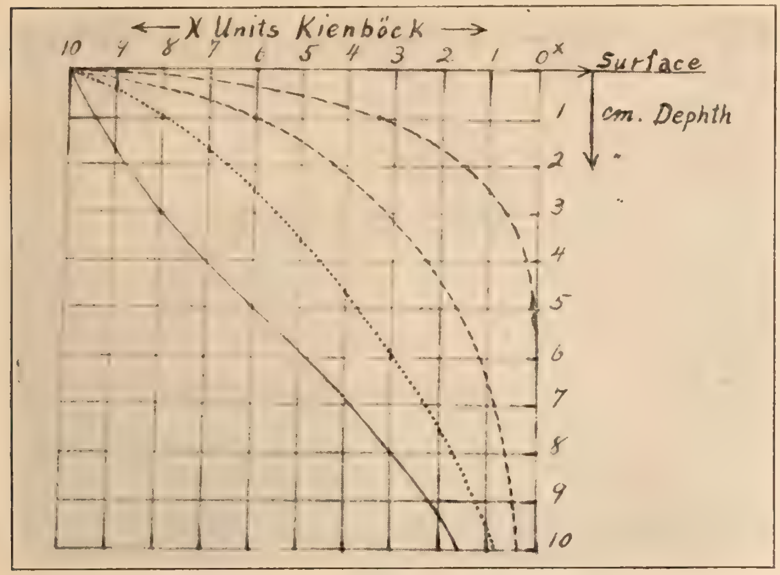

FIG. 12.—The transmission curves are constructed on experiments conducted with the Coolidge tube in a manner similar to that illustrated in Figs. 8, 9, and 10. The curve of long dashes — — — — indicates a transmission rate with soft unfiltered rays. The curved line of short dashes - - - -, the transmission rate with hard unfiltered rays. The curved dotted line . . . . represents the transmission rate with hard filtered rays, such as employed in sketch B C, Fig. 11. The continuous curved line represents the transmission rate with the author's rotary mesh filter. The intensity in Kienböck units is noted across the top of the squares, the centimetre depth in water in the vertical column.

In Fig. 10 the results of the two tests are shown; the various readings with plain filtered rays and the readings with rotary mesh filter. The thickness of filtration is the same in both instances and the dose time in Experiment B double that of Experiment A. The data on the plate are so complete that but little description is necessary. The Kienböck strips of both tests have been arranged in two adjoining columns so that the gradation and comparative tint values may be more easily noted. To right and left of the strips are columns indicating the Kienböck readings: other columns indicate respectively the centimetre depth, focal distance, etc., at which the tests were made. A careful study and comparison of tints and Kienböck readings, shows the surface dose in each instance to be practically the same, but at increasing depth the difference becomes more and more pronounced until at about the sixth centimetre depth the recorded intensity with the rotary mesh filter is nearly double that of the plain filter, followed by a gradual diminution of intensity. A rough idea of the absorption rate per centimetre depth may be gleaned by subtracting the transmission rate at any level from that immediately preceding. It goes without saying that these tests are but two of many performed, using both Kienböck strips and pastilles. The reason for specifying these in particular is that the Kienböck strips are best adapted for permanent record and demonstration. With the inaccuracies of the various methods of measuring transmission and absorption we are not here concerned. Suffice it to say that with slight variations of different tests considered the foregoing is representative and conclusive. Whatever part of this improved transmission rate may be ascribed to secondary ray effects is after all immaterial; the fact that it occurs under the conditions implied is the all important one.

Fig. 11, a schematic drawing, illustrates the transmission rate by the various methods in vogue and the progressive improvement brought about by filtration; compression and multiple area crossfire; the author's rotary mesh filter. If we take the figure opposite the target T as representing the dose time and the figure opposite S as representing the surface dose as measured by a Kienböck strip or pastille and consider the figure within the small oval, say at the sixth centimetre depth, as the transmitter dose at this level, then a progressive increase in transmission becomes apparent by the progressive improvement in technic.

If in Fig. 11, sketch A, the dose time is one minute, producing one pastille dose at the surface, then the transmitted dose at the sixth centimetre depth would be about 0.1 pastille dose.

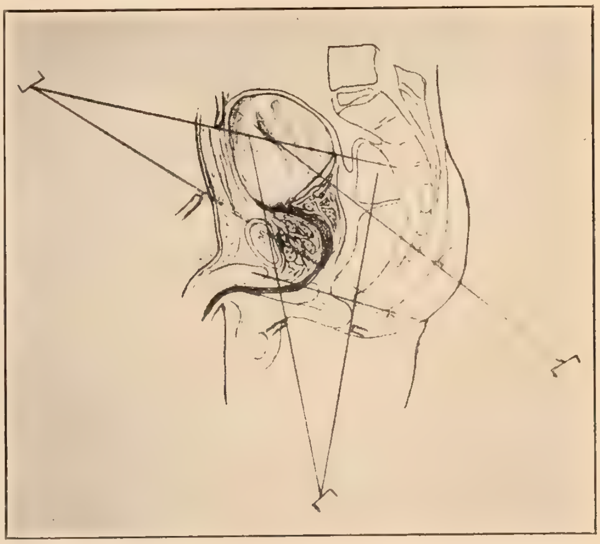

FIG. 13.—Three large and satisfactory areas for crossfire of the pelvic viscera. It will be noticed that each area is sufficiently large to include practically the whole of the true pelvis.

In sketch B, by the interposition of filters F, four millimetres of aluminum, the soft rays are absorbed by the filter; this steps up the dose time by about two and one half in order to produce one pastille surface dose; the transmitted dose, however, at the sixth centimetre depth becomes 0.2 pastille. This surface dose does not mean the limit of skin tolerance with filtered rays. Tolerance is closely associated with the absorption rate and since with filtered rays there is a marked reduction in superficial absorption, an increase in dose time as well as measured pastille dosage is possible. C illustrates the advantage of crossfire, each added area multiplying the deep dosage. D shows the transmitted dose with the rotary mesh filter almost double that of the plain filter, accounted for by the doubling of the dose time.

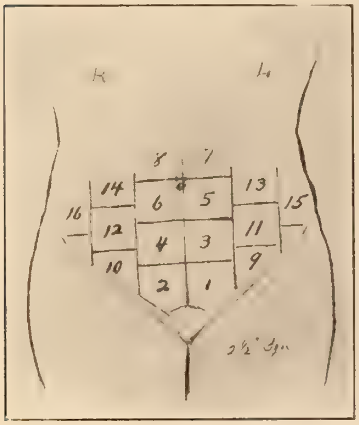

FIG. 14.—A method of plotting the abdomen for small multiple area crossfire. My objection to such small areas is that they can hardly include the whole of the structures we ordinarily wish to influence and the crossfiring will be more imaginary than real, as can be judged by viewing the transverse section in Fig. 13, the areas in the latter being proportionately much larger.

Fig. 12 shows the transmission curves through successive depths with soft, hard, hard filtered rays, and the author's rotary mesh filter. The various transmission curves here shown were constructed from tests conducted in a manner similar to that employed by Gauss and Lembcke, which consists of measuring the transmission rates through successive depths, each of one millimetre thickness of aluminum and one centimetre of space instead of through successive depths of water. The Coolidge tube was used throughout the experiments. Across the top of the chart will be found the values from one to ten in x units Kienböck and down the side the depth one to ten centimetres. The chart explains itself and shows concisely the progressive improvement in the transmission rate with proportional increase in deep absorption produced by the successive steps of advancement in technic. In an article of this scope it is beside the mark to consider at length the deep mass absorption rate in relation to the above transmission curves. The relation of the absorption rate for any given depth, as approximated by the difference between the transmission rate at a given level and that immediately preceding to the biological reaction is remarkably constant. Thus, not in transmission but in absorption lies the answer to deep therapeutic effect. It is upon this that I have based my method of crossfire with the estimated deep absorption the key, to the number of areas and dosage necessary for the desired effect; i. e., stimulation, inhibition, or destruction.

Fig. 13 shows the three most practical angles of crossfire in a saggital plane to affect the pelvic viscera. The technic here needs to be every bit as accurate as in radiography and illustrates the advantage of large areas for crossfire that none of the structure under treatment is neglected This is of utmost importance in treating malignancy. Failure of proper crossfire may well explain such microscopic findings as cell destruction with obliterating endarteritis and new connective tissue formation on one section; while another of the same neoplasm shows only the result of stimulation with cell proliferation and more rapid growth—the latter area probably never received the intended dose. Fig. 14 shows a method of blocking off for multiple area crossfire. The fault I have to find with this is that each portal of entry is so small that but a section

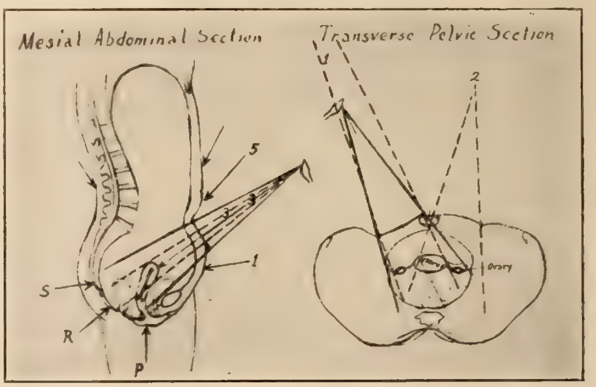

FIG. 15.—The usual errors that occur by using too small areas, such as illustrated in Fig. 14, or by incorrect focusing. In the mesial abdominal section the heavy lines from target to patient show the advantage of the large area as compared with the small cone of dotted lines representing a smaller diaphragm or area. The failure to include all the viscera one desires to affect is illustrated by the dotted lines in the transverse section. It will be seen that by incorrect focusing or too great a focal distance, even with the same sized diaphragm as illustrated by the heavier lines, certain pelvic organs will not be included in the given exposure.

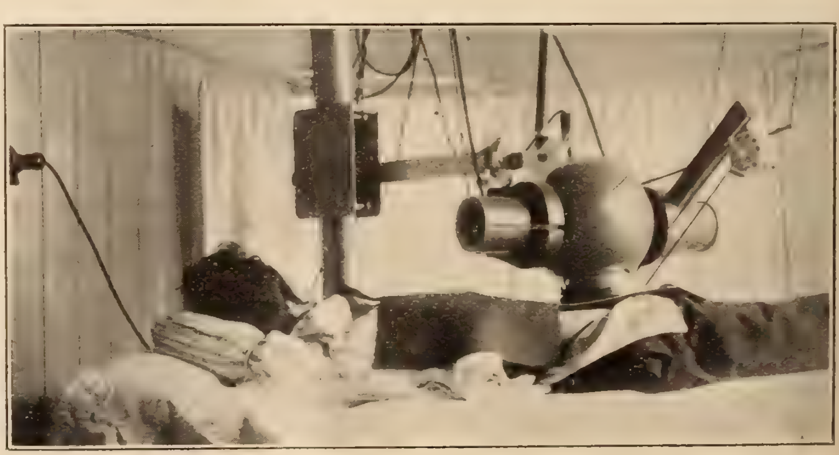

FIG. 16.—The author has never been satisfied with the usual types of tube protective devices on the market; furthermore the added protection required by the rotary mesh filter was incentive for the construction of a new type of protection tube box and I am indebted to the efforts of Messrs. Wappler for their cooperation in this direction. The tube box illustrated consists of a composition impregnated with lead, the portion opposite the target having an absorption rate equivalent to two millimetres of sheet lead. The box has the advantage of being an insulating material and with the rotary filter detached makes an excellent all around protective device of almost universal adaptability.

of the organ or tissue we wish to affect may be exposed to the cone of transmitted light, resulting in ineffectual crossfire. Fig. 15 is a graphic illustration of effectual and ineffectual areas and angles of radiation, the dotted lines showing the usual errors. From this and the two preceding plates the value of larger areas for crossfire became apparent and without sacrificing the present day deep transmission and absorption rate the square of the rayed area may be nearly doubled when the author's rotary mesh filter is employed. Fig. 16 is a photograph of the author's rotary mesh filter in use attached to a new type of insulating protective tube box. A final suggestion occurs to me that the area of maximum absorption may be raised or lowered by varying the filter focus distance, by using tubes of different sized broad focus, and by varying the size of the wire mesh.

The factors that governed the present filter construction were that I wish to bring the maximum absorption rate to bear below the fourth centimetre depth because up to this depth we have a fair degree of success; beyond this depth lies our greatest failure. The next point was the choice of the broadest focus tube: and with these two factors as a basis and with a short focal distance in mind the mesh was constructed so that the apex of the shadow cast by a lead wire would project beyond the fourth centimetre. This necessitated a rather fine mesh—0.9 millimetre—which presented considerable mechanical difficulty because it must revolve eccentrically in order that the skin may receive a uniform dose, and because the rotary speed must not be synchronous with the current pulse. These and more were the difficulties and they have been overcome.

A summary of the effect of filtration with the author's rotary mesh filter is as follows: It results in, 1, a reduced absorption rate in the upper depths of tissue; 2, in greater skin protection with the same dose time heretofore employed; therefore, 3, the possibility of increasing the dose time to nearly twice that generally used without further damage to the epidermis; resulting in, 4, an increase in the deep transmission and absorption rate due in part to prolonged radiation as well as secondary ray effects. This does not mean a saving in time and certainly will not meet the approval of the hurry-up, homeopathic-dose, single-area, make-them-come-often radiotherapist. 5. It means that the present day results, as measured by deep transmission and absorption, may be attained with greater certainty because the same deep absorption and transmission rate can be brought to bear through larger and fewer areas. 6. Finally it indicates that the efficiency of deep therapy with the popular multiple area crossfire method may be greatly enhanced.

I do not stand alone in the belief of full dosage delivered at the earliest possible moment within the shortest possible time, particularly in malignancy. With this end in mind the filter has been designed. It is proving its worth in theory and practice, yet because of its very recent practical application an account of it is presented here preliminary to detail case reports in which it is used to be published at a later date.

TWENTIETH STREET AND SECOND AVENUE.

PHLEBITIS OF THE DEEP DORSAL VEIN OF THE PENIS.

By E. NEWTON TURKUS, M. D.,
New York,
Chief of the Clinic of Genitourology, Samaritan Hospital; Attending Genitourologist, Samaritan Hospital.

Before entering upon a discussion of the condition which is the subject of this paper, it may be well to review briefly certain anatomical relations. The venous return from the glans, including both corpora cavernosa empties into the deep dorsal vein of the penis, which is its largest single venous trunk. The deep dorsal vein of the penis is formed by the junction of two veins. It follows the dorsal groove of the organ, passes between the division of the suspensory ligament, then proceeds between the subpubic and triangular ligamentous structures and again divides into two branches, and merges with the prostatic vesical plexus.

Phlebitis is derived from the Greek *phleps*, meaning vein, and *itis*, inflammation. Phlebitis may be acute, plastic or infective; subacute; and chronic (phlebosclerosis). It is the most common vascular lesion. Osler observes that phlebitis either begins as an endophlebitis or a periphlebitis; it rarely originates in the mesial coat of the vein.

Etiology.—Most frequently phlebitis is a secondary manifestation of primary etiological factors, viz., trauma; direct extension by continuity of tissue from a local infection; metastasis, including hematogenous and lymphogenous; idiopathology, a loose term, and a false thrust to parry an obscure etiology. This type is probably always hematogenous from a cryptogenetic focus. The last important etiological factor is postoperative conditions, most commonly after abdominal operations; this type forms two per cent. of Cordier's series; it is usually leftsided. Examples of each of these etiological factors hereinbefore mentioned are numerous and common; the type to which I wish to direct attention in this paper occurred by extension. It is not infrequent for thrombosis to complicate phlebitis. Phlebitis of the prostatic vessels is of interest to the genitourologist; here the gonococcus is the usual cause.

In examining the literature for a description of phlebitis of the deep dorsal vein of the penis I have found nothing, although I am not certain that it has never been observed. In my opinion, however, it is not an uncommon complication of gonorrheal urethritis, probably escaping unobserved many times because it is not looked for. I may cautiously suggest that thrombophlebitis of the deep dorsal vein of penis may precede monogonorrheal and polygonorrheal arthritis in some cases, the former escaping notice for want of marked referable symptoms and being masked by a severe urethritis, balanitis, balanoposthitis. Likewise in the very uncommon cases of gonorrheal septicemia in the male it may here, too, preexist.

CASE.—W. C.; male; age eighteen years; born in United States of America; single; shademaker by occupation. He reported to the genitourinary clinic at the Samaritan Hospital, Brooklyn, June 1, 1917, with the history of a urethral discharge, purulent in character, and with frequent burning urination which appeared five days after intercourse. The two glass urine samples proved very cloudy and did not clear up upon the addition of nitric acid. A urethral smear yielded numerous pus cells and many gonococci. There was moderate edema of the foreskin, a hard, tense, tender, cordlike deep dorsal vein, with slight discoloration of its superficial overlying tissues. Moderate edema of the foreskin accompanied the condition, with enlargement of the inguinal glands. Temperature was 100° F.; pulse, 85; respiration, 25. Blood count revealed a moderate leucocytosis of 14,000 with a relative polymorphonucleosis. The patient was admitted to my service the following day, put to bed, and given an initial course of calomel in 0.25 grain broken doses, followed by magnesium sulphate. The penis was elevated upon a gauze pad on the abdomen and held down for twenty-four hours by an ice bag. Subsequently a dressing of twenty per cent. ichthyolis was applied and held down by hot water bag applications for four days. At the end of six days all pain had disappeared and much of the inguinal adenitis was no longer manifest. On the seventh day the patient left the hospital and again reported to the clinic to have his anterior and posterior urethritis treated. I may add that on general principles we encouraged copious water intake and liquid diet while confined to bed.

465 FIFTEENTH STREET, BROOKLYN.

DIVERTICULITIS OF THE CECUM.

By WILLIAM R. JACKSON, M. D., F. A. C. S.,
Mobile, Ala.

Diverticula of the intestines are congenital or acquired and are seen more often in the sigmoid and descending colon than elsewhere. Meckel's diverticulum of the small intestines is a congenital anomaly, and is usually from three to ten centimetres long with its extremity free in the abdominal cavity, or it may be longer and attached to the umbilicus, when it may give rise to a fecal umbilical fistula. Only two cases of diverticula of the cecum have been so far reported. Diverticula are classified into true and false—true if the sac has all the coats of the intestines, and false when the wall of the sac does not consist of all the tunics of the bowel, the muscular coat being absent. Diverticula may occur in the small intestines, in the vermiform process, and in the large intestine; they especially are often found in the lower part of the colon descendens and the colon sigmoideum, where they are usually multiple. As many as 400 diverticula have been found in a single case. They are often seen in two rows at the side of the bowel or close to the attachment of the mesocolon; they are most frequently in the appendices epiploicæ. They vary in size from that of a grain of wheat to that of a hazel nut or even larger. They usually contain fecal matter and sometimes concretions. They are observed more often on the old than the young.

The causes of these circumscribed dilatations of the bowel are weak spots in the wall of the intestines especially where a bloodvessel passes through its wall. Constipation and obesity are causative factors also. Diverticula may lead to obstipation, pocketing, ileus, inflammation, gangrene, ulceration, perforation, vesicocolic, fistula, and thrombosis. Diverticula being mostly in the lower colon, inflammation of them will produce symptoms like that of leftsided appendicitis. If the inflamed diverticulum is in the cecum, there will be typical symptoms of appendicitis, acute or chronic. The Mayo Clinic has furnished us with a large number of cases of diverticulitis which were successfully operated, resection and drainage being done.

Chronic diverticulitis may become a focus of an extensive fibrous area, or "fibromatosis," resembling carcinoma, and often diagnosed as such. Pain, tenderness, swelling, rigidity of the abdominal muscles, constipation, tympany, nausea, vomiting, fever, and leucocytosis constitute the syndrome of diverticulitis. The following are some of the conditions to be differentiated from diverticulitis; leftsided appendicitis; tuberculous sigmoiditis; dysentery; sigmoid lues; actinomycotic sigmoiditis; catarrhal sigmoiditis; pelvic inflammatory diseases; carcinoma of the sigmoid. Usually the x ray findings in colon diverticula are very striking and positive.

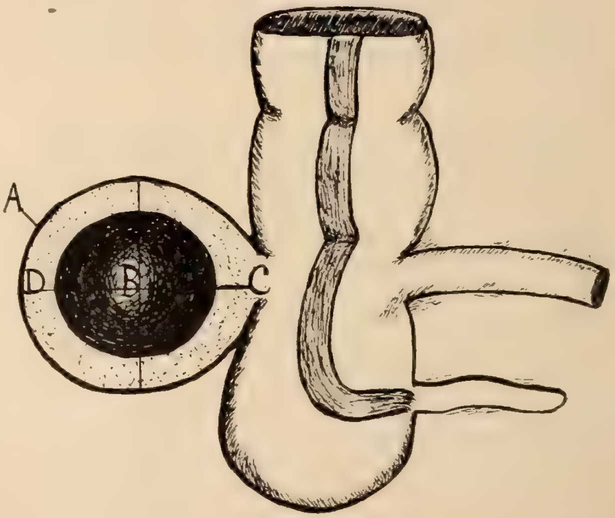

FIG.—Diverticulum of the cecum, two and one half by three inches in diameter: A, sac; B, coprolith; C, opening into the cecum; D, pus.

CASE.—Female; white; aged twenty-three years; mother of three children. Had been perfectly normal and well till April 12, 1917, when severe pain developed in the right side over the appendix. This was followed by tenderness, rigidity, fever and nausea, and vomiting. On the morning of the second day a distinct mass could be palpated over McBurney's point, and the patient's pulse became more rapid, accompanied by tympany. Operation was urged and performed on the third day. When the abdomen was opened, the cecum was found wrapped up in the omentum, as is often seen in acute appendicitis. Adhesions being freed from the mass, the appendix was found to be perfectly normal, but a tumorlike mass was growing from the external and anterior surface of the cecum. This mass was hard and firm where it was attached to the cecum, but was soft and gangrenous at its fundus. It was the size of an apple measuring two and one half by three inches. Deciding the tumor mass to be some kind of true tumor, I proceeded to effect its removal. The growth was excised and the cecum sutured by three rows of sutures, leaving an abundance of the cecum behind. On opening the mass, it was found to be a diverticulum of the cecum with a coprolith filling the sac (see Fig.). Inflammation and gangrene had set in and pus had extravasated into the peritoneum. Tubular drainage was established and the patient made an uninterrupted recovery.

164 ST. MICHAEL STREET.

Age Susceptibility to Cerebrospinal Fever.—Arthur Compton (*Lancet*, July 7, 1917) as the result of extensive studies shows that while the apparent most susceptible age is between twenty and twenty-five years, the real age of greatest susceptibility is under five years. This agrees with the observation that the mucosa of the child's nasopharynx is more delicate than that of the adult.

Our Readers' Monthly Prize Discussions

Twenty-five Dollars Is Awarded for the Most Satisfactory Paper

All persons, whether subscribers or not, are invited to compete for the prize of $25 offered for the reply deemed best by the editors to the following questions:

CLXXXVII.—How do you treat tantrums in children? (Closed.)

CLXXXVIII.—How do you treat frostbite and chilblains? (Answers due not later than November 15th.)

CLXXXIX.—How do you treat fainting? (Answers due not later than December 15th.)

The award will be based solely on the value of the information contained in the answer. No importance will be attached to literary style. Answers should preferably contain not more than six hundred words, and should be written on one side of the paper only. All papers submitted become the property of the JOURNAL, and should bear the full name and address of the author for publication. The prize will not be awarded to the same person more than once within a year.

The prize of $25 for the best answer to Question CLXXXVI has been awarded to Dr. David Lazarus, of New York, whose paper appears below.

PRIZE DISCUSSION CLXXXVI.

TREATMENT OF VARICOSE VEINS IN THE LEGS.

BY DAVID LAZARUS, M. D.,

New York.

Varicose veins in the leg may be caused by chronic constipation, pressure of the fetal head, continued standing and straining upon the legs, congested liver, heart, or kidney, and many other conditions. After ascertaining the cause of the condition and instituting treatment for that condition, the treatment of the varicose vein condition becomes of prime importance.

The medical treatment consists of absolute rest in bed in a recumbent position, with the legs slightly elevated, this being carried out for a period of about three to six weeks, overcoming or correcting the existing constipation, putting the patient on light, nutritious food and avoiding alcoholic beverages, and applying either a well fitting stocking or rubber bandage, either of which must only be applied while the limbs are slightly elevated and the patient is in a recumbent position. If inflammatory signs are present, then a wet dressing of a two per cent. alum acetate solution or the application of a fifty per cent. ichthyol ointment is of great benefit. Following this treatment, the patient may go about, but must wear the bandage or stocking which should be applied and removed while the leg is in a slightly elevated position. Treatment by medicine is of little avail, but medicine to correct errors of diet, constipation, and general anemia and run down condition should be given. A capsule consisting of extract nux vomica, grain ½; acid arsenic, grain 1/60, and phenolphthalein, grain ½, is usually prescribed by me.

The surgical treatment consists of various operations, having as their basic principle the removal of the tortuosities and relief of pressure upon the veins. The simplest operation consists of tying off the veins in various positions, either by the subcutaneous method, which is to be deplored, or by the open method. If the condition is moderately severe, the Schrady or the modified Schrady operation should be performed. In more severe cases of varicose veins of the legs it is necessary to operate upon the saphenous vein. Immaterial of what operation is performed the great importance for success lies in the aftercare. This consists of absolute rest in bed for three of four weeks or more with legs slightly elevated, overcoming constipation, and avoidance of any tax whatsoever of the system in general. If both the superficial and deep veins are affected and edema of the legs is present, surgical treatment may be of little avail. In excising the veins it is always best to perform the operation a short distance above the site of tortuosity and enlargement of the vein. If ulcers are already present they may be excised and skin grafting performed.

Dr. Louis L. Hoff, of Holyoke, Mass., writes:

Of all the varicosities of the body the most common is varicose veins of the legs. This condition is common among those who are affected with heart and lung diseases. These conditions constitute an important and exciting cause. If the heart is feeble in action, the power to drive the blood back is lessened and as a consequence the column of blood moves very slowly and becomes stagnant in places. The development of ascites often incident to heart affections with this pressure upon the veins causes a barrier to the free return of the venous blood. In pregnancy the gravid uterus presses upon the iliac veins. In a first pregnancy the veins of the extremity are not much affected pathologically and if attention is paid to the incipient stage of the disease, which is amenable to treatment, subsequent pregnancies will not be so likely to produce an incurable condition of varicose veins. Briefly, remove one or a combination of predisposing and exciting causes and results will be satisfactory to your patient and will bring peace to his suffering. Varicose veins are most frequent in the female and are apt to follow uterine enlargement of any cause. The tendency to the production of varicose increases as age advances. Obstruction to the free return of blood in the vein, as tight garters worn below the knee, is another predisposing cause. Occupations which require habitual standing constitute the fourth most potent cause. An exciting cause is tumor in the abdomen or the pelvis. It is obvious that any obstruction to the return venous circulation tends toward the development of varicose veins. Thus tumors of any variety which press upon the iliac veins will give rise to varicose veins of the leg. It has been stated that the left leg is more frequently the seat of the disease than the right on account of the sigmoid flexure, which when distended presses upon the left iliac vein. The cecum, when distended, would press almost as much upon the right iliac vein and as a clinical fact, the right leg is affected with equal frequency.

The treatment consists of 1, palliative measures, and 2, radical measures. Palliative treatment is to be directed to the removal of the cause of the obstruction and also of their effects as far as is possible without an operation. This object is best fulfilled by attention to the condition of the bowels, to the state of the liver, heart, and lungs; by enforcing quiet and rest in a recumbent position which favors venous return circulation, and by attention to the general health and often outdoor exercise in a suitable climate. The local palliative treatment consists in the application of an elastic bandage or a perfectly fitting silk elastic stocking which shall afford support to the vessels, thereby equalizing the circulation. The elastic support has a tendency to turn the flow of blood from the superficial veins to the deep veins which do not as a rule become varicose. The silk stocking should be made to order from accurate measurements of the limb, and should extend from below at the toes, when the trouble begins, to or about the knee, where it should be loose. Radical treatment has for its object the complete obliteration of the vein and many surgical procedures are being employed.

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Achylia Gastrica.—M. H. Gross and I. W. Held (*American Journal of the Medical Sciences,* August, 1917) say that treatment of this condition must be strictly individualized. They divide the cases into groups for therapeutic consideration. In the first group the symptoms point to a general neurosis with corresponding gastric symptoms; in the second are cases in which the gastric symptoms predominate; third includes cases in which diarrhea is the main symptom. In the first group the achylia is the expression of a general neurosis and the treatment must be directed to the nervous system with moderate, appropriate attention to the stomach.

In the second group, in which the gastric symptoms predominate, the food is prepared sufficiently so as not be a burden to the intestines mechanically, and must be of a nature to depend least on stomach digestion and at the same time not irritate the small intestine. When the gastric symptoms are very distressing it is necessary to keep the patient on warm milk, cream, and yolks of eggs for the first four or five days, then gradually progress to thin cereals prepared in milk, toast, and butter up to the end of the first week, while the patient remains in bed. When the symptoms have considerably diminished we can add bouillon with egg, beef soup, mashed potatoes with butter, as this is the vegetable best borne, and then spinach, asparagus tops, string beans, etc., all passed through a puree sieve. During the second week, two or three eggs may be given daily, and cereals in the form of light puddings or custard. If the patient is fairly comfortable, noodles and macaroni may be added. With meat we should begin gradually with it finely scraped or chopped and well done. Spices and alcoholic beverages are not allowed. The dietetic mode of life for a great length of time of an achylic patient who is subject to gastric symptoms should be: Three quarters of an hour before breakfast 250 c.c. of hot water, to which half a teaspoonful of sodium chlorate is added. Breakfast: orange juice or grape fruit, eggs in any form except hard boiled, cocoa, light coffee or tea, Graham bread or rolls with butter. Two or three times a week replace eggs with cereals, mashed potatoes, noodles, macaroni, or cream cheese. Dinner: grape fruit or caviar or anchovies, sardines as appetizers, bouillon, beef soup, or well prepared vegetable soup mildly spiced. Fish, chicken, lamb, veal, cooked ham, calf's brain, fresh sweetbread, or steak, well done, finely chopped and mildly spiced with onions, salt, and pepper, can be given, but must be thoroughly chewed. The vegetables named above, a cereal or noodle pudding or omelette, or prune souffle and cooked fruit. At 4 p. m., one cup of buttermilk with zwiebach or toast and butter. Supper: like breakfast with addition of cooked fruits and buttermilk instead of the coffee. Medicinally HCl and pepsin, ten parts of each in a hundred parts of water, a teaspoonful in a glass of water should be taken before and during the meal.

In the third group of cases, in which diarrhea is the main symptom, the treatment must be individualized, but patients who have not signs of enteritis are benefited by interdicting milk and meat for a few days, and then gradually returning to well done and finely chopped meat, not exceeding 200 to 250 grams a day. Raw fruits and coarse vegetables must be forbidden. The diet consists of eggs, water cocoa, fine cereals, rice and barley in particular, with butter, toasted white bread, macaroni, fish, cream cheese, and three day old kumyss. Red wines are beneficial. Medicinally the hydrochloric acid and pepsin given above with and after meals, and teaspoonful doses of calcium citrate or calcium phosphate in a tumbler of water are beneficial. In more obstinate cases, especially when the symptoms point toward enterocolitis, the diet should be restricted to strained barley soups, water cocoa, tea, rice, or sago soups cooked in water to which cinnamon may be added, and almond milk.

One hundred grams of red wine are allowed per day. Such a diet is continued three or four days while the patient stays in bed, and hot applications to his abdomen may be given. Medicinally we start with castor oil, followed by tannigen or tannalbin two or three times a day. For at least a month the diet should be about as follows: Breakfast: one or two soft boiled eggs, four slices of toast or zwiebach with butter, 250 grams of water cocoa with one or two egg yolks added. At 10 a. m. one cup bouillon. At noon barley or rice soup, spring chicken or lean fish, two tablespoonfuls finely mashed potatoes, or spinach or carrots in puree. Should these vegetables irritate they must be diminished or removed; if they are borne well they may be increased. Farina pudding and sixty grams red wine. Four p. m. 250 grams almond milk or water cocoa with zwiebach. Seven p. m. one to two eggs, cereals with butter or barley soup. Oatmeal and barley should be strained. Toast and butter. Water cocoa with yolk of one egg. Hydrochloric acid and pepsin are beneficial. In enterocolitis mild astringents and intestinal antiseptics are necessary.

Medicine and Surgery in the Army and Navy

LIFE IN A MEDICAL OFFICERS' TRAINING CAMP.

By Lieutenant John Doe, M. R. C.,
Weissnichtwo, Missouri.

At last I decided to join the Medical Officers' Reserve Corps. The sacrifice involved was a serious one. I had just begun to make a place for myself and was winning some of the recognition which would mean both financial and professional success. I realized that on returning from service in the war, if I should be so fortunate as to return alive and well, I should have to make a fresh start in life, that my practice would be dissipated, and that I would have to begin over again where I had left off, with the disadvantage of increased years and diminished energy. However, it seemed to me that duty called me to serve my country, even at the cost of material sacrifice. In this my wife agreed with me. She had, fortunately, sufficient means to be taken out of the "dependent" class, and consequently there were no complications in this direction. I therefore, applied for admission to the Medical Officers' Reserve Corps.

I received acknowledgment of the receipt of the application and instruction to report for physical examination. After passing this examination I received a formal notification that I had been named a first lieutenant in the Medical Officers' Reserve Corps. I had hoped that I might get a captaincy, but after all, that might come later. I then received my commission as first lieutenant with a request that I formally accept it. This was accompanied by a printed circular of instruction regarding the equipment which it would be necessary for me to provide. This equipment seemed to me quite formidable in view of the fact that I was to be allowed a very limited amount of baggage, and also ran into money—nearly $300. Then after several weeks, a telegraphic order came addressed to Lieutenant John Doe, M. R. C.:

> Report immediately to commanding officer, Medical Officers' Training Camp, Fort Benjamin Harrison.
>
> W. C. Gorgas, Surgeon General.

In the meantime I had ordered two uniforms, including cap, campaign hat, leggings, and army shoes, at a cost of thirty-five dollars for the khaki uniform, fifty-five dollars for the olive drab, twenty-five dollars for the leggings, and twelve dollars for the shoes. Having put my affairs in order, I set out on a Sunday morning for Fort Benjamin Harrison. At the railway ticket office, I was intercepted by one of a group of pharmacists, who needed another man to make up a party of ten to get reduced rates. Joining them, I set out for Indianapolis. I checked my trunk to Fort Benjamin Harrison. Arriving on Monday morning, I had breakfast at the Claypool Hotel, and took the Interurban trolley for the Fort. There appeared to be some doubt as to the exact place where I should get off, but eventually I took the advice of the conductor and debarked at "Ohio Camp."

I found myself in the middle of a vast plain, with a group of buildings about half a mile away. Assuming this to be the camp I was in search of, I tramped down the dusty road, valise in hand, and on nearing the buildings was greeted with a friendly "Hello, doc," and satirical cries of "Turn out the guard, here comes the general," from a group of young men in khaki, who recognized in me a "fresh fish." Inquiring for headquarters, I was directed to an isolated building to the extreme right, which seemed strangely devoid of life, a fact which explained itself when I found that, far from being the headquarters, the building was, in fact, the latrine. Tramping back through the dust, I finally located the headquarters building through the fact that in front of it were two or three automobiles and several orderlies holding horses. Here I found a tired looking young officer seated at a desk, who took my telegraphic order, put his initials in the corner, wrote "Doe," on a list before him.

LIEUTENANT COLONEL P. M. ASHBURN, M. C.,
Commanding Medical Officers' Training Camp, Fort Benjamin Harrison.

LIEUTENANT COLONEL CHARLES F. MORSE, M. C.,
Property officer, Medical Officers' Training Camp, Fort Benjamin Harrison.

said, "Give me your baggage checks—get your card in the next room—report to Company 9," all in one breath, and turned to the next recruit. In the next room, two privates, seated at a plain deal table, were vigorously hammering on typewriters. One of these grabbed my telegraphic order and asked: "Age? Where do you want your body sent? Specialty? Report to Company 9." He then handed me my identification card, without which it seems I had no standing in camp. Having observed a figure 6 on one of the buildings which I passed, I set out in that direction, supposing naturally that Company 9 would be in proper sequence. Arriving at the place where cantonment No. 9 should have been, I found an open field. An inquiry at No. 8 developed the fact that No. 9 was across the roadway, and several hundred yards to the south. Arriving at the spot indicated, I found an unfinished pine structure about twenty-one feet wide and 150 feet long with openings for doors and windows, but far from being ready for occupancy. In one corner half a dozen valises were deposited. In front, under the shade of a big tree, lounged half a dozen medical officers in brand new uniforms. The carpenters knew nothing.

Instructing doctors in tent pitching, Medical Officers' Training Camp, Fort Benjamin Harrison.

The men in uniforms turned out to be fellow officers who had been assigned to Company 9. Inquiry revealed the fact that each officer would have to skirmish for himself, as to bed, bedding, etc. A commissary sergeant from the post appeared in the unfinished building with a wagonload of mattresses. One of these I purchased at a cost of five dollars. I then went to the office of the quartermaster of the post, another half mile walk in the sun, and asked for blankets. There were none. I asked for a cot; the supply had been exhausted by the line officers' training camp, which also drew its supplies from the post quartermaster. They did have sheets at thirty-six cents, pillow cases at eleven cents, and socks at seven cents, which I purchased, and army shoes, but only in certain sizes. Fortunately my feet are not very long, so I could take a six and one half double E, for which I paid $2.83. I was required to fill in my name, rank, and command on the sales slips, but paid cash for everything.

Further search through the building brought me in contact with a young quartermaster sergeant who was very kind and polite. He put me into a quartermaster's bus, driven by a sergeant of the Medical Department, who ran over to the railway station, or rather the place where the trains stopped, for there was only a small hut used by the express company. Here among a hundred other packages, trunks, and bundles lying on the ground along side the railway, I found my trunk, and with the help of the accommodating sergeant put it into the bus, and went back to the office of the quartermaster of the Medical Officers' Training Camp. Inquiry here failed to help me to secure blankets, though I was told that blankets would be loaned me for the night in case I was unable to purchase them, but that this particular quartermaster would have no blankets to sell. Driving back to the unfinished cantonment of Company 9, I found that a civilian dealer had brought in a stack of blankets, and I purchased a pair from him, paying fifteen dollars for the two. By this time my clothing was wet with perspiration, and so I opened my trunk, and changed from the heavy olive drab to the lighter khaki uniform. As I came out I saw the group which had been lounging in front of the hut disappear down the roadway, and overtaking them, was told that they were on the way to luncheon. Presently a very busy, energetic, and corpulent captain in shirt sleeves came out, took a list of our names, and informed us that we would be provided with luncheon in the mess room of Company 3, as soon as that company had finished with its luncheon.

MAJOR SAMUEL J. TURNBULL, M C.,
In charge of instruction of enlisted men, regimental detachments, and evacuation hospitals, Medical Officers' Training Camp, Fort Benjamin Harrison.

On being summoned within, we found the mess hall a duplicate as to structure, of the barracks. One end was divided off for a kitchen and instead of the line of cots which I observed in the barracks there were long board tables and benches, at which we sat, and were served with a plentiful though plain meal by fellow officers. Ordinarily the meals are served by negro servants, but these had gone on a strike, and the commander of the company had called for volunteers among the officers themselves to serve the tables temporarily, and they did so most graciously.

After luncheon, we went back to the unfinished cantonment, and were notified that we had been assigned to new quarters which had recently been vacated by students of the line officers' training camp. Taking such of our belongings as we could carry in our hands, we trudged down the dusty road, and deposited them in the new cantonment, which was a duplicate of hundreds of others all around it. Four medical officers then appeared and we stripped for physical examination, the results of the examination being noted on our identification cards. Then came a long interval of idleness, which I made use of by attending some of the lectures going on in the grove surrounding the Y. M. C. A. Building. In this grove the medical officers were assembled in companies, each company having its own instructors. The instruction included military formations, special sanitary precautions, and surgery, medicine, and French. By wandering about from one group to another I found that all these subjects were being treated by some one of the instructors.

MAJOR J. E. BASTIEN, M. C.,
In charge of organization and instruction of ambulance companies, Medical Officers' Training Camp. Fort Benjamin Harrison.

MAJOR HOWARD C. McSNYDER, M. C.,
Adjutant, Medical Officers' Training Camp, Fort Benjamin Harrison.

Returning to the street of Company 9, I found the men lined up. By this time the company had grown to 125, and the busy little captain called out the names of the individual officers in groups assigning them to mess with other companies until such time as the mess of Company 9 could be regularly organized. This involved in some cases a triplicate service, there being three sets of men designated to dine in each mess hall. All this involved much bookkeeping for the fat captain, for each officer pays for his own meals, the government furnishing meals only to enlisted men. We therefore were for the time being paying guests of the companies on whom we had been billeted, and the captain who had us temporarily in charge had to keep track of the meals eaten so that the company furnishing these could be repaid from the mess fund of our own company

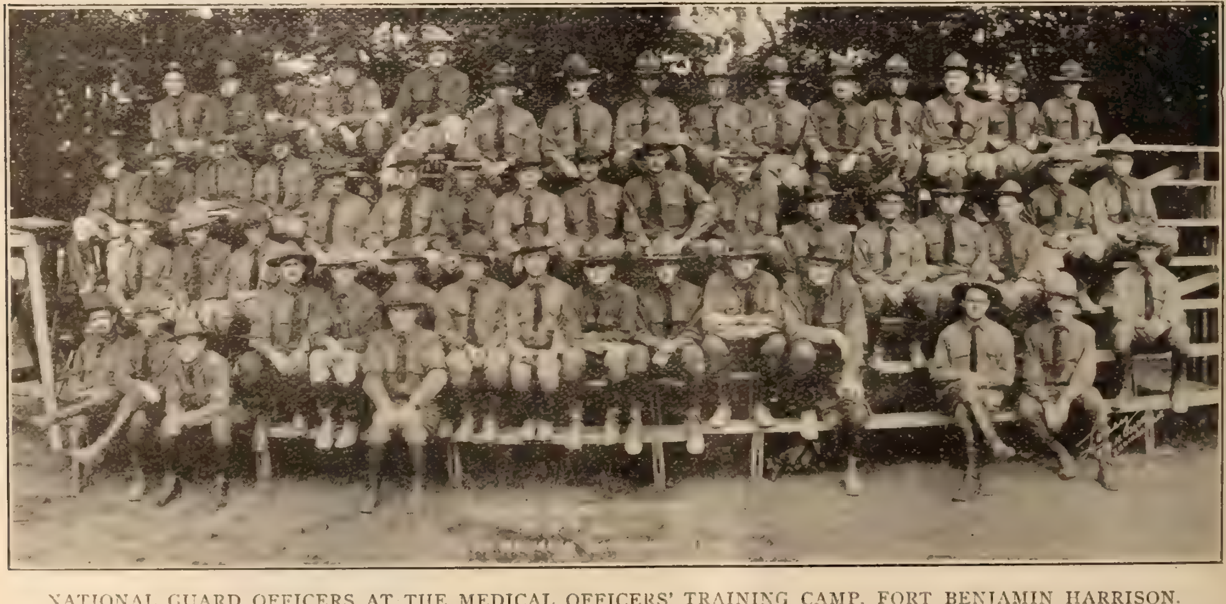
MAJOR C. C. McCORNACK, M. C.,
In charge of instruction of enlisted men, regimental detachments and evacuation detachments, Medical Officers' Training Camp, Fort Benjamin Harrison.

later. This temporary arrangement lasted only a few days until our own company mess was organized. Each meal was charged at thirty-three cents, as the officers in training pay a dollar a day into the mess funds of their respective companies.

AT THE MEDICAL OFFICERS' TRAINING CAMP AT FORT BENJAMIN HARRISON.
National Guard Camp, looking down street of Company E, which is made up of officers and enlisted men of the New York National Guard.

Each of us then made out his personal report to be forwarded "through military channels" to the surgeon general's office. This was our first introduction to the voluminous "paper work" which is so irksome to the recruit but so necessary to the proper conduct of the army, particularly in the Medical Department. Those of us who had ever been brought into contact with the Pension Bureau, and many had through claims made by patients, knew how essential it is to make proper records as required, for those records form part of the permanent records on which pension claims may be based half a century or more later. This personal report, made out on a form furnished for the purpose, told my rank, when and where I had received my commission, when I received orders to join, and when and what command I joined. These particular reports were also of personal importance as the paymaster, whom they eventually reached, based his payroll on them. Since neither the post quartermaster from whom I had purchased my mattress nor the M. O. T. C. quartermaster had cots for sale, many others in Company 9 had to sleep on the floor as I did, in fact, some were even in worse straits, having neither mattress nor blankets. This deficiency was made good, however, by the loan of blankets or comfortables by the M. O. T. C. quartermaster, so that all of us had covering. Fortunately it was not very cold, and the strenuous day with its novel experiences furnished a hypnotic which made all sleep despite minor discomforts.

At 5:30 next morning came "first call" by the buglers all over the camp, and fifteen minutes later the reveillé. At first call we rose and dressed hurriedly, for at reveillé we fell in for roll call, our first military function, by the way. We then fell out for the morning ablution. Camp Benjamin Harrison, being considered a permanent camp, was provided with sewers and bath houses and toilet accommodations more elaborate than in some other camps. These were housed in wooden cantonments at one end of which was a room about twenty-one by forty-two feet with a number of showers. The other end of the building was divided by a longitudinal partition, on one side of which was a series of faucets above a flat trough, the front edge of which had a shelf for supporting basins. Each


NATIONAL GUARD OFFICERS AT THE MEDICAL OFFICERS' TRAINING CAMP, FORT BENJAMIN HARRISON.
Left to right—top row: Drs. Wagner, Hay, Hewitt, Hicks, Grabau, Walker, Cass, Clark, Keatley, Lyons Shaw, Rusmisell, Cauldwell, Dryer, Gill. Middle row: Drs. Kilcourse, Metz, Christopher, James, Palmer, Allerton, Harvey, Ballantyne, Albertson, Boucher, Miller, David, Smith, Moore, Robertson, McGraw, Benedict. Bottom row: Drs. Scandelton, Snyder, Meeker, Albanese, Boutwell, King, Cromwell, Wallace, Coogan, Ackerman, Lantz, Martin, Bradner. Sitting on first step: Drs. Bles, Mayer, Hovey, Jones, Kerr, Toepper.

man brought his own basin, soap, and towels. On the other side of the partition was a gutter shaped urinal and a row of comfortable and modern water closets. The place was scrupulously clean and wholly inoffensive.

Breakfast was served, as were all the meals, in white enamelware dishes of gargantuan size—the coffee cup held a full pint—on a plain, extemporized, wooden table without cloth. A rude bench furnished seats alongside the table. The kitchen occupied one end of the building, and the food was ample and excellent even though the service was primitive. For breakfast we had half of an excellent melon, oatmeal with milk, a choice of tea or coffee, scrambled eggs, bread, butter, syrup, and jam. Dinner, which is served at noon, always includes a meat, vegetables, tea, and a dessert, ordinarily canned fruit of some kind. Tea or supper is similar to dinner though a little less substantial. After breakfast we took up our schedule of work at eight o'clock. This schedule varied from week to week as the course progressed. The major portion of our time was devoted to purely military matters on the assumption that we needed little or no instruction on professional topics. There were occasional lectures by famous visitors and specialists on such subjects as gas gangrene, trench foot, the typhus in Serbia, bone grafting, the aftercare of laparotomies, etc. Schedules are given herewith for the fifth and sixth weeks which will give a good idea of the ordinary day's work. In addition to the marching and horseback riding we had setting up exercises every morning in the company streets. I found myself perfectly willing to turn in early in the evening and was able to sleep despite the occasional disturbances necessarily involved when fifty men slept in a single cantonment. Some of the officers preferred the out of doors and found places for their cots on the ground underneath one end of the cantonment, which happened to be higher than the other.

MAJOR T. E. DARBY, M. C.,
In charge of instruction of reserve officers, Medical Officers' Training Camp, Fort Benjamin Harrison.

The work was to me extremely interesting. I found myself rapidly taking on the attitude of the soldier in my dependence on my superiors for the disposal of my time. To a man who has been left so much to his own initiative as a practising physician, this submission to superiors in every phase of your life, this feeling of being hedged in by authority at every turn, was at first irksome, but one soon grew to accept the soldier's view and it was in the end a relief to feel that some one higher up was doing your thinking for you so far as your daily life was concerned. Between study, lectures, and drills, we had but little leisure. Such leisure as we had ordinarily came at the weekend when a certain proportion of the officers would get leave to go into Indianapolis to enjoy the luxury of a well served meal at the Claypool and take in a theatrical entertainment of some kind, though ordinarily a moving show was the best thing offered. A large building was devoted to the Y. M. C. A. work and here moving pictures were given twice a week, free writing material was provided, and equipment for baseball and football was loaned. Some of the younger and more athletic officers got up football and baseball teams, being encouraged to do so by their instructors.

LIEUTENANT COLONEL GEORGE H. SCOTT, M C.,
In charge of instruction of reserve office, Medical Officers' Training Camp, Fort Benjamin Harrison.

In addition to the 1,400 medical officers in the camp, there were about 3,000 enlisted men of the Medical Department who occupied tents "across the Marne," as the term went, on the other side of a little hollow. All the national guard officers in the Medical Officers' Training Camp, and there were several hundred of these, were quartered in tents instead of cantonments. Ordinarily there were two officers to a tent, and they said they preferred sleeping in tents on account of the comparative privacy, which they thought more than counterbalanced the discomforts of a cantonment housing fifty or a hundred men.

"Across the Marne" the tents were laid out in streets and arranged just as a field ambulance or an ambulance company would be in the field. The officers there ordinarily messed with the men, that is, obtained their food from the company kitchen, though it was served to them on a table in a mess tent. In these cases each officer paid his share, not less than fifteen dollars a month, into the company mess fund. I met several of these officers whom I knew, and found that their food was quite as good as that served to us in cantonments, though the officers ordinarily supplemented the food obtained from the company kitchen with a few delicacies, such as sweets or pies, sent in by their families or friends. A large and well equipped post exchange supplied ice cream, milk, soda water, candy, etc., and a number of the small things such as handkerchiefs, writing materials, kodak supplies, etc., for which there was a demand either among the officers or the enlisted men.

National Guard officers' tent. Medical Officers' Training Camp, Fort Benjamin Harrison. At the left, Lieutenant F. Sharp, Philadelphia; at the right, Lieutenant Richard H. Eanes, Widen, W. Va.

Two of the most interesting parts of the work to me personally were the practice in the trenches, which were built to closely simulate the conditions existing in France on the war front, and the pistol practice We had a half a dozen reserve officers who acted as instructors in pistol practice and were provided with all the ammunition necessary. In the trenches we learned how to handle wounded men in very confined spaces and to convey them to the rear without exposure to the enemy fire. The instructors included regular army officers and members of the reserve corps. The administration of the camp was in the hands of a group of nine regular army officers under the command of Lieutenant Colonel P. M. Ashburn, M. C. These men, on account of their long experience, in the regular service, were able to give instruction and advice on every phase of the novel problems presented to the civilian doctor, and their intercourse with the student officers was marked by a uniform courtesy and kindness which spoke worlds for their forbearance. Colonel Ashburn's staff included Lieutenant Colonel George H. Scott, M. C., and Major T. E. Darby, M. C., who were in charge of the instruction of the reserve officers; Major C. C. McCornack, M. C., and Major Samuel J. Turnbull, M. C., in charge of instruction of enlisted men, regimental detachments, and evacuation hospitals; Major J. E. Bastien, M. C., organization and instruction of ambulance companies; Major S. S. Creighton, M. C., organization and instruction of field hospitals; Major Howard C. McSnyder, M. C., adjutant; Major Russell M. Wilder, M. C., assistant adjutant; and Lieutenant Colonel Charles F. Morse, M. C., property officer.

The student officers were ordered to the Medical Officers' Training Camp for three months' instruction. Many, however, were detached before the close of the three months for special duty at other stations. I was fortunate enough to complete the entire course and find that this has given me a great advantage in active service, since I have been able to handle all my paper work with much less trouble than officers who did not complete the full three months' course. At the end of the term, I found myself in better condition physically than I had been for years. The outdoor life, the enforced exercise, the plain, but wholesome food, and the freedom from the petty cares of civil life, and the, to me, intensely interesting character of the work and of the studies much more than compensated for the comparative crudity of the environment inevitable to a life in camp. I do not know that I could have spent a three months' vacation more enjoyably than I did in the Medical Officers' Training Camp at Fort Benjamin Harrison.

[For several of the photographs in this article we are indebted to the courtesy of Captain G. P. Coopernail, M. R. C.—EDITORS.]

Group of animal drawn ambulances, Medical Officers' Training Camp, Fort Benjamin Harrison,

ASSOCIATION OF MILITARY SURGEONS OF THE UNITED STATES.

Twenty-fifth Annual Meeting Is Held at Medical Officers' Training Camp, Fort Benjamin Harrison, Indiana.—Largest Attendance on Record.

All the sessions of the twenty-fifth annual meeting of the Association of Military Surgeons of the United States were held in the open air with the exception of the last session, which was held in one of the Y. M. C. A. buildings, owing to inclement weather. The meeting was unique, in that it was held in the environment of a military encampment. The attendance was the largest in the history of the association. The meeting was opened Monday, October 8th, 9 a. m., by an address by the President, Surgeon General Rupert Blue, United States Public Health Service, after which he introduced Major Edouard Rist, Medical Department, French Army, who read a paper on the subject of Tuberculosis as It Pertains to Armies. Four distinguished visitors, Colonel T. H. Goodwin, R. A. M. C., Colonel Charles Dercle, French Army, Captain John Gilmore, R. A. M. C., and Major Edouard Rist, French Army, were then admitted to honorary membership in the association and presented with the badge of the association. President Blue then introduced Surgeon General William C. Braisted, U. S. Navy. Admiral Braisted said in part:

MAJOR S. S. CREIGHTON, M. C.,
In charge of organization and instruction of field hospitals, Medical Officers' Training Camp, Fort Benjamin Harrison.

> Mr. President and Members of the Association: It is a great pleasure for me to be here today and I wish that I might be present during the meeting, but I must leave shortly for Chicago. The navy, as you know, is far from the interior and from the front, but I think you will be interested in knowing that all our work is progressing along exactly the same lines as yours. Two of the base hospitals are ready for the reception and care of patients and the navy work at home—on this side of the water—is about complete, so far as organization, personnel, supplies, and equipment are concerned. We are busy now with the estimate of some sort of organization on the other side—base hospitals are going with our army of marines. Some years ago, when president of this association, I predicted that the time would come when membership in this association would be one of the most highly prized that man might have. I had no idea that it would be realized so soon, but the time has come when this association should be the highest medical expression that we have in this country. I think, gentlemen, that you will have one of the best and most enlightened meetings at this session that you have ever had, and I feel that much good will come from it.

Colonel E. L. Munson, secretary of the association, read the report of the executive council, outlining the activities of the association since the 1915 annual meeting. Colonel Munson stated that while it was impracticable to hold a general meeting of the association in 1916, the affairs of the organization had been in no wise neglected, the council having held fourteen meetings during that time. The secretary's report covered the period January 1, 1916, to October 7, 1917, and was one of unprecedented progress. On January 1, 1916, the membership of the association had dwindled to 820, and even of this number many were of doubtful status and in arrears for dues for several years. The total membership, October 7, 1917, is 4,366. Since January 1, 1916, the *Military Surgeon* has been completely reorganized and doubled in size. The present total paid circulation is 4,979, and with the propaganda for membership and advertisers, an edition of 6,000 copies is now required. Eighteen months ago the annual cost of the *Military Surgeon* was $3,100. At the present time the *Military Surgeon* is costing over $20,000 annually, or nearly seven times as much. On January 1, 1916, the total assets of the association, after all bills were paid, amounted to just $71.60. At the present time, the association does not owe a dollar and it has a surplus of $13,378.82. Assistant Surgeon General William C. Rucker, U. S. P. H. S., treasurer *ad interim,* submitted a report which showed a very satisfactory financial status of the association. The next business in order was the amendment of the constitution and bylaws. During this part of the programme a telegram was received from Dr. Charles H. Mayo, president of the American Medical Association, expressing regret at his inability to attend the meeting. President Blue then appointed the following committees: Resolution Committee—Brigadier General J. D. Griffith, Mo. N. G.; Lieutenant Colonel Bispham, M. C., U. S. A.; Medical Director George A. Lung, U. S. N.; Assistant Surgeon General W. C. Rucker, U. S. P. H. S.; Major Victor C. Vaughan, M. O. R. C., U. S. A. Nominating Committee—Colonel Henry Page, M. C., U. S. A.; Medical Inspector F. E. McCullough, U. S. N.; Surgeon J. O. Cobb, U. S. P. H. S.; Colonel Jacob Frank, M. C., Ill. N. G. Auditing Committee—Brigadier General S. C. Stanton, M. C., Ill. N. G., Retired; Medical Inspector F. E. McCullough, U. S. N.; Surgeon J. O. Cobb, U. S. P. H. S.

In a paper entitled Cooperation of the Civilian Medical Profession with the Medical Services of the Government in Time of War, Major Victor C. Vaughan, M. O. R. C., outlined the work done by the Medical Department of the Council of National Defense. He stated that one of the first things to be done was to ascertain if certain medicinal plants imported from Germany before the war could be grown in this country and if so, if the American grown plants would be of the same value, citing as an instance digitalis. The investigation of this plant showed that the American grown was even superior to that formerly imported from Germany. Inventions for the prevention of injury to the ear drum in time of bombardment and the discovery of new disinfectants were also touched upon by Major Vaughan. The necessity for greater rank for the officers of the Medical Department and other interesting subjects were ably presented in this paper. Major Vaughan's address completed the programme for the first session and the meeting adjourned until 1 p. m.

Drill in cross the back carry at Medical Officers' Training Camp, Fort Benjamin Harrison. Lieutenant Homer E. Line, Chili, Ind., carrying Lieutenant Carl C. Vogel, Elray, Wis.

The first feature of the second session was a symposium on How Medical Military Services of the Government May Best Cooperate in Time of War. Colonel Louis A. La Garde, M. C., U. S. A., Retired, read the paper for the Army; Medical Inspector F. E. McCullough, U. S. N., read the paper for the Navy, prepared by Passed Assistant Surgeon H. B. Eaton, U. S. N.; and Assistant Surgeon General William C. Rucker, U. S. P. H. S., read the paper for that service. Major Joseph C. Bloodgood, M. O. R. C., U. S. A., delivered an address. The chairman then introduced Colonel T. H. Goodwin, C. M. G., D. S. O., R. A. M. C., who read a very interesting paper on Practical Medical Military Lessons of the War. An address on Plastic Surgery, by Surgeon William S. Bainbridge, U. S. N., followed Colonel Goodwin's paper. Surgeon Bainbridge told of his experiences in Germany during the first two years of the present war, having visited forty-one of their most important cities, their hospitals, their trenches, etc.

Doctors in litter drill, Medical Officers' Training Camp, Fort Benjamin Harrison. Showing type of cantonment.

At 3:30 p. m., the meeting adjourned to witness a parade and review by the Medical Officers' Training Camp. There were 3,500 men in line in this parade, 1,000 of whom were medical officers. It was reviewed by the heads of the three great public medical services, Surgeon General Gorgas, of the Army; Surgeon General Braisted, of the Navy, and Surgeon General Blue, of the United States Public Health Service. At 5:30 p. m., the third session, a barbecue was held. Tables were spread for the accommodation of about 1,500 guests and a bounteous feast was served. Huge bonfires built in a semicircle around the tables added greatly to the occasion. Following the barbecue supper, the guests were entertained with singing and recitations by members of the Medical Officers' Training Camp.

At 8 p. m., Colonel Charles Dercle, French Army, delivered an illustrated lecture on Medical Service on the Western Front. The motion pictures were made on the French front, and that the lecture was especially interesting and beneficial goes without saying.

The fourth session opened with the reading of the following papers: The General Aspects of the War, by Colonel T. H. Goodwin, R. A. M. C.; Transportation of Wounded on the Western Front, by Captain J. Gilmour, R. A. M. C.; Trench Warfare, by Lieutenant Henri Haye, French Infantry.

Colonel Henry Page, M. C., U. S. A., chairman of the nominating committee, presented the following names in nomination for officers of the association for the ensuing year: President, Medical Director George A. Lung, U. S. N.; first vice-president, Colonel Henry Allers, M. C., N. J. N. G.; second vice-president, Brigadier General Henry P. Birmingham, M. C., U. S. A.; third vice-president, Assistant Surgeon General J. W. Kerr, U. S. P. H. S.; secretary-editor, Colonel E. L. Munson, M. C., U. S. A.; treasurer, Assistant Surgeon General W. C. Rucker, U. S. P. H. S. The report was accepted and the officers therein named declared elected for the ensuing year. The report of the auditing committee was that the books were found to be correct. Following these reports, addresses were made by Surgeon J. O. Cobb, U. S. P. H. S., and Colonel E. E. Persons, M. C., U. S. A. The meeting then adjourned until 1 p. m.

The fifth session was devoted to witnessing a field demonstration of Medical Department activities. Inspection of field, evacuation and base hospitals at war practice was made. A hospital field company rushed up to a certain point, unloaded its equipment and established a field hospital in a few minutes. Then came a long line of ambulances bearing supposedly wounded men. Both motor and mule ambulances were used. Stretcher bearers could be seen rushing back and forth across an imaginary battlefield. They halted at first aid stations, then hurried the wounded to waiting ambulances. It was a grim though interesting spectacle, and served well to show how rapidly the Medical Department can work.

The principal feature of the sixth session, Tuesday, October 9th, 7 p. m., was an illustrated lecture on War Neuroses given by Major Thomas H. Salmon, M. O. R. C., U. S. A. The lecture was followed by bonfires and entertainment by the Medical Officers' Training Camp.

The seventh and last session, Wednesday, October 10th, 8 a. m. was held in one of the Y. M. C. A. buildings owing to rain. The first feature was to be a paper on An Efficient State Medical Department by Lieutenant Colonel Jacob Frank, M. C., Ill. N. G., but as Colonel Frank had been unexpectedly called to Chicago, the paper was read by title. Colonel T. H. Goodwin delivered a lecture on The Retreat from Mons. An address was made by Colonel Briggs, M. C., N. Y. N. G., Retired, and a demonstration on the preparation of the Carrel-Dakin solution proved very interesting. Resolutions were then adopted, after which the meeting adjourned *sine die*, it being understood that the arrangements as to the place of holding the next annual meeting were to be left with the executive council. As Colonel Munson said: "In a psychological sense, the association has enjoyed a period of great uplift. Never have its members been more loyal to the organization and enthusiastic in its betterment. . . . With achieved success behind us, we may look forward in all confidence to a brighter future and larger opportunity."

Mess hall, Medical Officers' Training Camp, Fort Benjamin Harrison.

MEDICAL NEWS FROM WASHINGTON.

Situation in Regard to Promotions in the Medical Corps.—Nutritional Survey of Military Forces.—Military Surgeons Pass Resolutions to Benefit Dependents of Soldiers and Sailors.—Meeting of the American Public Health Association.—Assignments to Gas Defense Service and Section of Psychology.—A Veterinary Corps of the National Army to Be Organized.

WASHINGTON, D. C., *October 23, 1917.*

Owing to promotions resulting from increases in the regular army personnel, and as a result of promotions by seniority, all captains of the regular Medical Corps have been advanced to the grade of major and there are no officers in the grade of captain, in view of the fact that under the present law first lieutenants in the corps cannot be promoted until they have served five years. With all the former captains promoted, there remain 282 vacancies in the grade of major, and the list shows, with no officers in the grade of captain, 1,286 vacancies in that grade. The commissioned personnel of the Medical Corps is based on an enlisted strength of 300,000 in the regular army. The 134 first lieutenants in the corps cannot be promoted until 1922. A bill to remedy this injustice and to permit promotion of these first lieutenants now is pending in Congress; it has the approval of the War Department, and it has been made the subject of a favorable report by the Senate Military Committee. It also permits promotion of first lieutenants of the Medical Corps of the national guard, who have been under the same disadvantages.

* * * * *

The nutritional survey of the military forces, arrangements for which were made some time ago, has begun. First Lieutenants Edward Plant and Willard R. Line, of the Sanitary Corps, will make surveys at Fort Benjamin Harrison, Ind., reorganization camp and Camp Travis, Fort Sam Houston, Tex., and Camp Bowie, Fort Worth, Tex. First Lieutenants Drury L. Weatherhead, Norman R. Blatherwick, Victor K. La Mer, and Arthur W. S. Thomas, of the Sanitary Corps, will report to Professor S. C. Prescott, at Massachusetts Institute of Technology, for preparation for this work, and upon completion thereof will make surveys at Camp Devens, Ayer, Mass., and Camp Upton, Yaphank, Long Island.

* * * * *

Those interested in the welfare of dependents of soldiers and sailors are much gratified to note with what enthusiasm the Association of Military Surgeons, at its recent meeting at Indianapolis, endorsed the suggestion that members of the medical profession, who are not employed on military service at home and abroad, through some arrangement made by the medical section of the Council of National Defense, attend professionally and free of cost the members of the families and other dependents while the members of the military and naval establishments are away from home. The association, which is constantly growing in strength, influence, and usefulness, passed a resolution to the effect that "it is the sense of the Association of Military Surgeons of the United States . . . that it would be commendable, wise, and proper, to have mobilized by competent authority such medical service of the United States as is not now or may not become during the present war utilized by the United States Government for military, naval, or public health service at home or abroad, and that such mobilized medical service be so organized and administered as will insure medical service free of charge during the war to the families or dependents of such officers, soldiers, sailors, or members of the public health service as may be engaged in active military, naval, or public health service, or as may require such mobilized service and are not or may not be provided for in this respect by the United Government, without charge to such families or dependents of such officers, sailors, or members of the public health service." The resolution was adopted unanimously. With the association endorsing the project in this way, it remains for some organization, such as the medical section of the Council of National Defense, to devise ways and means by which the project may be developed, maintained, and successfully applied.

* * * * *

A number of members of the medical services of the Government read important papers and delivered interesting addresses at the meeting of the American Public Health Association in Washington last week. Surgeon J. R. Phelps, of the Navy, attached to the Navy Department Bureau of Medicine and Surgery, read a paper on statistics on Wednesday. The Thursday session was in connection with the Baltimore and Maryland medical societies, and among those who delivered addresses were Medical Inspector R. C. Holcomb, of the Navy, and Colonel F. F. Russell, of the Army Medical Corps.

Officers at Medical Officers' Training Camp, Fort Benjamin Harrison, hear an address from General Glen, commanding Officers' Training Camp.

* * * * *

First Lieutenants Dudley Clapp, E. L. Frederick, and A. H. Waitt, of the Sanitary Corps, have been ordered to duty in the office of the surgeon general of the army at Washington in connection with the gas defense service, and First Lieutenant A. S. Otis, of the corps, to duty in that office in the section of psychology.

* * * * *

Orders have been issued directing the organization, as a part of the Army Medical Department, of a veterinary corps of the National Army, the total number of the corps not to exceed one commissioned officer and sixteen enlisted men for every 400 animals in service. The ratio in the commissioned grades will be seven with the rank of major, to twenty with the rank of captain, to thirty-six with the rank of first lieutenant, to thirty-seven with the rank of second lieutenant.

Editorial Notes and Comments

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EDITORS
CHARLES E. DE M. SAJOUS, M.D., LL.D., Sc.D.,
Philadelphia,
SMITH ELY JELLIFFE, A.M., M.D., Ph.D.,
New York.

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We ask the indulgence of our readers for the delay in the delivery of this issue of THE JOURNAL. *It was caused by a strike which affected all the printing houses in New York.*

PROGRESS IN THE NEW YORK CITY POLICE DEPARTMENT.

Well bred little boys and girls know "our friend the policeman." They look up to his heights of attainment with undisguised admiration and a secret resolution to emulate, and wait confidingly at the crowded thoroughfare for his gallant services. A large proportion of our young citizens, however, have had no opportunity for a friendly attitude toward the policeman. They are not well bred; they have been brought up in an atmosphere of suspicion and evasion. Ignorance, too readily lurking temptation, proximity of evil conditions are all responsible. At the bottom lies a cause for which well bred society is largely responsible. This is the impulse to hound the criminal, scent him out, and pounce upon him with a satisfaction only concealed in the righteousness of form it has succeeded in drawing about itself. This impulse is so much more brutally marked in the earlier years of civilization, it is so much older than civilization, that we are constrained to believe that it must indicate the outcropping of an unconscious selfcondemnation for harboring, also unconsciously, the same primitive criminal tendencies which manifest themselves in certain hapless individuals. Society, therefore, the "well bred," has maintained this position by applauding the effort on the part of the police force to terrify the small citizen and the big, if he may or may not be suspected of delinquency, or at least to stand watching with his big stick. A few stray remarks to children heard upon the street reveal how imbued society is with this attitude, and wider contact with criminal courts or any other form of penalizing institution merely confirms this. Society in its attempts at regulation has forgotten its humanity. There is no denying that it has made and confirmed criminals by this callous attitude both toward its small boys and the older men and women submitted to its care.

The authorities themselves are awakening to the fact that it is plastic human material with which the policing force, protective or punitive, has to deal. They are arousing their own forces and through their attitude a larger thinking public to a preventive responsibility which works not only for the protection of the society of which they are the guardians, but to the betterment and improvement of the class of offenders. It has been Commissioner Woods's effort recently to enlist his men in such an outlook upon their service. He urges them not merely to be on call when danger arises, quell the disturbance, and bring the offenders to punishment, nor furthermore would he have them make it their business only to hunt out and prevent the secret gathering and the hatching plot, locating and nabbing the criminals before the act. This is prevention of a sort, but his is a prevention which far outmeasures this. This is to inspire the men in service with an idea of the common humanity of the people with whom they have to deal. It brings in an element of constructive work on the part of every officer whereby he is on hand first to build up a clean and wholesome spot where crime and disorder might instead have put in an opening wedge. It teaches him to be on terms of friendliness and comradeship with that element of the younger population which have been taught to be afraid of him and therefore plot against him and the society he represents.

Such is the principle upon which the police department is being encouraged to carry on its work. It extends itself, moreover, to the delinquent who is arrested and brought to trial. Here too an attempt to understand the problem involved in each individual case is made part of the program. It is recognized that many factors go to make up a criminal offense and many more the personality of the man or woman who has offended in any particular point of the law. The examination and the treatment based upon its results extend for that reason much further than is made possible by a superficial process of merely hunting out an offender and measuring punishment according to the formalized definition of the offense. This newer method is not first punitive. It is first curative and prophylactic and its aim is that which its result must be, to control trouble by preventing it and, as far as mental equipment permits, to restore the offender to a useful place in society.

This is a progressive program and though it may be largely in its beginning, it points in the right direction. It likewise should be highly suggestive to a large part of the medical and legal professions to fall into step with this great practical working force in the adoption and carrying out of such principles of humanity, their understanding and service in the most constructive sense.

PATENTED GERMAN DRUGS TO BE MADE IN AMERICA.

Under the Trading with the Enemy Act, the Federal Trade Commission was given authority to make regulations governing the rights of enemies in enemy owned patents and copyrights. The commission has issued regulations which affect something like 20,000 patented and copyrighted articles, covering a wide range of industries. Regulations pertaining to a large number of valuable synthetic drugs heretofore made under German patents are of particular interest to physicians. These drugs have been increasingly difficult to obtain since the outbreak of the war and since America's entry into the war importations of them have, of course, entirely ceased. Under these regulations licenses will be issued to American manufacturers to use enemy owned patents. They will be required to pay royalty to the Government to be held for the ultimate benefit of the German owners. The details of the conditions which are to be imposed on these licensees will be determined by the commission as the licenses are issued. It is not improbable that the question of price may also be taken into consideration when the licenses are issued so as to prevent the possibility of profiteering by licensees. Representatives of the American Chemical Society, the surgeon general of the army, the surgeon general of the navy, the Public Health Service, and the Council of National Defense have been consulted by the commission, and it is expected that the regulations will make it possible to provide supplies of many valuable drugs which have not been obtainable at all or obtainable in limited quantities only for some time past. Among the drugs affected are the following, none of which are now obtainable from the usual sources of supplies: alypin, aristochin, iodothyrine, luminal, novasparin, piperazine, sabromin, sajodin, salophen, saloquinine, theosin, medinal, novatophan, paratophan, tricresol, and hydragogin.

Several of the most used German synthetic drugs, such as salvarsan, phenacetine, and aspirin are now made in the United States. No public statement has been made as to just what will be done by the commission in the case of these drugs.

PSYCHIATRY AND THE MISSING LINK.

The study of mental disease is admittedly difficult. Medical students, as a rule, acknowledge it as their *bête noir,* the general practitioner is apt to confess his unfamiliarity with any but its elementary principles, and even the physician in the hospital for mental disorder sometimes exhibits an elaborate surface display of familiarity with symptoms, covering but little accurate knowledge of the more profound psychological relations involved. This allegation is made with no implication of blame. The anatomist can turn to the cadaver and compare his findings with the dissection of animals; the therapeutist can study the actions of drugs on animals and frequently on man himself; the surgeon has a definite and established method of perfecting himself in the minutiæ of his craft, but the would be psychiatrist is handicapped in many ways.

In the first place there are no lower animals which approach man closely enough to render the study of their psychological reactions of much value to the student of human behavior. This belittles in no way the excellent studies which have been made of animal behavior. The real trouble is in the existence of such a great gap between the highest order of monkeys and the lowest order of man. The so called missing link, which has been sought so eagerly by anthropologists, would be quite as welcome to psychiatrists, especially as we conceive him as communicating with his kind by an agrammatical speech. We might thus be able to study language in its nascent state, so to speak, and trace the development of the emotions and reason from their very beginnings.

Lacking, however, such clinical material, we must turn to the feebleminded as the root of psychiatry, taking the place of comparative anatomy in the study of man's physical life. Here we encounter the rather inexplicable fact that we seem to have three large groups with large gaps between. First there is a class of idiots who measure up roughly to the age of one year in intelligence; then a group approximating in mental age five or six years, and last a group of morons, whose psychological age is ten or twelve years. One would expect, instead of such a grouping, a scale running by almost imperceptible gradations from one year to the adult. We might expect the initial impulses when weak to carry the individual up to any one of a score of points along the subnormal scale rather than halt him at one of only three stopping places. Psychiatry then has here a very pretty problem to explain, and perhaps if the true reason is forthcoming it will be valuable in elucidating other psychiatric problems.

In the meantime the search for the missing link must be prosecuted until the last dark corner of the earth's surface has been illumined. Let us investigate the feebleminded in the meanwhile and, in the absence of an ape with an agrammatical language, we might turn to the aphasic and study his speech as we would study that of the missing link.

THE MEDICAL INSPECTION OF SCHOOL CHILDREN.

Careful examination and the preparation of complete surveys of the mental and physical conditions of school children are necessary to check the increasing tendency to defects at a period when the pressure of education acts adversely on development. Although many States in the Union have voluntary inspection of one kind or another, it remained for the State of New York to be the pioneer in the mandatory inspection of school children.

It is true that many large cities have this mandatory examination, yet the neglect of this measure by rural communities and the smaller cities is quite in keeping with their general sanitary status. In this, New York State has taken the proper action. This neglect is due in part to the idea generally entertained by the lay as well as the medical public that health and mental and physical development in the country are far ahead of those in the city. This may be the case among prosperous rural communities, but by now every one is familiar with the health conditions in certain of the rural sections of the South, of the mountains of West Virginia, of the mountain regions of Kentucky, where hookworm, pellagra, trachoma, and general physical and mental deficiency are found. Moreover, if it is remembered that the larger the city or community the more it can afford to spend in health work and disease prevention, it will be understood that in fact the mortality and morbidity rates are lower in proportion to the size of the community.

Investigation of the general health and mental and physical defects of school children as well as the sanitary provisions of the school buildings and grounds by Clark has again confirmed the fact previously brought out in the investigations in Europe that a very large percentage of the school population suffer from remedial defects. The school child must be studied individually, for he is a different being from the adult, both in conformation, rate of development, liability to disease and defect, etc. How large a percentage of the population suffered from physical defects that could have been prevented or remedied during the formative period of childhood was shown by the recruiting statistics recently. Most cases of visual, auditory, and postural defects so frequently found in adults had their inception in early childhood and were probably initiated by unhygienic methods of teaching and were undetected because of the lack of systematic and persistent medical inspection.

To be successful, however, any system of medical inspection must be thorough. Every aid to diagnosis must be enlisted, and when correction is advised subsequent inspection must see that correction has in fact been carried out. The school authorities can require good health, as well as proficiency in studies, as a condition to promotion. With the rise in the health standard the standard of mental proficiency will rise. So many of the mental defects found in school children are due to physical defects or adverse environment rather than to heredity that the question of mandatory inspection becomes a solution for the problem of the mentally deficient school child. If, however, the physical defects are allowed to continue too long before correction the mental deficiency and backwardness will have assumed such proportions that their remedy becomes hopeless, and the victims must take their places permanently among the already too crowded class of the defective. The medical inspection of school children can, besides, be a means of education in the value of health to those who are otherwise shut off from this source of information. Finally, the medical inspection of school children is the first step in a rational physical and mental preparedness for national service.

EYE STRAIN AND THE MOVIES.

The tremendous development of the moving picture business that has become a part and parcel of our amusement life, in fact for some portions of the community the only amusement accessible to them, has called into being the problem of the effect of the moving picture on the eyes. Demands are being made, particularly by parents of growing children, for special information as to whether frequent attendance of movie "shows" is harmful to the eyes, and what measures are to be adopted for their protection. We hear complaints from many an intelligent patient who emerges from the moving picture performances with a splitting headache and a pain in and around the eyes. Whether these were due to the wretched ventilation of the house, which many even of our best theatres provide, or to the direct effect of the picture on the eyes, or possibly to a combination of the two, it is sometimes difficult to determine.

There is, however, no doubt that, as exhibited now, many of the pictures exert a deleterious effect on the visual apparatus. Bishop N. Harman (*British Medical Journal,* February 17, 1917, quoted in *Ophthalmology,* July, 1917) considers the following conditions attending the moving picture exhibitions capable of exerting an unpleasant effect on the eye: glare, flicker, rapidity of motion, concentration of attention, and duration of exhibition. The eye is unable to adapt itself to a single point of light in a dark place; no matter how feeble, it will be relatively intense and irritating to the eye. The flicker is irritating especially to those of the audience who respond to the rapid change of the moving film more quickly because their "action time" is higher than those whose senses are dull. To avoid this there should be a reasonable illumination of all parts of the theatre not directly behind the screen. The irritating effect of the flicker depends on the slowness of the film. The more rapid the change of the film the less is the effect upon the eyes, and the flicker will cease altogether if the film can be made to move faster than a keen eye is able to perceive variations of light. An irritating flicker is also produced by old and damaged films that have scratches and patches, as these allow sudden exposure of the eyes to bright flashes of light. Fatigue of the eye is also induced by rapidity of motion on the films which is far in excess of the natural movement of the event depicted. The eye is compelled to follow motions to which it is not habituated, and as a result its resentment is felt in straining and fatigue. The mechanism of the motion picture should be so arranged as to depict the course of events as near to their natural rapidity as possible. If the moving picture program lasts more than a certain length of time, an hour or less, the eye becomes fatigued from too long concentrated attention and compulsory alertness, in addition to the other causes. This defect is partly remedied by the introduction of other features, such as singing or some other entertainment. The various ill effects are considerably reduced when the observer is as nearly as possible in a straight line with the centre of the screen, and as far away from the screen as thrice its full height.

It should be admitted that thus far it has been difficult to answer statistically the question as to the permanency of the defects caused by the motion pictures. The author, however, cites an instance where a great many school schildren who were in the habit of frequenting moving picture shows were referred by the school physician to the eye clinic as having failed to pass the standard test for acuity of vision. An examination at the clinic showed that nothing was the matter with their eyes, the lowering of the visual acuity evidently being due to fatigue, both ocular and mental, induced by strain at the movie show. However, while this is rather vague and unconvincing, it should give a sufficiently strong impetus toward further investigations of this very important subject, both in adults as well as in children, and any one with time to spare and a statistical bent of mind would surely confer a boon on the profession and on a grateful public by working out some definite data on the effect of the moving picture on the eyes.

News Items.

Periodical Supplement to Navy Medical Bulletin.—The bureau of medicine and surgery of the navy is issuing a thirty page pamphlet, prepared for the information of members of the navy hospital corps. The pamphlet contains a summary of standard dressings, information from medicals journals of interest, and a list of promotions and changes in rating. This is to be issued periodically as occasion requires.

The Medical Profession of New York Subscribes to Second Liberty Loan.—Mr. Samuel W. Fairchild, chairman of the Liberty Loan Committee of the Drug and Chemical Trades of New York, announces that the sum of $32,033,800 has been subscribed to the second liberty loan through this committee. This sum includes subscriptions for $1,700,000 subscribed by the medical profession of New York city through Mr. Fairchild's committee.

Chemists and Laboratory Assistants Wanted by the State Department of Health.—Among the positions for which the New York State Civil Service Commission will hold examinations on December 8th are the following in the State Department of Health: Physiological chemist, $1,500: laboratory assistant in chemistry, $720 to $1,200; laboratory assistant in bacteriology, $720 to $1,200. For full particulars address the State Civil Service Commission, Albany, N. Y.

Joint Meeting of Pediatric Societies.—On Thursday evening, November 8th, a combined meeting of the New England Pediatric Society, the Philadelphia Pediatric Society, and the Section in Pediatrics of the New York Academy of Medicine will be held at the Academy of Medicine. Addresses will be delivered by Dr. Richard M. Pearce, of Philadelphia; Dr. Hermann M. Biggs, of New York, and Dr. Samuel McC. Hamill, of Philadelphia. A dinner at the Harvard Club will precede the meeting.

An Opening for Physicians.—Dr. Donald B. Armstrong, executive officer of the Community Health Demonstration, calls attention to three full time medical positions now open at Framingham, Mass. These include a public school medical supervisorship, a medical position in one of the industries of the city, and a medical position at the head of the industrial medical organization for the community as a whole. The first two positions will pay $2,500 a year and the third position $3,500. Men with school or industrial experience are preferred for this work, but owing to the pressure of present conditions it may be necessary to take young men with sound medical background and have them develop with the work.

Southern Medical Association.—The annual meeting of this association will be held in Memphis, Tenn., November 12th to 15th, under the presidency of Dr. Duncan Eve, of Nashville. Dr. Frank D. Smythe, of Memphis, is general chairman of the committee of arrangements, which is making elaborate preparations for a meeting which they believe will be the most notable in the history of the organization. Complete programs may be obtained from the secretary, Dr. Seale Harris, of Birmingham, Ala.

Annual Meeting of Railway Surgeons.—The New York and New England Association of Railway Surgeons will hold its twenty-seventh annual meeting at the Hotel Astor, New York, on Thursday, November 8th, under the presidency of Dr. H. G. Stetson, of Greenfield, Mass. Other officers of the society are: Dr. J. S. Hill, of Bellows Falls, Vt., first vice-president; Dr. William B. Coley, of New York, second vice-president; Dr. J. K. Stockwell, of Oswego, N. Y., treasurer; Dr. George Chaffee, of Little Meadows, Pa., corresponding secretary; Dr. J. H. Reid, of Troy, N. Y., recording secretary.

The Care of Soldiers' Feet.—Regulations governing orthopedic work in the army have been published for the information and guidance of officers and enlisted men. For medical officers in medical officers' training camps at least three periods of instruction of not less than an hour each is prescribed, and for selected medical officers who elect the orthopedic service there will be a course of intensive instruction in orthopedic surgery of about six weeks' duration. Enlisted men will receive practical instruction in the care of the feet and particular attention will be given to the feet by medical officers at each physical examination.

Canadian Public Health Association.—The sixth annual meeting of this association was held in Ottawa recently and the following officers elected to serve for the ensuing year: Sir John Gibson, of Hamilton, honorary president; Captain W. H. Hattie, M. D., of Halifax, president; Dr. J. A. Hutchinson, of Westmount, first vice-president; Mrs. A. M. Huestis, of Toronto, second vice-president; Dr. George Clinton, of Belleville, third vice-president; Major G. F. Fitzgerald, M. D., of Toronto, general secretary; Captain George W. Porter, of Toronto, general treasurer. Next year's meeting will be held in Hamilton.

Neurologists to Hold Joint Meeting at the Academy.—The Section of Neurology and Psychiatry of the New York Academy of Medicine will hold a joint session with the New York Neurological Society, Tuesday evening, November 13th, at 8:30 o'clock, with Dr. Frederick Tilney, president of the Neurological Society, in the chair. Dr. J. Ramsay Hunt will read a paper on Exhaustion Pseudoparesis Developing under Intensive Military Training. Addresses on Preparedness in Neurology and Psychiatry will be delivered by Major Pearce Bailey, Medical Officers' Reserve Corps; Major Graeme H. Hammond, Medical Officers' Reserve Corps, and Dr. B. Sachs.

Examination for Assistant Medical Officer at Quarantine.—The New York State Civil Service Commission will hold an examination on December 8th for the position of assistant medical officer, Department of the Health Officer of the Port of New York, open to men only. This position is in the detention and hospital service of the quarantine station and involves residence and service at either of the quarantine islands in lower New York Bay. It requires a knowledge of cholera, plague, yellow fever, smallpox, leprosy, epidemic cerebrospinal meningitis, and typhus fever. The examination is open only to licensed medical practitioners of the State of New York.

Utah State Medical Association.—Dr. Frederick Stauffer, of Salt Lake City, was elected president of this association, at the twenty-third annual meeting held in Salt Lake City on September 12th, 13th, and 14th, succeeding Dr. S. C. Baldwin. Other officers were elected as follows: Dr. A. J. Stewart, of Provo, first vice-president; Dr. Edward I. Rich, of Ogden, second vice-president; Dr. Ernest Van Cott, of Salt Lake City, third vice-president; Dr. W. Brown Ewing, of Salt Lake City, secretary; Dr. F. A. Goultz, of Salt Lake City, treasurer; Dr. E. H. Smith, of Ogden, councilor. Dr. T. J. Howell, of Salt Lake City, was chosen delegate to the American Medical Association convention, and Dr. J. R. Morrell, of Ogden, alternate delegate.

Georgia State Board of Medical Examiners.—Dr. J. W. Palmer, of Alley, was elected president of the board, at the annual meeting held recently in Atlanta. Dr. A. F. White, of Atlanta, was elected first vice-president, and Dr. C. T. Nolan, of Atlanta, secretary.

Delaware State Medical Society.—Dr. George W. K. Forest, of Wilmington, was elected president of this society at the 128th annual meeting, held in Middletown on October 9th, and other officers were elected as follows: Dr. Rowland G. Paynter, of Georgetown, first vice-president; Dr. James Martin, of Milford, second vice-president; Dr. William A. LaMotte, of Wilmington, secretary; Dr. Samuel C. Rumford, of Wilmington, treasurer.

Doctor Baruch Honored by the City.—On Monday, October 29th, Rivington Street Baths were renamed the Dr. Simon Baruch Baths and a bronze tablet was unveiled there commemorating Doctor Baruch's work in public sanitation. Twenty-eight years ago he began his fight to have the public baths and swimming pools made available for the poor of the city, and twelve years later the first public bath was built. This bath proved to be such an important factor in disease prevention that since then twelve additional baths have been built and six floating baths. The city statistics show that in 1916 these public baths were used by 9,227,375 bathers. In August of this year at the Rivington Street Baths, now the Dr. Simon Baruch Baths, 136,096 bathers used the baths, an average of 4,390 a day.

Medical Association of the Southwest.—The twelfth annual meeting of this society was held in Kansas City, Mo., Tuesday and Wednesday, October 15th and 16th, under the presidency of Dr. Everett S. Lain, of Oklahoma City. About four hundred physicians from Missouri, Kansas, Oklahoma, Arkansas, and Texas, the five States from which the association draws its members, were in attendance and the meeting was unusually interesting. Officers for the ensuing year were elected as follows: Dr. F. H. Martin, of Hot Springs, Ark., president; Dr. C. Lester Hall, of Kansas City, vice-president for Missouri; Dr. J. M. Bonham, of Hobart, vice-president for Oklahoma; Dr. M. M. Smith, of Dallas, vice-president for Texas; Dr. E. F. Day, of Arkansas City, vice-president for Kansas; Dr. F. H. Clark, of Kansas City, secretary, and Dr. M. M. Smith, of Dallas, Tex., chairman of the advisory committee. Next year's meeting will be held in Dallas.

Examining Boards Named for Army Medical Corps.—Boards of medical officers as hereinafter constituted are appointed to meet at the places indicated on November 5, 1917, to conduct the preliminary examinations of applicants for appointment in the Medical Corps of the Army:

Washington, D. C.—Lieutenant Colonel Champe C. McCulloch, Jr., Medical Corps.

Philadelphia, Pa.—Major Elijah H. Siter, Medical Reserve Corps.

Pittsburgh, Pa.—First Lieutenant Nicolas G. L. Shillito, Medical Reserve Corps.

Jefferson Barracks, Mo.—Colonel Joseph T. Clarke, Medical Corps.

Columbus Barracks, Ohio.—Colonel Charles Willcox, Medical Corps; First Lieutenant George D. Chunn, Medical Corps.

Letterman General Hospital, San Francisco, Cal.—Colonel Guy E. Edie, Medical Corps; Captain Leo C. Mudd, Medical Corps.

Fort Logan, Colo.—Colonel Allen M. Smith, Medical Corps.

Army and Navy General Hospital, Hot Springs, Ark.—Colonel Charles M. Gandy, Medical Corps; First Lieutenant James E. Ash, Medical Corps.

Fort Lawton, Wash.—Major Charles A. Black, Medical Reserve Corps; First Lieutenant Carl O. Lind, Medical Reserve Corps.

Fort McKenzie, Wyo.—Captain Thomas V. Moore, Medical Reserve Corps.

Camp Lee, Va.—Lieutenant Colonel Thomas L. Rhoads, Medical Corps; Captain Henry P. Carter, Medical Corps.

Fort Clark, Tex.—Major Frederick C. Kellam, Jr., Medical Corps.

Brownsville, Tex.—First Lieutenant Val E. Miltenberger, Medical Corps.

Fort Benjamin Harrison, Ind.—Lieutenant Colonel Percy M. Ashburn, Medical Corps; Captain Joseph E. Bastion, Medical Corps.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

THE TREATMENT OF BOILS.

By Louis T. de M. Sajous, B. S., M. D.,
Philadelphia.

(*Continued from page 808.*)

In all cases of furuncle, whether an attempt is made to arrest the process in its early stages or the boil is already so advanced that prompt absorption of the inflammatory products is out of the question, constant care of the surrounding uninflamed skin is necessary both to lessen the chance of extension of the original lesion and to obviate the formation of additional furuncles in its vicinity. The old fashioned poulticing of boils is being given up because it favors, rather than prevents, propagation of the inflammatory focus. Measures are indicated instead that will not only remove or kill some of the bacteria at the skin surface but also inhibit in so far as is possible the remainder more deeply ensconced which cannot so easily be reached.

The simplest measure for the purpose consists in washing the skin surrounding the boil at least once a day with soap and water or with tincture of green soap. Since uncleanliness is a factor in the etiology of so many boils, this procedure alone will frequently prove of inestimable service. Additional benefit is to be obtained, however, by the use of actual antiseptics, provided the irritation they induce is not such as in itself to preempt the defensive capacity of the tissues and thereby weaken their resistance to bacterial proliferation. This objection, that of excessive skin irritation, doubtless applies in the use of a 1:500 solution of mercuric chloride as a lotion twice daily, as was recommended by Stoner, among others, a number of years ago. Many other methods are available, however, which seem to give the desired results without undue irritation. Alcohol, especially when of about seventy per cent. strength, is a good antiseptic, though its use merely as a lotion is probably not, in view of its rapid evaporation, especially efficient. The evaporation could be prevented with an impermeable dressing, but the latter would soon have to be removed to obviate harmful irritation. A greater favorite, apparently, for the purpose in question is benzine. Ether has also been used, but its great volatility would seem a disadvantage. P. G. Skillern, Jr., 1913, recommends a thorough bathing of the area, first with benzine, then with alcohol, while Manté, 1913, uses a mixture of alcohol and ether containing camphor in solution.

Probably the most valuable property of alcohol, benzine, and ether, however, in these cases is as solvents for the fats of the skin, solution in them assisting in the penetration of more persistently acting antiseptics, especially iodine. This purpose is, of course, served by the alcohol in tincture of iodine, the efficiency of which as a skin antiseptic, capable of entering into even the deeper layers of the integument, is well established. Painting a ring of the tincture around the boil reduces this measure to its simplest expression, and is unquestionably efficient. More perfect removal of the skin fats, and hence better penetration of the iodine, can, however, probably be secured by wiping off the area with pledgets dipped in a solvent alone, before the tincture of iodine is applied. Thus Berger, 1913, advises preliminary use of benzine to free the skin of fats. Repeated daily application of the pure tincture is apt soon to result in follicular irritation, but a tincture diluted with one to three parts of alcohol is almost equally efficient as an antiseptic while much less irritating; again, according to Sabbatani, the excess of iodine can without prejudice be removed five or ten minutes after its application by swabbing the skin with a tepid, sterile five per cent. solution of sodium thiosulphate. Manté at times disinfects the skin with a one or two per cent. solution of iodine in carbon tetrachloride, followed, when the surface has dried, by a dusting with talcum powder. The use of a two per cent. solution of salicylic acid as a lotion at each dressing has been recommended by Rishl. A dilute solution of formaldehyde and one of aluminum acetate have likewise been employed.

Brocq, the well known French dermatologist, many years ago called attention, as a useful measure, to the free application of petrolatum around furuncles, the purpose being not so much to inhibit bacteria already in the skin as to prevent completely others from the exterior from entering. The same therapeutic principle doubtless obtains in Ringer's old treatment, alcohol and camphor being first applied, then, the skin having been wiped dry, a layer of camphorated oil. At all events, from what has been said, the best method of treating the surrounding skin would appear to be threefold, viz., preliminary removal of fats, iodine tincture, and petrolatum or some oil to prevent reinfection. Shaving the hairy covering off the surface to be treated is always advisable. To reduce the likelihood of driving microorganisms more deeply into the tissues it has been recommended to draw the razor only toward the centre of, and not away from, the furuncle.

In the treatment of the boil itself, when already well established, so that the possibility of a successful abortive treatment need no longer be taken into account, the measures used should obviously be such as will assist the natural defensive process. Early incision across the entire inflammatory area, some years ago a widely accredited method, has for this reason been of late largely abandoned, the incision breaking through the defensive wall, cellular as well as seric, set up by the organism around the focus of infection. The very fact that, as noted by Leonard Freeman, extensive cellulitis or serious lymphadenitis seldom results from a furuncle would seem, even bearing in mind the low virulence of the germs ordinarily responsible, to prove the effectiveness of this defensive wall and suggest the unsuitability of any measure which would impair it. Proper local treatment, therefore, consists in favoring the rapid formation of this wall and in applying such measures as will destroy, remove, or inhibit as many as possible of the offending germs.

Physical measures are at times appropriate, including some of those already referred to in relation to the so called abortive treatment, e. g., the cauterization with a hot metallic point, recommended by Unna and others; exposure to direct sunlight or the incandescent bulb, as advised by Bartlett, and the suction treatment of Bier. Bartlett himself employs Bier suction for the purpose of promptly reducing edema in adjacent muscles and relieving stiffness of the neck. P. G. Skillern, Jr., regularly uses the Bier cup with the purpose of withdrawing some of the infected fluids from the boil and bathing the latter with fresh blood. The entire inflammatory area having been washed with benzine and alcohol and tincture of iodine or a three per cent. alcoholic solution of picric acid applied, gentle suction with the Bier cup is instituted for three minutes, to be repeated four hours later.

(*To be continued.*)

Modern Treatment of Burns.—Edward Hammond Risley (*Boston Medical and Surgical Journal.* September 13, 1917) divides the problem of treatment of a burned patient into: 1, the treatment of shock, when present; 2, the selection of treatment for the burned area, involving the kind of first dressing to use and the prevention of sepsis; 3, the prevention and treatment of contractures; 4, the prevention and treatment of associated acute toxic nephritis and duodenal ulcer and the question of their relation to the toxemia. No attempt should be made to move the patient until he has been relieved by a generous dose of morphine. If shock is marked, subpectoral salt infusion and rectal shock enemata should be given, while exposed areas are lightly covered with a warm blanket to prevent chilling. If this gives benefit within half an hour, one of three courses may be followed: 1. The clothing may be carefully cut away from the whole body and the patient exposed to the air, with the temperature of the room elevated to about 110° F. by open fire or other means; this is the open air treatment. 2. He may be swathed with compress cloth saturated with a one to five per cent. solution of picric acid, to be left on for forty-eight hours; or the burned area, if not extensive, may be painted with tincture of the chloride of iron and the patient left without dressing in a warm room. 3. Should the patient not recover rapidly from his shock he should be immersed in a continuous hot saline or boric acid bath, the clothing to be cut away after and not before he has been immersed. He should be kept in the hot bath until he has recovered from his shock, and should be reimmersed immediately on signs of recurring shock. Too much stress cannot be laid on this very vital, but often lightly considered, part of the problem of the care of burns.

The only point in favor of an oily dressing is that it is fairly painless. It is not as a rule sterile, it favors the growth of bacteria, keeps the discharges in contact with the wound, causes maceration, and must be changed every twenty-four hours. The points in favor of the picric acid dressing are: it can be sterilized; the discharges are absorbed by the dressing; the growth of bacteria is prevented; it is healing in itself; it acts as an analgesic, and the first dressing can be left on forty-eight hours. The danger of poisoning is negligible. The writer considers the open air treatment superior to any in which any kind of dressing is used, at least for extensive burns. Patients so treated recover more quickly from shock, suffer less pain, and get a better start than others. For not too large burns of the first and second degrees paintng with tincture of the chloride of iron is a satisfactory method. Its first application is painful, but analgesia quickly supervenes. Repeated applications should be made once an hour or so until the affected area is well coated over and a dry protective layer is formed, after which only occasional applications need be made. The area is best left uncovered as a thorough drying is desired.

The writer believes that the percentage of contractures can be reduced at least seventy-five per cent. by the prevention of sepsis, the early immobilization of extremities effected by properly applied splints or plaster casts, and the early employment of passive motion and massage. He formulates the following general rules for treating burned cases: 1. Combat shock first. 2. Treat all shocked cases or those with extensive burns by the open air method or the temporary use of the hot bath. 3. Avoid oily dressings. 4. In burns of the extremities, if fairly extensive, but not requiring open air, use picric acid. 5. In all other burns use picric acid, tincture of the chloride of iron, or the more modern paraffin film treatment, according to preference or experience. The paper closes with a discussion of the ambrine treatment, which he believes to be a decided advance over other methods, especially for burns of a limited area. Points in its favor are that it is not a painful dressing, it is easy of application and removal, does not favor infection, produces more rapid healing, and leaves a smooth, soft, pliable scar.

Treatment with Bacterial Vaccines of Bronchial Asthmatics Who Are Not Sensitive to Proteins.—I. Chandler Walker (*Journal of Medical Research*, September, 1917) divides bronchial asthmatics into those who are sensitive to proteins, and those who are not, the treatment of the latter of which he discusses. Fifteen cases, divided into three groups, are described. It is rare for patients with bronchial asthma to become sensitive to proteins after forty years of age, and nearly half of the sensitive asthmatics have asthma before twenty; chronic bronchitis is not relatively common, and cardiorenal disease is uncommon among sensitive asthmatics. In nonsensitive asthmatics the reverse is true. From the study of a number of cases Chandler concludes that strains of Streptococcus pyogenes aureus are occasionally agglutinated by the serum of bronchial asthmatics, and under this condition, administration of a vaccine of this organism is the proper treatment; occasionally treatment with diphtheroid vaccines is beneficial. Attacks of bronchial asthma, or symptoms simulating it closely, may be associated with conditions and diseases remote from it, as cardiac, renal, pulmonary, and pituitary disease. It is possible that the disease is not true bronchial asthma in patients who are not sensitive to proteins.

Autoserum Treatment for Chorea.—Rudolph Duryea Moffett (*Medical Record,* September 8, 1917) describes the Goodman treatment which has been used in 100 cases in the past two years in five per cent. of which recurrence took place within a year, giving ninety-five per cent. of successful cases. In this method fifty c. c. of blood is withdrawn from the arm and rapidly centrifugalized, after which the serum is pipetted off and placed in the incubator at body temperature. A lumbar puncture is performed and twenty c. c. of spinal fluid withdrawn; the serum is slowly injected at body temperature, taking from five to eight minutes. The patient is kept in bed in the recumbent position for several hours to prevent heart collapse and the injection is repeated in five or six days if necessary. Many cases show on the following day a slight rise in temperature, vomiting, increase in pulse rate, and perhaps a slight stiffness of the neck; these symptoms are, however, not serious. Patients with syphilis, tuberculosis, or enlarged thyroid do not do well under this method and care must be taken to keep the patient in bed for four or five days previous without medication of any kind, as a saturation of the nervous system with chloral, bromides, or arsenic may result in collapse when the serum is injected.

Radium Treatment in Cancer.—In the Report of Results of Radium Treatment at the Collis P. Huntington Memorial Hospital by the Cancer Commission of Harvard University, William Duane and Robert B. Greenough (*Boston Medical and Surgical Journal,* September 13, 1917) present the following conclusions: Many cases of advanced, inoperable, or recurrent cancer may be benefited by treatment with radium. In such cases the relief may include one or more of the following advantages: relief of pain; diminution of discharge; rendering discharges less offensive; relief of hemorrhages; diminution in the size of the tumor masses, even to total disappearance; and improvement of the general condition, with a beneficial psychic effect. In a very small number of advanced and apparently inoperable cases, improvement may occur such as to permit a radical operation. In about thirty-five per cent. of superficial nonmetastasizing types, and in a much smaller number of metastasizing cancer, radium is capable of destroying the clinical manifestations of the disease. Sufficient time has not elapsed to report these cases as cured. In a limited number recurrence has taken place. In certain situations, as on the eyelids, radium treatment is to be preferred to operation. In ceratoses, papilloma, and other benign skin diseases regarded as precancerous, radium is effective in destroying the clinical manifestations in from forty-eight to sixty per cent. of the cases. In myelogenous leucemia the beneficial effects of radium are pronounced, and, although recurrence of symptoms may take place, the clinical advantages of radium therapy are very marked. In malignant lymphoma, lymphosarcoma, and Hodgkin's disease the lesions appear to be especially sensitive to radiation, and definite, though temporary, benefit is obtained. When in accessible situations it would appear that the disease could be controlled by radiation for a considerable period of time. In the treatment of many other tumors and diseases radium has been used with benefit depending largely upon the extent of the disease, its depth in the tissues, and the practical ability to apply sufficient radiation to modify or destroy tissue or tumor growth. Among these conditions may be mentioned recurrent or inoperable carcinoma of the cervix or of the body of the uterus; Hodgkin's disease; malignant lymphoma; myelogenous leucemia; inoperable squamous cell carcinoma of the tongue, jaw, and buccal mucous membranes; nonmetastasizing epidermoid cancer; and precancerous conditions. Radium therapy has proved so far to be of little benefit in recurrent carcinoma of the breast, carcinoma of the stomach and intestines and of the glands of the neck by extension from cancer of the tongue, mouth and lip, and in general in deeply seated metastatic extension of cancer from any region. The use of radium in prophylaxis of recurrence after radical operation for the cure of cancer is not advised. The combination of radium therapy and operation by which a tumor, otherwise inoperable, is excised as thoroughly as possible, the remaining tissues cauterized, and subsequently subjected to radiation, has yielded satisfactory results in several cases. Of 642 cases treated with radium in this series, 354, or fifty-five per cent., received definite benefit. No case was observed in which radium appeared actually to accelerate the growth of tumor tissue. The considerable expense of purchase and the difficulties and dangers of administration of radium therapy are more than justified by the results obtained.

Tyramine as an Adjunct to Morphine in Labor.—Henry Gray Barbour (*Journal A. M. A.,* September 15, 1917) says that the value of morphine in labor is acknowledged by those best fitted to pass judgment but the use with it of scopolamine is not on a secure footing. This is partly due to the dangers associated with the latter drug as well as to the facts that it is unstable and manifests many variations in its pharmacological actions. Morphine has the much desired property of producing a satisfactory analgesia, combined with the undesirable properties of delaying labor and causing respiratory depression in the child. Its combination with a drug which would largely overcome the undesirable actions would prove of great value. This seems to be possible as indicated by recent experiments and trials on human beings. Tyramine produces a rather prolonged respiratory stimulation and also stimulates the contractions of the uterus. Laboratory studies show that tyramine does not antagonize the analgesic actions of morphine, while in effective doses it does antagonize the two undesired actions of the latter drug. A dose of sixteen mgm. of morphine with forty mgm. of tyramine, given hypodermically when the pain of the first stage of labor becomes marked, produces in women a satisfactory grade of analgesia, slight stimulation of respiratory rate, and an augmentation of uterine contractions which is maintained throughout. There is also a rise of twenty to twenty-five millimetres of mercury in the blood pressure of the mother which is of no importance in normal cases, but which should be be borne in mind. Data are not yet sufficient to warrant an expression of opinion as to the ultimate value of this combination for use in labor, but the indications are very favorable

Thermic Fever.—R. B. H. Gradwohl and Edwin Schisler (*American Journal of the Medical Sciences,* September, 1917) apply this term in cases of sunstroke and of heat prostration in the absence of sunlight in which heat accumulates in the body while the body does not rid itself of its metabolic end products. The treatment advocated consists of tub baths, gradually cooling the water to an ice bath until the patient's temperature is reduced to 104° F. or under; stimulation with camphor, strychnine, and digitalin, free elimination, proctoclysis with normal saline solution, and general attention to symptoms.

Treatment of Cystitis.—James E. Helms (*Urologic and Cutaneous Review,* August, 1917) advises rest in bed with the administration of hexamethylenamin. If the case does not improve rapidly, bladder irrigations of boric acid solution or silver nitrate, 1:5,000, should be given. Argyrol left in the bladder after irrigation is of great value. When the urine is alkaline potassium permanganate solution should be used. If silver nitrate is too irritating, boric acid should be used first. If this does not result in a cure cultures should be made and stock or autogenous vaccines used.

Tuberculin in Uveitis.—Hiram Woods (*Annals of Ophthalmology,* April, 1917) considers that the following conclusions present the proper attitude in regard to the use of tuberculin for diagnostic or therapeutic purposes: 1, avoidance of focal reaction in intraocular lesions; 2, avoidance of tuberculin as a therapeutic measure in acute cases; 3, the indication of tuberculin when the trouble is nonprogressive, but does not get well; 4, the indication of tuberculin in the presence of a positive von Pirquet, with elimination of other causes. The present status of vaccine therapy is so uncertain that this treatment should be conducted under the guidance of one trained in immunological problems.

Cataract.—John J. Smith (*Annals of Ophthalmology,* July, 1917) mentions some of the various solutions, such as a mixture of dionin and cyanide of mercury, and succus cineraria maritima, which have been used in attempting to absorb cataracts or to arrest their development, and says that he has tried a few of them. His results can hardly be said to be satisfactory as in one case only did he succeed in clearing up a beginning opacity of the lens. In this case he used drops composed of dionin and mercuric cyanide together with frequent applications of the high frequency current of electricity. He is convinced that an operation is the only satisfactory method of dealing with cataracts.

Treatment of Chronic Suppurative Otitis Media.—Amédée Pugnat (*Bulletin de l'Académie de médecine,* July 10, 1917) recommends the use of dry dressings with antiseptic powders in this condition and in particular of the hypochlorites which in his hands have proved capable of arresting suppuration in cases previously uninfluenced by any form of medical treatment. These results were obtained, moreover, in a few weeks. He uses a mixture of one part of calcium hypochlorite with nine parts of powdered boric acid. Successful results naturally depend upon the size of the perforation in the drum; if this is very small, benefit from the powder is reduced.

Care of the Feet in Pregnancy.—George Gellhorn (*Medical Record,* August 25, 1917) thinks that every woman who complains of painful feet in pregnancy should have them strapped at once and then have a suitable shoe made, and further have instituted exercises tending to strengthen the tibiales anticus and posticus and the plantar muscles. These exercises should be resumed the first day of the puerperium. Flat feet which begin in pregnancy and may last through life may be avoided by these simple precautions.

Merits of Medical and of Surgical Treatment in Peptic Ulcer.—J. N. Hall (*Medical Record,* September 1, 1917) considers that there are advantages and disadvantages pertaining to both modes of treatment, and in any given case a decision can be reached only after a careful consideration of these factors. The advantages of medical treatment are avoidance of immediate operative and anesthetic dangers; avoidance of the vicious circle, later jejunal ulcer, adhesions, ventral hernia, etc.; the ability of the patient to remain at work during treatment. The advantages of the surgical method are the valuable knowledge of the exact nature of what is being treated; the chance of finding early and curable cancer of the stomach, gallbladder disease, or Lane's kink; avoidance of perforation; the decisiveness and rapidity of cure.

Spinal Anesthesia.—D. A. Orth and G. Mueller (*Saint Paul Medical Journal,* July, 1917) place emphasis on the use of freshly distilled water for rinsing the boiled needle and syringe to be used in the injection, believing that the minute particles of foreign matter invariably present in water not freshly distilled are the cause of postanesthetic headaches. They use a tablet containing 1.875 grains of novocaine hydrochloride and 0.004 grain of synthetic suprarenin. About three c. c. of freshly distilled water is poured into a test tube and boiled for a few minutes, and the tablet then added. Just before use the solution is brought to a boil six to eight times. The specific gravity of the solution is approximately that of the spinal fluid. The injection is made with the patient in a lateral recumbent posture, between the fourth and fifth lumbar vertebræ for a low anesthesia and between the first and second lumbar for a high anesthesia. High anesthesia is also accomplished by mixing about seven c. c. of spinal fluid with the three c. c. of anesthetic solution. Among 423 cases of spinal anesthesia headache occurred in seven per cent., incontinence of urine in one per cent., and paralysis of the sphincter ani in two per cent. The excellent general condition of the patient after the operation is especially commented upon. The writers maintain that spinal anesthesia with novocaine and suprarenin is safer than a general anesthetic in handicapped patients, where a deep anesthesia is required. It is well tolerated in shock and sepsis, and among old subjects. The surgeon can give his own anesthetic. Hemorrhage is less than with ether. Gas pains are infrequent. The operating time is shortened and the work through a small incision is facilitated because of the more complete relaxation. The anesthetic does not increase hemolysis, as does ether; eliminates surgical shock by causing a complete nerve block, and does not reduce resistance to infection.

Miscellany from Home and Foreign Journals

Treatment of Arteriovenous Aneurysm of the Internal Carotid and Internal Jugular.—René Le Fort (*Bulletin de l'Académie de médecine,* August 7, 1917) deems arteriorrhaphy far preferable to ligation of the vessels, with or without resection, in this condition. He reports a case of bullet wound of the neck in which the distressing, constant thrill resulting from the aneurysm led the patient to seek operative relief. A temporary ligature was placed on the common carotid and the greatly dilated jugular vein ligated and cut above and below the orifice of arteriovenous communication. The external and internal vessels being pressed upon by an assistant above the aneurysm, the segment of the jugular vein at this level was split open longitudinally, the arteriovenous opening sutured, and the segment of vein then sutured over it to reinforce the arterial suture. The thrill and head noises at once disappeared. The venous blockage caused facial congestion and somnolence, but these passed off in a few hours, and complete recovery followed. Le Fort believes arteriorrhaphy adapted to a large number of cases providing certain principles are adhered to. The operation should, except in an emergency, be postponed a few months, dissection by layers being then easier. The tissues should be freely exposed and dissected as for an anatomical specimen, all vessels and nerves being liberated. Provisional arterial hemostasis should be attended to as in the case reported. The vein being adherent, dilated, and friable, it should be ligated some distance from the lesion.

Renal Calculi and Their Operative Treatment.—F. Suter (*Correspondenz-Blatt für Schweizer Aerzte,* June 23, 1917) met with thirty-four cases of operative nephrolithiasis during the ten years from 1906 to 1916, although in the preceding five years, while assistant to Professor Burckhardt, he had seen none. He ascribes this not to an increase in the number of sufferers, but to the recent improvements in diagnosis. Seven of the stones were urate, twelve phosphate or carbonate, and sixteen calcium oxalate. The urate calculi were small, they plugged the ureter, and were all infected. The phosphatic were all large, situated in the renal pelvis, often with processes extending into the calyces, and had inflicted much damage upon the kidney. The oxalate stones seem to be conglomerates of crystals of calcium oxalate which present sharp corners and edges. It is only in hydronephrosis that these stones become round. The danger of relying on a history of renal colic for the diagnosis of renal calculi is pointed out, for this was absent in the majority of his cases; renal colic is caused almost wholly by small, movable stones. Infected renal calculi usually cause no greater subjective troubles than the aseptic ones, except when the infection is very severe, when its symptoms predominate in the clinical picture. The diagnosis is made mainly through catheterization of the ureters, tests of function, and röntgenographs. The results of nonoperative treatment in the presence of colic, depend on the chemical composition of the calculus. Small stones that give rise to frequent attacks of colic do not need operation as a rule, but occasionally an operation is necessary, particularly when the patient has only a single kidney. The prognosis of an operation depends on the stone and the condition of the patient; prognosis of pyelolithotomy is good and that of nephrolithotomy is more grave because of the possibility of secondary hemorrhage. When both kidneys are affected the prognosis is serious.

Urinary Amebiasis with Cystitis.—E. J. Wright (*Journal of Tropical Medicine and Hygiene,* July 2, 1917) reports the case of a young woman, twenty-six weeks pregnant, who began to notice an undue frequency of micturition, gradually increasing in severity until small amounts of urine, followed by marked strangury and the passage of a few drops of blood, were evacuated about five times every hour. The turbid urine showed many amœbæ, mostly spherical, together with some cysts. A diagnosis of amœbic cystitis having been made, emetine hydrochloride was given hypodermically in daily doses of one to three grains. At first improvement was but slight. Later, the bladder was repeatedly washed out with boric acid solution and one half grain of emetine in half an ounce of sterile water left in the bladder. Uninterrupted improvement followed.

Observations on Spirillar Infections.—Guysez and Pierret (*Presse médicale,* August 6, 1917) refer to three cases in which with an ulcerative and membranous stomatitis due to fusospirillar and streptothrix infection there appeared an eruption of large papules and blebs on the hands and feet and a bilateral conjunctivoblepharitis. The urine, examined in one case, showed numerous spirillar organisms, suggesting that the infection had broken through the pharyngeal barrier and was in some way responsible for the eruption. Both the latter and the stomatitis promptly disappeared under applications of methylene blue in the mouth, with or without potassium iodide. In another series of nine cases, suspected to be tuberculous, the sputum never showed tubercle bacilli but yielded numerous spirilla and streptothrices; one, carefully examined, showed many spirilla in the stools. In a case of acute and one of subacute laryngitis smears showed the same kinds of infection, and rapid improvement occurred under methylene blue. In all these cases the sputum was fluid and grayish or reddish and had a peculiar stale odor. Attacks of sore throat with mild fever, aching limbs, and slight meningeal symptoms were similarly produced and yielded rapidly to methylene blue. Thus, clinically, the possibility of a spirillosis should constantly be kept in mind. Spirilla and streptothrices seem to reside as saphrophytes in the throat of about one third of all soldiers; on assuming pathogenicity they multiply enormously. The blood shows a marked mononucleosis. The spirilla are easily shown in smears by prolonged Ziehl staining in the cold or by the Fontana-Tribondeau silver method. To the local treatment with methylene blue and alkaline gargles may with advantage be added potassium iodide and arsenicals internally.

Placental Transmission.—E. D. Plass (*Johns Hopkins Hospital Bulletin*, September, 1917) continues his previously reported work, substituting the acetic acid precipitation method for Folin's method. It was not possible to show any definite relationship between the maternal and fetal whole blood in any given case, but in both series there was a close agreement of the plasma values, which confirms the theory that the creatinine bodies are directly diffused through the placenta. The red blood cells have an increased power to store creatine, both in the newborn and in the parturient woman. Despite reports to the contrary, a higher creatine content is not always found in the maternal cells than in the fetal cells.

Triple Typhoid Vaccine.—Charles F. Craig (*Journal A. M. A.*, September 22, 1917) conducted a series of observations upon a group of men to determine the severity of the reactions following the use of a triple prophylactic vaccine, containing typhoid and both paratyphoid organisms. He also determined the agglutinins resulting for each of the organisms after such immunization at different periods of time following the injections. The reactions produced, both general and local, were not more severe than those usually resulting from the use of typhoid vaccine alone and differed from them only in showing slightly more frequent nausea and more delayed reactions. So far as the agglutinins were concerned, those against the typhoid bacillus were as high as after the use of this vaccine alone, while those for each of the paratyphoid organisms were equally high, although these for paratyphoid B did not develop and reach their height until later than the agglutinins against the other two organisms.

Typhoid Osteoperiostitis.—P. E. Weil and Chevrier (*Presse médicale*, August 23, 1917) note that of twelve cases recently met with, seven patients were between thirty and and forty years of age, three above forty years, and only two below thirty. In ten cases the ribs were involved, in one the tibia and fibula, and in one the trochanter. Trauma played a rôle only in the trochanteric case. In all cases the preceding typhoid attack had been severe and prolonged; only three had received protective inoculations, and in none was the process of paratyphoid origin. In the diagnosis of the condition, the agglutination test is recommended, having given excellent results in eleven cases. All these patients still had high agglutinating power, though an interval of a year, two years, or even more had elapsed since their typhoid attack. In two cases the B paratyphoid organism proved somewhat confusing in the agglutination tests, but its participation as a causal factor was easily excluded by the agglutinin saturation method of Castellani. In the treatment the authors advise, in the slow nonsuppurating forms manifested merely in hyperostosis, increasing doses of typhoid vaccine are to be administered twice weekly and continued for a time after the enlargement has disappeared. In a course of sixteen injections the first dose is 0.25 c. c., and the last eight doses each 1.5 c. c. The first two injections increase the enlargement temporarily; later, it subsides entirely or is greatly reduced. Each injection causes some general reaction, and the treatment induces a slight loss of weight, which is more than regained after the injections are stopped. In the suppurative forms, whether open or closed, vaccine treatment alone rarely yields a complete, permanent cure, though it will temporarily arrest the discharge or cause the sinus to close. After four injections, therefore, the authors excise the bone lesions, then continue the vaccine up to sixteen injections, with the last six or eight injections a week apart. At the operation the course of the infiltration is carefully exposed in its entirety, from rib to rib if necessary. All infected tissues are removed with the curette, the bone ends then beveled, a little crumpled gauze inserted in the wound, and a flat dressing applied. During healing the thermocautery is often required to subdue granulations. A complete cure is obtained in two or three months.

Chronic Valvular Heart Disease in Pregnancy and Labor.—Foster S. Kellogg (*Boston Medical and Surgical Journal*, September 20, 1917) draws the following conclusions from a study of the chronic valvular diseases complicating pregnancy and labor in a material of nearly 30,000 cases: One to two per cent. of pregnant women have chronic endocarditis. Fifteen to twenty per cent. show some decompensation under prenatal care; half of these 1° decompensation; half 2° decompensation. Cases with stenosis of the mitral valve, with or without insufficiency, are far likelier to decompensate in pregnancy than cases with simple insufficiency. The maternal mortality of chronic valvular disease in pregnancy is two per cent. The maternal mortality of cases showing 2° decompensation, requiring induction, and 2° decompensation in labor, is forty-five per cent. Mitral stenosis is almost always present in fatal cases. Fetal mortality runs from ten per cent., in a series including all cases, to forty per cent. in cases with 2° decompensation. Chronic valvular heart disease complicating pregnancy is, in view of these figures, potentially a very serious condition for mother and child, and the handling of these cases requires the utmost attention and skill, frequent prenatal observation being an absolute necessity in all chronic valvular cases complicating pregnancy. Half of these cases not under good previous care for their heart condition, which show decompensation, will recover sufficiently under medical treatment, rest, and the proper regulation of their lives so that they do not again decompensate, and so that they will stand any appropriate method of delivery at term. Many chronic valvular heart cases compensated and with only slight degrees of decompensation, and some with 2° decompensation, will safely deliver themselves if allowed to. Though this fact is undeniably true, theoretically and with what data we have at hand it should not be allowed. Normal delivery and accouchement forcé have no place in the treatment of chronic valvular heart cases in pregnancy or labor. It is not justifiable to attempt to carry a woman who is decompensated to term for the sake of her baby unless she reacts favorably to treatment almost immediately, especially as the fetal mortality in these cases is so high that we risk the mother's life for the sake of a problematical child.

Epidemic Meningitis.—Simon Flexner (*Journal A. M. A.*, August 25, 1917) points out that this disease has been more or less endemic in this country and in Europe ever since the severe epidemics of 1904-05 and that it is prone to become epidemic wherever many men are brought together in close contact as in army camps. It is of the first importance to bear in mind that the source of infection under such conditions is the presence of one or more carriers of the organism. The carrier cases are of two types: individuals who have the disease and those who are healthy but harbor the organism in their nasopharyngeal tracts. It is the latter which are the more dangerous, since they commonly escape detection until they have infected others. The mode of infection is usually via the nasopharyngeal mucosa and practically invariably arises from contact or association with a carrier. The infection may take two general forms: In the one the freshly infected person promptly develops symptoms and signs of the disease and is isolated; in the other the infected person may harbor the organisms in his upper respiratory tract for many days or weeks before falling ill, during which time he may transmit the infection to many others. The former type is relatively unimportant as a source of danger to his associates. In the presence of a case of meningitis appearing among a body of men, a search should be made to detect all carriers. This is not difficult if there is a reasonable bacteriological equipment and a few good bacteriologists are available. It consists in the taking of cultures, with the aid of the West tube, of the secretions of the nose and throat and growing them on suitable mediums. The meningococci can be recognized by the characters of their colonies, their fermentation reactions, their morphology, and best of all by means of agglutination tests against known serums. Every carrier should be isolated at once and kept so until repeated cultures are negative. By this means it is possible to check an epidemic at its inception and save many lives and much illness. The details of the technic of making the cultures and identifying the organisms are given in the paper.

Poliomyelitis from the Standpoint of the Neurologist.—C. R. Ball (*Saint Paul Medical Journal*, August, 1917) lays stress on isolation and quarantine of the abortive type of acute poliomyelitis, constituting thirty-five to fifty per cent. of all the cases, if efficiency in combating epidemics is to be attained. In such cases the onset is marked by respiratory or digestive disturbances, or both, with fever, malaise, headache, vomiting, drowsiness, twitchings, neck rigidity, hypersensitiveness, a pulse rapid out of proportion to the fever, sometimes profuse sweating, tenderness along nerve trunks, and the Brudzinski and Macewen's signs. In doubtful instances, lumbar puncture is of diagnostic assistance. All these abortive cases must be quarantined. As regards atypical cases, Ball points out that, with present knowledge of the pathology of the disease, a spastic paralysis and an active reflex are not incompatible with a diagnosis of infantile paralysis. Errors may follow faulty interpretations of the reflex response; apparent absence of a reflex sometimes results from failure of the patient properly to relax his muscles or from a strained position of the body in the bed. A typical mild case of the spinal type is reported in which absence of the Achilles reflex was an important diagnostic factor. The bulbospinal type is well illustrated in the ascending form of paralysis, while in the bulbopontine type the bulbar centres of the cranial nerves are involved. Temporary complete loss of sensation is to be remembered as a possibility in acute poliomyelitis. Cases of isolated abducens or facial paralysis, especially in young adults, coming on suddenly during an epidemic, should be isolated. In the cerebral and meningeal types, examination of the spinal fluid is often the chief means of diagnosis, the significant features being the small amount of globulin, marked increase in total number of cells, large number of lymphocytes, presence of large mononuclears, and the behavior of the Goldsol test. The author has seen a case of spastic hemiplegia and one of spastic diplegia due to infantile paralysis. Where an epidemic threatens or exists, there should be organized in every community a diagnostic unit consisting of a general clinician, pediatrist, and neurologist, to examine all suspicious cases.

Osteochondritis Juvenilis of the Hip.—Wallace Blanchard (*Journal A. M. A.*, September 29, 1917) made a comparative study of a large number of untreated cases of this affection or, as it is called, Perthes's disease and found that there was no evidence for the general belief that the condition was infective and secondary to some focus of infection in the tonsils or elsewhere. Röntgenograms were taken of the whole pelvis and both lower extremities on a single plate in each of a number of cases at various stages of their development and it was soon found that the most characteristic feature of the affection was a rarefaction and atrophy of the bone, involving the whole girdle on the affected side and all of the bones of the leg. The changes were most marked in the region of the hip, in both pelvis and femur and became progressively less marked as one descended the leg. The surrounding muscles and soft parts also showed a decreased density of structure, the whole picture being one of atrophy due to some interference with the circulation causing trophic changes from the median pelvic line to the foot. The very earliest positive manifestation of this disease is found in the atrophy of the bones and soft parts in the region of the hip and if untreated, or if friction and weight bearing is allowed to continue, this atrophy leads to marked destruction of the acetabulum and the head and neck of the femur. On the other hand, if the whole extremity is promptly immobilized so as to prevent friction and weight bearing and is so maintained the atrophy will progress for a time and then cease, to be replaced by a process of increased deposit of hard bone with restoration of the femoral neck, head and the acetabulum. This restoration will occur even if there has been considerable destruction before treatment was begun. This form of treatment should be maintained for two years and it is interesting to note that cases of this disease which were erroneously diagnosed as tuberculous and promptly treated by immobilization made perfect recoveries.

Proceedings of National and Local Societies

THE NEW YORK ACADEMY OF MEDICINE.

SECTION IN GENITOURINARY SURGERY.

Meeting Held April 18, 1917.

Dr. A. R. Stevens in the Chair.

(Concluded from page 819.)

Röntgen Findings in the Urinary Tract.—Dr. A. J. Quimby, of New York, stated that the advances of Röntgen diagnosis of the urinary tract had been much more rapid and thorough than any other branches of internal medicine. Opinions differed as to the value of thorough preparation of the patient. His experience justified him in adhering to a complete catharsis, especially in the case of an average business man, whose rush and worry kept him from proper attention to his physical well being. Some years ago, he did extensive x ray work in a city whose water supply contained large quantities of calcium and magnesium. He was deeply impressed with the percentage of renal stones and with the value of thorough preparation. He believed that one of the factors in the satisfactory work accomplished at that time was that he was able to take a week or ten days to prepare and study the case. Phenolphthalein was the most satisfactory agent for free catharsis and preparation for an examination of the renal tract. He administered ten grains before breakfast for two days in succession. If the patient was in the habit of using cathartic pills, Doctor Quimby allowed him to take the usual quantity the night before the administration of the phenolphthalein; this agent gave a large number of watery stools and left very little if any gas in the intestines. The second best cathartic was castor oil which should be administered in the morning. Firm fixation of the patient by the compression cylinder or strapping, together with control over the diaphragm, was important. Many adults had so little knowledge of control of the respiratory apparatus, that when asked to hold their breath, the diaphragm would move involuntarily and obliterate the kidney shadow. Respiratory movements would blur images as low as the fifth lumbar vertebra. Gas and feces would obliterate the kidney shadow and produce distorted images which could be mistaken for stone. He had seen distinct, clearcut images, almost as dense as the shadow of a calcareous stone cast by a small mass of tissue which rested between the sacculations of the colon. Until these were obliterated by removing the gas, they might be easily mistaken for stone or hide the image of the stone. The hospital patient was usually in the best condition for a renal examinations. The régime usually provided free evacuations and the diet left small residue in the colon and the least tendency to gaseous distention. The simplest x ray examination of the renal tract consisted in taking sufficient plates to get the gross picture, i. e., the two kidneys, ureters, and the bladder region. From this simplest examination, we might elaborate the work by taking exposures covering various segments of the renal tract on the small plate, using a compression cylinder, which permitted obtaining better detail and a more positive fixation of the parts. The renal tract should be röntgenographed on two separate days and in the interval additional cathartics should be given. Meals taken on the day of the examination were of little account, unless they produced quantities of gas. Old feces were usually the source of false shadows upon the plate. About twenty different sources of error in an x ray diagnosis of kidney lesions had been enumerated, but the various additional technical points eliminated practically all of these. The opaque catheter, the opaque salts, and manipulations by pressure, etc., would eliminate shadows of calcium deposits outside the renal tract. Occasionally further study by the aid of the opaque material in the gastrointestinal tract was necessary. It might enable us to define a given mass sufficiently to prove its connection with the kidney or to recognize it as a structure outside the renal tract, as an appendicular lesion or adhesion. An abdominal tumor, the gallbladder, the spleen, and the long branching border of the liver, might be mistaken for the kidney; the best means of eliminating such factors was the opaque catheter or salt in the ureter. Recently, urologists had tended to be conservative in the administration of the opaque material in the ureter; he believed that a rational selection of cases and improvement in techinc should render this method more popular. In cases of renal colic, too much pressure was used. He had never seen dangerous symptoms occur following the instillation by the gravity method. In the x ray examination of the kidney the first requisite was a determination of its relative position, as ptosis, congenital displacements, and adhesions caused such departures from the normal that the field usually occupied by the kidney might contain other viscera. After the kidney was localized, its size, shape, and relative density should be determined. If shadows of greater density than the kidney substance occurred within the kidney area, they must be differentiated from other deposits and new formation simulating stone. If a shadow was within the kidney area, it should be localized so that the operator could needle the organ during the operation to definitely localize the stones if desirable. If a clear image of the kidney was obtained the localization could be so definite that the error need not be more than one or two centimetres.

During the examination for stones in the ureter due consideration should be given to the variations in position which occurred in abnormal developments and changes incidental to ptosis. Displaced kidneys would carry the ureter far out from its normal position; the ureter might be carried in front of the spine, so that stones contained therein might be obliterated by adjacent bony structures. Stones might be overlooked which lay in the ureter passing over the bony pelvis. In the examination of the bladder the principal sources of error were phlebolith in the pelvic veins, prostatic deposits, and feces in the rectum. The opaque catheter was very desirable in differentiating stones in the lower end of the ureter lying close to the bladder, but in several instances Doctor Quimby succeeded in differentiating between stones in the ureter and phlebolith by having an assistant displace them by traction upon the bladder. A wire mesh was placed on the skin so that it rested in contact with the x ray plate in the area projecting into the pelvic cavity. The assistant's finger was passed into the rectum or vagina and pointed in the direction of the suspicious shadows. One exposure was made; then traction was applied downward and toward the opposite side pulling down pelvic structures. This traction displaced the posterior bladder wall and carried the lower end of the ureter downward. Stones in the lower end of the ureter were displaced by this method as much as 2.5 centimetres, whereas phleboliths and other deposits might either remain stationary or be displaced but a short distance. Instances occurred in which bladder stones were encysted in the walls and might be overlooked by the cystoscope or sound; the x ray was invaluable in determining the presence of these deposits.

The Differential Diagnosis of Right Renal and Gallbladder Lithiasis.—Dr. Lewis Gregory Cole, of New York, stated that it was a well known fact that biliary calculi might be misinterpreted as renal calculi in the examination of röntgenograms of the upper right quadrant of the abdomen.

While at the present time a high percentage of even soft cholesterin gallstones could be detected by careful Röntgen examinations, only approximately twenty per cent. of gallstones were sufficiently dense to cast shadows on plates made of the right kidney, that is, with the tube anterior and the plate posterior. In approximately five or six per cent. of gallstones the calcium deposit might be so extensive or so uniformly distributed that the differentiation from renal stones was difficult; yet this situation did arise frequently enough to require careful differentiation of every case of right renal calculus from gallstones. It seemed to be generally believed that gallstones did not acquire the marked density assumed by renal stones. If we would discard this fallacious belief we would undoubtedly prevent some erroneous diagnoses. In the majority of instances a little mature deliberation used on carefully made plates was all that was necessary to arrive at a correct diagnosis. The general comparative physical characteristics of gallstones and kidney stones were based on the physical properties of all types of stones as they were observed and interpreted in well made plates. Renal calculi were usually very dense; biliary calculi might be either soft or dense. Renal calculi were usually single; biliary caculi were usually multiple. Renal calculi usually were of the same density throughout; biliary calculi usually had a variable density, many times showing only a ringlike shadow or a dense nucleus. Multiple renal calculi usually had an irregular shape, the size and shape conforming to the pelvis or calyces; multiple biliary calculi, when they filled the gallbladder, usually conformed to the pearshaped gallbladder. Multiple renal calculi usually varied in size and shape; multiple biliary calculi usually had relatively the same size and shape. In renal calculi the surfaces were usually rounded; in biliary calculi the surfaces were usually facetted or flat. Renal calculi seldom changed their position between examinations; while biliary calculi frequently changed their position between examinations. Occasionally in an examination of the right kidney when the kidney outline was distinctly shown a sharply defined, rounded calculus would appear within the kidney shadow, casting a uniformly dense shadow of relatively small size. One would be inclined to make a diagnosis of renal calculus without much hesitation, but careful differentiation might save an embarrassing situation. Only recently a diagnosis of renal calculus was made by another röntgenologist, and the diagnosis was subsequently established as gallstone. The reverse might just as readily happen; one might get good crisp plates showing a sharply defined gallbladder, and lying within this shadow the same type of dense, rounded calculus. Here, too, one must be careful to ascertain quite definitely that this was not a renal stone. Another difficult differentiation was where there were multiple small, rounded, uniformly dense stones lying within the kidney shadow on kidney plates and within the gallbladder shadow on gallbladder plates; these stones might even change their positions relative to each other between examinations. One might say that these were gallstones, but Doctor Cole had this type of case where the stones were renal and were freely movable in the pelvis of a hydronephrotic kidney. The most difficult differentiation that he had ever been called on to make was where a stone was lying posteriorly in the cystic duct and yet superimposed over both the normal kidney and gallbladder region.

It was impossible to differentiate such stones as he had just described by their physical characterestics because they were identical. The only certain method of differentiation lay in determining their anatomical position. This was done by determining the proximity of the stone to either the anterior or posterior abdominal wall. Unless the nicest Röntgen technic was followed with due regard for fine detail it would not be productive of results. The following were the various methods which had served to locate and differentiate these calculi: 1. The shadow of a renal calculus was much smaller and distinctly more clearly defined with the plate posterior and the tube anterior. The shadow of a biliary calculus was much smaller and more clearly defined with the plate anterior and the tube posterior. If these conditions were reversed, the stone appeared much larger and less clearly defined. 2. If the plates were made and viewed stereoscopically, renal calculi appeared in a posterior plane near the vertebral column. Biliary calculi appeared in an anterior plane just beneath the costal arch. 3. If two plates were made with a lateral shift of the tube between the two, even though they were not viewed stereoscopically, many times there would appear an altered relation between the stone and the kidney or gallbladder outline which would readily make the differentiation possible. 4. If direct lateral plates were made with the patient lying on the right side and the plate ununderneath, the stones would be shown in either an anterior or posterior plane. 5. If any of the standard methods for the localization of foreign bodies were employed, the proximity of the stone to the anterior or posterior wall could be shown. A very simple method of foreign body localization which he published in 1902 was ideally adapted for this work. It had the advantage of not requiring additional accessories or complicated apparatus. 6. Pyelography or ureteral catheterization served as an accurate method for the anatomical localization of renal or ureteral stones. Gastrography or plates made with the stomach and duodenum filled with an opaque suspension served as an accurate method for the anatomical localization of gallstones as well as showing much indirect evidence of the stone by demonstrating the presence of adhesions, distortion of the cap, and spasm.

Tuberculosis of the Kidney.—Dr. WILLIAM H. STEWART, of New York, reported three cases in which characteristic forms of tuberculosis were demonstrated röntgenographically. In order to recognize renal tuberculosis röntgenographically, certain pathological changes must occur, namely, more or less extended abscess formation with caseous or calcified formations or the scattered calcification of discrete tubercles. Renal enlargement alone, even if lobulated, might be suspicious of tuberculosis, but would not justify a diagnosis of this lesion unless combined with positive cystoscopic, bacteriological, and clinical findings. The first patient's brother had died of tuberculosis of the larynx. In 1905 the patient had a unilateral castration for rightsided tuberculous epididymoorchitis. In 1906 he had a leftsided epididymitis which had been diagnosed as tuberculous; as he was married, climatic treatment had been advised. After an interval he presented himself complaining of great increase in the frequency of urination for five months both day and night, with severe pain referred to the glans penis; there had been no history of decided hematuria; the patient had lost a few pounds in weight during this period; the urine was very turbid. Cystoscopic examination revealed a large area of intense inflammation of the right half of the bladder base, particularly surrounding the ureteral orifice; the ureteral orifice was swollen, edematous, and roughened and, adjacent to it, there was an area of superficial ulceration. The left half of the bladder base, as well as the rest of the bladder wall, was normal and the left ureteral orifice showed only a very slight narrow zone of hyperemia at its mouth. The clinical diagnosis was suppurative tuberculous cystitis secondary to a rightsided tuberculous pyelonephritis. Examination of the urine corroborated this diagnosis by disclosing tubercle bacilli. Röntgenographic examination revealed almost the entire right kidney replaced by irregularly shaped shadows cast by abscess cavities which had undergone caseous and calcareous degeneration. A diagnosis of right renal tuberculosis was made.

In the second case, the patient, a man forty-nine years old, had been married for fourteen years and had two perfectly healthy children. He had been in good health up to fifteen years ago when his right testicle was said to be tuberculous and was removed. His present symptoms had started with frequency of urination accompanied by an irritating, scalding feeling; on one occasion he had noticed that the urine sediment was bloody; he had considerable pain radiating from the left side toward the bladder. The cystoscopic examination revealed the right kidney properly functioning with normal urine; around the orifice of the left ureter were numerous ulcerative areas and the urine from the left kidney showed a large number of pus cells with tubercle bacilli. Röntgenographic examination revealed an enlarged left kidney with small, discrete, irregular, light areas scattered throughout the kidney shadow which were interpreted as calcified tubercles. A diagnosis of left renal tuberculosis was made.

In the third case the patient had noticed that his urine was bloody following a kick while playing football in 1902. Cystoscopic examination at the time showed that the hemorrhage had come from the right ureter. After a time the urine again became clear. In 1904 he had gonorrhea followed by cystitis. During 1905 and 1906 the urine was milky with pus and contained tubercle bacilli. The patient went to Switzerland for heliotherapy and gained forty pounds in eighteen months. During 1909 a number of small stones were removed from the bladder through the urethra. A cystoscopic examination at that time showed the left kidney completely inactive. With a life of moderation, he had been in good health until four or five months ago when he began to have frequency of urination, sometimes with clots of blood in the urine. There was constant discomfort over the right kidney region. Cystoscopic examination at this time revealed an inactive left kidney. Röntgenographic examination on November 25, 1916, revealed a contracted irregular shaped left kidney with here and there a calcified area, especially in the lower pole. The right kidney showed a large, irregularly shaped calculus in the renal pelvis with numerous small calculi in the lower pole. A diagnosis of left renal tuberculosis and right multiple nephrolithiasis was made.

A New Type of Rotary Mesh Filter for Use in Deep Röntgen Therapy, with Special Reference to Vesical Neoplasms.—This paper, by Dr. WILLIAM H. MEYER, of New York, is published in full in this issue of the JOURNAL.

Dr. EDWIN BEER, of New York, said that he had occasionally had much difficulty in differentiating between kidney and gallstone shadows, especially in two cases where there were shadows which might have corresponded with the position of stones in nephrosis or in a gallbladder. One of these patients had bilateral renal infection and bilateral infected hydronephroses. The x ray showed two stones which were facetted and they were thought to be in the right kidney, but their size, shape, and position suggested the possibility of gallstones. An exploratory nephrotomy failed to reveal any stones, and an attempt to palpate the gallbladder through the same incision gave negative results. The patient's kidney was drained. After recovery from the operation, other x rays were taken with thorium and from side to side and still it was impossible to determine whether or not these two shadows of moderate density were caused by stones within the kidney. As the kidney wound refused to heal, a nephrectomy was done, and stones were found to be in the calyx of the kidney. In this case all the methods available were tried, stereoscopy, thorium, x ray, from various directions, and it was impossible to determine absolutely whether gallstones or kidney stones were responsible for the shadows until the kidney was outside of the patient. Referring to Doctor Stewart's cases, there was no doubt that advanced cases of tuberculosis, such as shown in the shadow box, would not infrequently show calcified areas, but he had never seen such minute calcified areas in acute renal tuberculosis.

Referring to Doctor Meyer's paper, Doctor Beer said he wished to protest against the suggestion that the x ray treatment of prostatic adenomata was satisfactory. This had been tried repeatedly, and although some patients seem to be benefited for a time, the evidence was not sufficient to prove that prostatic adenomata were cured by radiation. Seasonal changes in symptoms were common, but unless it could be shown that the residual urine was markedly diminished after a series of radiations, he would continue to be doubtful of the result. Rectal palpation of the size of the prostate was really not accurate, for even after removal of adenomata it did not show that the prostate was correspondingly reduced. Still, Doctor Beer knew of no reason why prostatic adenomata should not respond to radiation, and perhaps with the new filter suggested the treatment of prostatic adenomata by the x ray might yet prove feasible.

Doctor Stevens said that these papers and demonstrations had more than ever impressed him with the mutual dependence of the men working in the respective fields of x ray and surgery. Concerning Doctor LeWald's demonstration he had found it helpful, in determining the relation of abdominal tumors to the kidney, whether they were within the kidney or separate from it, to place a piece of metal wire on the skin outlining the border of the tumor, just before taking the radiogram. It would be an advantage to know whether in any of the cases in which tuberculosis of the kidney was demonstrated on x ray plates there was a fine calcareous deposit in the regions corresponding to the shadows, and whether there was anything actually palpable.

Dr. C. G. Bandler asked Doctor Tousey why it was assumed that, in cases of hematuria such as he had mentioned, the foci of pus about the dental roots were the etiological factors; also why was it assumed that such foci of infection were the etiological factors in malignant disease. In the latter condition people of the "cancer age" were almost invariably affected with pyorrhœa alveolaris, so it was quite likely that the two conditions occurred coincidently. In reference to Doctor Meyer's remarks about the effects of the Röntgen rays on adenomatous enlargements of the prostate gland, it had been his experience that almost any type of electrical treatment had some temporary effect; e. g., the high frequency current, either D'Arsonval or Oudin, seemed to reduce the size of the prostate by rectal palpation, but it did not reduce the amount of residual urine or decrease the nocturnal frequency. The symptoms were temporarily relieved but soon returned. As Doctor Beer had remarked, the size of the gland may apparently have been diminished, but cystoscopy did not corroborate this, nor was any relief of the intravesical obstruction apparent.

Doctor Tousey said that in some instances the connection between dental abscesses and some genitourinary infections seemed very clear. As for the connection between dental infections and cancer cases, he had radiographed the teeth of many cancer patients who had been sent to him, usually after operation, and had usually found severe dental infections. Dental infections usually lasted a very long time, and cancer infection was doubtless a very long persistent type. If there was any place in the body where a germ could find lodgment, remain undisturbed, and acquire high resistance, it was in the teeth.

Doctor Cole said that he had not dwelt on a number of points in regard to the various phenomena that helped in distinguishing between stones in the kidney and gallstones. In the first case presented the patient came to the office from one of the large institutions of the country, and he had been asked to examine her and make a diagnosis. A stone was definitely shown superimposed in the kidney shadow; it was very clear and he had no good reason for being suspicious. First a plate was made in the opposite direction, with the patient lying on the abdomen, and the shadow cast by the stone was much more clear cut; it was better defined on the anterior than on the posterior plate. They were not contented with that, and so made stereoscopic plates; stereoscopically the shadow was well forward toward the abdominal wall. Still not content, the patient was turned on the side in the direct lateral position, and the shadow was shown well forward just under the abdominal wall. Doctor Cole said he did not recall whether in this particular case they did a localization or not, but in some cases they estimated the depth of the stone anteriorly or posteriorly, and outlined it within a quarter or an eighth of an inch.

The case cited by Doctor Beer was an exceedingly interesting one. Exactly the same thing occurred in the early days at the Metropolitan Hospital. In that case, a diagnosis was made of one large and five small stones; at operation one large stone was found. The kidney was taken out, split, and both sides laid open, with an open field in the pelvis of the kidney. After that the patient had five attacks of renal colic, and passed five stones. Mere palpation of the kidney was no reason for thinking that there were not any stones. Every one knew how difficult it was to find a foreign body with the finger. Doctor Cole said he thought the time had passed when surgeons would say with certainty that a certain shadow was not in the kidney, when by reasonable means it was shown to be.

In many of these cases it was necessary to get two series of plates with a tube shift between, and if the shadow was cast by a gallstone it would be found to shift in relation to the kidney, whereas if it lay in the kidney it did not shift. Of course a pyelogram in such cases was a great aid in determining the location with certainty. In the case to which he referred the stone lay so far back in the cystic duct that it was relatively as far from the anterior wall as from the posterior wall; and was exceedingly difficult to localize.

Doctor STEWART said that positive Röntgen findings were only shown in advanced lesions of tuberculosis of the kidney. In his case showing the kidney studded with fine, discrete tubercles, no postoperative Röntgen studies had been made as it had seemed sufficient to have found tubercle bacilli in the urine from the affected kidney and to receive positive surgical and pathological reports to verify the röntgenographic diagnosis. These fine shadows scattered throughout the kidney outline were frequent in tuberculosis of the kidney. In early lesions the röntgenographic findings would be enlargement of the kidney shadow; this, of course, would not be pathognomonic. Differentiation between gallstones and kidney stones was extremely interesting. He believed, however, that no hard and fast rules could be made, that each case must be thoroughly studied, and where there was any question the diagnosis must be made by elimination. Referring to the treatment of hypertrophy of the prostate, Doctor Stewart said that he had in many instances tried the x ray method but had been disappointed. He had used the most improved methods but up to date his results had only been inhibitory.

Doctor MEYER said that if he had been satisfied with results heretofore obtained with the x ray in deep seated neoplasms, he certainly would not have attempted or presented the method which he had demonstrated. If the older methods had been satisfactory there would be no reason to have sought for a new method of producing deeper transmission and absorption. His earliest cases were treated a considerable time ago and were approached on the theory of the investigations of Griffith, Hunter, White, and others, whose experience with the removal of the testicles showed that castration produced a shrinking of the prostate gland. Thus, in the first cases treated, the testicles were included in the areas x rayed; with the beneficial results obtained, possibly due to the produced sterility, simulating castration. In later cases, however, when the multiple crossfire came in, the treatment was directed entirely to the prostate. That marked improvement followed such treatment no one seemed to doubt; though some were inclined to ascribe the result to electrical effects or in fact anything, rather than to the x ray. A careful study of microphotographs showed the effects of the x ray, upon superficial structures as well as the deeper seated neoplasms, in producing an atrophy and cell destruction in certain tissues, an obliterating endarteritis, and the production of new connective tissue with later contraction. Such investigations gave evidence which we cannot throw aside. Again, in conclusion, if we were satisfied with the results of present day deep therapy and with the effects thus far produced, there would be no object in trying to obtain deeper absorption.

Letters to the Editors.

A REGRETTABLE TYPOGRAPHICAL ERROR IN DOCTOR LOEWY'S ARTICLE.

THE ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH.
NEW YORK, *October 29, 1917*.

To the Editors:

A mistake has been made in my article on Carrel's Method of Treatment of Infected Wounds, published in your issue of October 27th. On page 798, line 15, second paragraph of column 2, "selected dichloramine-T" should read, "selected chloramine-T." As these substances are entirely different, you can understand the importance of this correction. Yours very truly,

G. LOEWY, M. D.

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Book Reviews.

[*We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.*]

Pathogenic Microorganisms. A Practical Manual for Students, Physicians, and Health Officers. By WILLIAM HALLOCK PARK, M. D., Professor of Bacteriology and Hygiene, University and Bellevue Hospital Medical College, and Director of the Bureau of Laboratories of the Department of Health, New York City, and ANNA WESSELS WILLIAMS, M. D., Assistant Director of the Bureau of Laboratories of the Department of Health; Consulting Pathologist to the New York Infirmary for Women and Children. Assisted by CHARLES KRUMWIEDE, JR., M. D., Assistant Director of the Bureau of Laboratories; Assistant Professor of Bacteriology and Hygiene in the University and Bellevue Hospital Medical College, New York City. Sixth Edition, Enlarged and Thoroughly Revised. 709 Pages, with 209 Engravings and 9 Full-Page Plates. New York and Philadelphia: Lea & Febiger, 1917. (Price, $4.75, cloth.)

Though the previous edition of this popular textbook was written only three years ago, the science of bacteriology has advanced in such strides that it has been necessary to add considerable new material. In this revision the work on the determination of types of pneumococci and the recent investigations on poliomyelitis are perhaps the most notable additions. An entire new chapter has been written on the bacteriological examination of shellfish, which is rather limited in interest to public health officers. The section on mediums and stains has been brought up to date by the insertion of some of those more recently introduced. The revision of the chapter on Immunity is a great improvement, presenting the subject as it does in a manner much easier of comprehension. As no book at present can be thoroughly abreast with the times without the inclusion of some of the experience gained through the war, it is not surprising that in this last edition the subject of preventive measures against typhoid, paratyphoid, tetanus, and wound infection should be gone over thoroughly and emphasize.

The arrangement of the former edition has been maintained, with the exception that the practical application of serums and vaccines has been collected and incorporated into two separate chapters in Part III, which is devoted to Applied Microbiology. This has the advantage of presenting the whole field of the subject in a very concise form, and will no doubt be welcomed by the general practitioner as a valuable conserver of that much needed commodity, time. There is a great improvement in the decrease of typographical errors in this edition, although attention still needs to be given to the spelling of proper names. It is to be regretted that where so much is excellent the index is not in every case an accurate guide to where the particular information sought for may be found.

This constitutes an inconvenience, though one easy to bear with in view of the excellence of the edition in other respects.

After Office Hours.

Those in search of thrills can be readily accommodated by the *Wide World* magazine. For example, the November issue describes the terrible torture of prisoners, the six skulls, a nocturnal struggle with a desert snake, a baffled grizzly bear, a narrow escape in the North Sea, a royal revenge, a massacre at a mill, a real ghost, a secret cave, and a death room.

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Surprisingly scant attention has been given to negro psychology by the dominant race in America. Negro folklore, art, and music are all rich fields which lie fallow to the hand of the investigator. The artistic worth and commercial success of the three negro plays of Ridgely Torrance, the best being "The Rider o' Dreams," were extremely significant. Mr. James W. Johnson, in the New York *Evening Post,* calls attention to negro folklore exemplified by the Uncle Remus stories and negro music, illustrated in ragtime and such negro melodies as "Go Down, Moses" and "Nobody Knows de Trouble I See."

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It would be interesting to possess a psychological study of Mr. Wells's mind, beginning with the period when he wrote his amazing stories, his *War in the Air, Invisible Man, Food of the Gods, The Time Machine,* and *The First Men in the Moon,* continuing through his sociological and psychological books, such as *Kipps, Tono Bungay,* and *Mr. Polly* and, last, investigating the inner changes that resulted in giving birth to those tremendous triplets, *Mr. Britling Sees It Through, God, the Invisible King,* and *The Soul of a Bishop.* By the way, why does he have the bishop's spiritual awakening take place as a result of a drug, presumably cannabis indica?

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Meetings of Local Medical Societies.

Monday, *November 5th.*—Clinical Society of New York Throat, Nose, and Lung Hospital; German Medical Society of the City of New York; Utica Medical Library Association; Niagara Falls Academy of Medicine; Brooklyn Hospital Club; Hornell Medical and Surgical Association; Clinical Society of the New York Polyclinic Medical School and Hospital; West Side Physicians' Economic League.

Tuesday, *November 6th.*—New York Academy of Medicine (Section in Dermatology); New York Neurological Society; Amsterdam City Medical Society; Lockport Academy of Medicine; Society of Alumni of Lebanon Hospital, New York; Syracuse Academy of Medicine; Buffalo Academy of Medicine; Ogdensburgh Medical Association; Oswego Academy of Medicine; Medical Association of Troy and Vicinity.

Wednesday, *November 7th.*—Brooklyn Society for Neurology; Society of Alumni of Bellevue Hospital; Harlem Medical Association; Bronx Medical Association; Elmira Academy of Medicine; Psychiatrical Society of New York; Society of Alumni of St. John's Hospital, Brooklyn; Schenectady Academy of Medicine.

Thursday, *November 8th.*—New York Academy of Medicine (Section in Pediatrics); Gloversville and Johnstown Medical Association; Physicians' Club of Middletown; West Side Clinical Society, New York; Brooklyn Pathological Society; Blackwell Medical Society of Rochester; Jenkins Medical Association, Yonkers; Buffalo Ophthalmological Club; Jamestown Medical Society; Society of Physicians of Village of Canandaigua; Cayuga County Medical Society (annual).

Friday, *November 9th.*—New York Academy of Mediline (Seltion in Otology); Society of Externs of the German Hospital in Brooklyn; Flatbush Medical Society, Brooklyn; Eastern Medical Society of the City of New York; Clinical Society of the German Hospital and Dispensary; Manhattan Dermatological Society.

Saturday, *November 10th.*—New York Association of the Medical Reserve Corps of the United States Army (annual).

Official News.

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending October 24, 1917:

Allen, Walter C., Assistant Surgeon. Directed to continue on duty at the Marine Hospital, Chicago, Ill.

Banks, C. E., Senior Surgeon. Authorized to proceed to Leavenworth, Kan., from Manhattan, Kan., and return, on special temporary duty.

Cobb, J. O., Surgeon. Directed to proceed to Fort Benjamin Harrison, Indiana, on special temporary duty.

Cody, H. C., Passed Assistant Surgeon. Directed to proceed from Spartanburg, S. C., to Petersburg, Va., and return on special temporary duty.

Crohurst, H. R., Sanitary Engineer. Directed to proceed to Des Moines, Ia., on special temporary duty.

DeSaussure, R. C., Assistant Surgeon. Directed to proceed by way of Atlanta, Ga., to Macon, Ga., on special temporary duty.

Fullerton, Lynne A., Assistant Surgeon. Continued on duty at Seattle, Wash.

Holt, J. M., Surgeon. Authorized to travel in the State of Texas, when necessary, on special temporary duty.

Laughlin, J. B., Passed Assistant Surgeon. Relieved at Greenville, S. C., directed to join C. G. C. Tallapoosa.

Prather, D. J., Assistant Surgeon. Detached from C. G. C. *Tallapoosa.*

Price, W. H., Scientific Assistant. Directed to proceed to Chattanooga, Tenn., on special temporary duty.

Robinson, D. E., Surgeon. Directed to proceed to Columbus, Ohio, from Chillicothe, Ohio, when necessary, on special temporary duty.

Schereschewsky, J. W., Surgeon. Directed to proceed to New York City to attend the meeting of the National Committee on Industrial Fatigue, October 22, 1917.

Stevenson, A. F., Sanitary Engineer. Directed to proceed to Des Moines, Ia., on special temporary duty.

Wynne, R. F., Assistant Surgeon. Directed to proceed to Leavenworth, Kan., on special temporary duty.

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Births, Marriages, and Deaths.

Died.

Brown.—In Springfield, Mass., on Monday, October 22d, Dr. Edward Manning Brown, aged forty-five years.

Darling.—In Thompsonville, Conn., on Thursday, October 18th, Dr. James Homer Darling, aged seventy-nine years.

Deveney.—In Albany, N. Y., on Wednesday, October 24th, Dr. Thomas E. Deveney, of Watervliet, N. Y., aged thirty-six years.

Edwards.—In Denton, Tex., on Friday, October 12th, Dr. James R. Edwards, aged seventy-seven years.

Ellis.—In San Francisco, Cal., on Thursday, October 18th, Dr. Charles Z. Ellis, of Downieville, Cal., aged fifty-three years.

Elliston.—In Nashville, Tenn., on Wednesday, October 17th, Dr. Thomas E. Elliston.

Falkenstein.—In Glen Rock, Pa., on Monday, October 22d, Dr. Andrew N. Falkenstein, aged fifty-two years.

Gillard.—In Sandusky, Ohio, on Tuesday, October 16th, Dr. Edwin Gillard, aged seventy years.

Greenleaf.—In Oswego, N. Y., on Friday, October 12th, Dr. John T. Greenleaf, aged seventy years.

Hadley.—In Atkinson, N. H., on Monday, October 8th, Dr. Charles H. Hadley, aged sixty-five years.

Jones.—In Springfield, Me., on Wednesday, October 17th, Dr. Pitt H. Jones, aged fifty-five years.

Kolmer.—In Indianapolis, Ind., on Sunday, October 21st, 18th, Dr. William A. McCallie, aged sixty-six years.

Munn.—In Sycamore, Ill., on Monday, October 15th, Dr. Marshall C. Munn, aged fifty-eight years.

Newton.—In Atlanta, Ga., on Friday, October 19th, Dr. Edwin D. Newton, aged eighty-three years.

Wood.—In Champaign, Ill., on Wednesday, October 17th, Dr. John H. Wood, aged seventy-four years.

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Original Communications

SOME ASPECTS OF MILITARY SURGERY.

By H. G. Barling, C. B., A. M. S.,

Lieutenant Colonel, R. A. M. C.

British surgeons who have had an opportunity of observing the wounds inflicted during the whole period of the war cannot fail to realize that at present wounds are doing much better than at any earlier time. The clash of opinion and the testing of methods has evolved lines of treatment which if not entirely satisfactory, at all events show a considerable advance on the earlier results. If I were asked to indicate the chief factor in this great improvement I should unhesitatingly ascribe it to the early and radical treatment of the wounded tissues by excision which is now so commonly adopted. A large proportion of the wounds are inflicted on men whose clothing and skin are grossly infected with organisms, aerobic and anaerobic. The missiles inflicting the wounds are mostly of irregular shape; they tear and lacerate the tissues; they smash bones severely, driving fragments deeply into surrounding parts; pieces of soiled clothing are often carried in with the missile, and there is wide extravasation of blood between the various layers of fascia, muscle, etc. In addition, it may happen that affected parts are deprived of nutriment through injury to large vessels. Under such conditions as these gross infection, once allowed to establish itself, is most difficult to check and to bring to an end. It may kill in a few hours or it may set up suppuration in soft tissues or bone which may last for months or even years.

I believe that the greatest service which can be rendered to the wounded is to provide ample casualty clearing hospitals as near to the fighting line as military exigency allows. This insures a large proportion of the wounded receiving skilled surgical treatment within a few hours of their injury. If then the damaged soft tissues are thoroughly excised, skin, fascia, and muscle, with due regard to adjacent important parts, such as main vessels and nerves, fragments of bone, clothing, and missile are removed, and the wound mechanically cleansed by washing, an enormous benefit has been conferred on the patient. The more ample the accommodation in the casualty clearing hospitals the better; otherwise the patients must be sent without operation to the base hospitals which means that their wounds may not be efficiently treated for twenty-four to forty-eight hours or even later. By this time the gross infection will have established itself in the surrounding tissues and extirpation of the infection is either impossible or incomplete as compared with what can be effected in the casualty clearing stations a few hours after the injury is inflicted. Practically all the wounds infected are attacked by a mixture of organisms, of which the chief aerobic offenders are the streptococci, and anaerobic, the Bacillus perfringens. The latter is responsible for many early deaths and for a large proportion of early amputations; the former for the prolonged suppurations, most of the later amputations and the septicemias.

Much controversy has arisen in connection with the treatment of infected wounds with antiseptics. Lister's name has been invoked in a manner which would, I venture to believe, be highly distasteful to the master were he yet with us. It has always seemed to me that the glory of Lister lies in his determination of a great principle. He established that the infection of wounds is due to the presence of germs. Given this, the manner in which they can be excluded from or destroyed in a wound is a mere detail. Different conditions demand different methods, so let us accept and test any promising method, adopting it or not, according to our observations and results. Very briefly I may indicate my own impressions.

After thorough excision of the demaged tissues, it may be possible at once to close the wound by suture, sometimes with the precaution of applying Rutherford Morison's iodoform preparation knows as "Bipp." This step of closing a wound must be made with discretion, and should be avoided especially when there has been any interference with the arterial supply to the part. When the wound is not suitable for closure, numerous antiseptic applications are at our disposal. Given suitable conditions, such as a sufficiently large surgical and nursing staff, I should unhesitatingly adopt Carrel's method with Dakin's solution, but this should only be done if the surgeon has made himself acquainted with Carrel's technic. Failing these conditions, a simpler and at the same time a valuable antiseptic is found in the iodoform preparation, which must be applied in moderation on account of the possibility of iodoform poisoning. Brilliant green has not impressed me as an antiseptic. Flavine on paper is highly promising, but it has yet to show its value in the treatment of war wounds. Through the kindness of Colonel Pasteur a moderate quantity was

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placed at my disposal when I was at Rouen, where I tested it in a number of selected severe wounds. The results were not convincing, but lack of knowledge as to the best method of using the antiseptic may be more responsible for my failure to obtain really good results than the antiseptic itself. Salt solutions of varying strength and the salt pack have fallen into disuse, but they may still be used with advantage in wounds surrounded with much induration, a condition more easily reduced, I think, by salt applications than by any other treatment.

Wounds of joints are numerous and make constant demands on the surgeon's thought and skill. The knee is perhaps the most commonly injured joint; at all events it provides the surgeon with more anxious work than any other, and the general principles mentioned in my remarks made at Rouen at the opening of a discussion on wounds of the knee joint (1) are applicable to the treatment of other joints. One point which I failed to emphasize, however, was the absolute necessity of rest and fixation when a joint is wounded. It diminishes pain by abolishing movement and avoids the dispersion of septic matter more widely than it has already spread; fixation is of equal importance whether the joint is of the upper or the lower extremity. Although I am not much enamored of excision of the wounded knee joint with fracture of the bones entering into it, I hold a different view as to the treatment of other joints. If the head or neck of the femur is fractured excision is generally the best course to adopt, and incision should be the usual anterior one with a posterior puncture for drainage. Fracture of the head of the humerus with or without fracture of the neck of the scapula is also best treated by excision, and it is important to adopt an incision such as the anterior one commonly in use in civil surgery, which will not interfere with the nerve and blood supply to the deltoid. Most fractures into the elbow joint, unless the infection is very moderate, are best treated by early excision, otherwise ankylosis generally follows and excision is called for later in many cases. Fractures into the wrist and ankle joints are, I believe, best treated on more conservative lines and few lend themselves to excision. In the treatment of all these wounded joints careful attention should be given to position when ankylosis is likely to occur; it should always be present to the surgeon's mind. At the hip adduction should be carefully avoided; at the knee the limb should be straight or very slightly flexed; at the shoulder abduction with the arm rather in advance of the plane of the body should be secured; the position of the elbow should be determined greatly by the patient's occupation in civil life. If the wrist ankyloses the hand should be dorsiflexed; if the ankle, any degree of equinus must be avoided. *Respice finem.*

Fractures of the diaphyses of long bones require in the first instance careful cleansing with excision of damaged soft tissues. Then arises the decision as to how the more or less separated fragments of bone are to be treated. Are they to be extensively removed or are they to be mostly preserved? British surgeons have generally proceeded on conservative lines, removing only fragments which are completely detached from the shaft and the surrounding muscles, leaving those which, though separated from the shaft, still retain their muscular attachments in whole or in part. Other surgeons, notably Leriche, of Lyons, have removed large and small fragments much more extensively, but Leriche, a pupil of Ollier, carefully deperiostialises the fragments he removes and asserts that he thus secures good consolidation of the fracture by new bone produced from the retained periosteum. On the one hand, if we retain the majority of the fragments, some of them wholly or partially die and sequestrotomies, often extensive and delaying complete healing, are necessary. On the other hand, if fragments of bone are freely removed we are faced with the possibility of nonunion of the fracture, though Leriche maintains that failure of union does not occur after his method has been adopted, and ascribes it rather to retention of sequestra and prolonged suppuration. Personally I have favored the more conservative methods, and have seen little of the more extensive removals of bone. I must confess, however, that a limited experience of Leriche's method makes me hesitate to speak disparagingly of it. Failure of union may occur in any bone, and, though this may be remedied in some instances by the methods of H. O. Thomas, stasis over the ununited ends and heavy percussion of the fragments, yet these methods are obviously insufficient in those cases with a considerable interval between the fragments. Here bone grafting has a valuable opportunity. Between the fragments there may be an inch or more of dense scar tissue; the ends of the fragments are closed by callus. The scar tissue must be excised, the ends of the fragments freshened, and a strong inlay graft obtained from tibia or fibula should be inserted. In my own experience failure of union occurs most commonly in the humerus, the ends of the fragments are often thin and spindle shaped, they easily split under manipulation, and success is by no means assured after careful grafting. Fortunately, the instruments designed by Albee relieve us of much of the laborious work required when we had to rely on Hey's saws and chisel; further, they enable us to do much neater carpentering. It is impossible to leave the subject of fractures of the long bones without acknowledging the debt we owe to Thomas's splint for the treatment of femoral fractures. Many modifications of it have been suggested, but I doubt if any is needed or if any betters it. It must be acknowledged, though, that in the treatment of fractures a few surgeons have greater gifts than the rest of us. Not all have the mechanical mind or touch, and I wish it were possible for every one to see the results attained at No. 8 General Hospital, Boulogne, in the wards supervised by Major Sinclair, R. A. M. C.

Secondary hemorrhage, practically banished from our work before the war, has been a constant source of anxiety, though happily less so now than it was a year ago. I have heard it attributed to many factors, to faulty catgut, to the use of silk ligatures, to the use of this antiseptic or that. Personally, I regard it as mainly, if not entirely, due to sepsis which prevents satisfactory obliterations of ligatured vessels or even undoes the repair when it has been effected. If I laid stress on any other factor it would possibly be on the excessive use of salt solutions as a dressing. In the treatment of secondary hemorrhage the general rule holds good. Seek and tie the bleeding vessel, often an unenviable task in the midst of infected and softened tissues. In the case of a vessel in continuity a ligature should be applied above and below the opening. When operating for secondary hemorrhage it should be borne in mind that the patient is not unlikely to have suffered several small losses which in the aggregate amount to a good deal and he is generally septic.

Under some circumstances the rule of exposing and ligating the bleeding vessel may be abrogated with advantage. As an instance, if secondary hemorrhage occurs after amputation in the lower third of the thigh, instead of opening up the septic wound it may be better to expose and ligate the superficial femoral artery at a little distance through a fresh and clean incision, remembering that asepsis under these conditions is not easily attained without extreme care. In secondary hemorrhage from the gluteal region proximal ligature is with me the operation of choice. Such wounds are often septic; the rectum may be involved with fecal escape through the buttock; the exact position of the bleeding point is not easy to locate; lastly, the gluteal artery may be divided just before it escapes from the pelvis, the artery then retracting into a deep cavity where it is difficult to find, and while it is sought there may be further considerable loss of blood. It is best to ligate the internal iliac artery before it divides, through a transperitoneal incision. With the patient in the Trendelenburg position and the bowel well out of the pelvis the operation is not a difficult one; the results have been good.

Traumatic aneurysms sometimes with vein injury have been numerous, and I have operated on a considerable number. The number of such cases suitable for vascular suture has been few, and I have not met with one; ligature has been the rule. I have had no opportunity of dealing with recently wounded vessels. In those I have operated upon, the openings in the vessels have mostly been of considerable size and even when the wounds were small the induration in the edges has appeared to me to render suture quite unsuitable. Proximal ligature does not cure these traumatic aneurysms; the attack must be direct and a ligature applied above and below the opening. In certain positions, as in the axilla and groin, it is often a wise precaution to expose the artery on the proximal side, subclavian or external iliac, and either clamp it or place a ligature round it for control by an assistant. Without this precaution the loss of blood may be grave before the lesion in the vessel is secured. In operating on varicose aneurysms near the trunk we have to remember that, even with control of the main artery on the proximal side, the venous bleeding may be furious from the main vein on the proximal side. I had my first experience of this in a very large varicose aneurysm of the femoral vessels. A bullet passed vertically up the thigh wounding the superficial femoral artery and vein and the common femoral vein higher up. I first opened the abdomen and controlled the external iliac artery, then opened the aneurysm and found the vessels pushed inward by the collection of blood, the openings in the vessels being on their outer side. After ligating the superficial femoral artery and vein, furious venous bleeding still occurred from the opening in the common femoral vein down which the blood poured from the iliac vein quite uninfluenced, of course, by the control of the iliac artery. The most difficult of all the arterial traumatisms requiring operation are those at the root of the neck, especially on the left side. The difficulties are partly anatomical, as will be easily understood in connection with the first and second portions of the left subclavian. Associated venous lesion may greatly dilate the already large and thin walled veins and there is apt to be matting of tissues from sepsis and old hemorrhage around the wound track. These operations tax one to the utmost and should be undertaken only by practised surgeons.

The last subject to which I shall allow myself briefly to refer is the treatment of retained foreign bodies. If a piece of metal has entered the tissues and lies there quiescent without exciting any inflammatory reaction, pain, or any untoward symptoms, it should as a rule be left alone. The mere presence of a foreign body is not in itself a reason for operation. This is particularly true of such bodies in the thorax, the abdomen, and the head. In these cavities the possibility of inflicting damage which may be lethal must always be kept in mind. There are few exceptions to this rule of inactivity, but there are some. When a foreign body is retained in a bone or in the immediate neighborhood of a joint I advise removal because in several such cases early in the war the quiescent foreign body, on the resumption of active military work, set up infection processes and intervention was then required when the mischief was not always easily controlled; latent infections and their activation have provided some most interesting studies during the war. If therefore accurate x ray localization is obtainable—and not without—intervention may be justifiable in certain selected cases. With the most careful localization it is still possible to miss the foreign body. As an assistance in discovering it I have found useful, especially on a few occasions in the brain, a very sensitive galvanometer. One pole of the galvanometer has a sharp probe attached to it, not sharp enough to damage vessels but penetrating most soft tissues easily. With the other pole in the wound and the probe searching carefully for the foreign body contact with the latter causes a wide deflection of the needle which is quite unmistakable.

These notes are intended only for surgeons who have not yet had experience of war surgery. For their fragmentary nature I must blame pressure of work. It seemed to me better to make something of a general survey rather than to make an exhaustive study of some particular point.

REFERENCE.

1. BARLING: Remarks on Treatment of the Wounded Knee Joint, *British Medical Journal*, September 1, 1917.

Treatment of Carbuncle.—Emilio F. Solari (*La Semana medica*, July 26, 1917) reports success in six cases treated by the injection of normal bovine serum and its local application to the infected area. The quantity injected varied from ten to sixty c. c. in twenty-four hours.

REPAIR OF "FLAT FOOT," "BROKEN ARCH," OR "RHEUMATISM OF THE FEET," ESPECIALLY IN RECRUITS.

By J. Madison Taylor, A. B., M. D.,
Philadelphia,
Professor of Applied Therapeutics, Medical Department, Temple University.

Many forms of foot disabilities have a common origin, and when taken in time most are relievable by simple means. A considerable number can be cured. The purpose of this memorandum is to set forth personal experiences and to direct attention to certain forms of lameness dependent chiefly on two major faults: one a fault of position or placing the foot; the other a fault, or defect, in the tone of the plantar ligaments. Other factors doubtless coexist; each case varies more or less as to constitutional peculiarities, metabolism, "diathesis," previous infections, insults, and other environmental and hypoplastic effects all of which deserve attention. The majority of sufferers applying to me were relieved sufficiently by giving mechanical relief to the outstretched calcaneum and the overtense plantar ligaments and also by retraining the structures in the proper economic posture with but little attention to the metabolism or other errors of function. The measures to be recommended have usually sufficed for those who came my way and while others may hold different views, at least mine have served me and also many of my pupils.

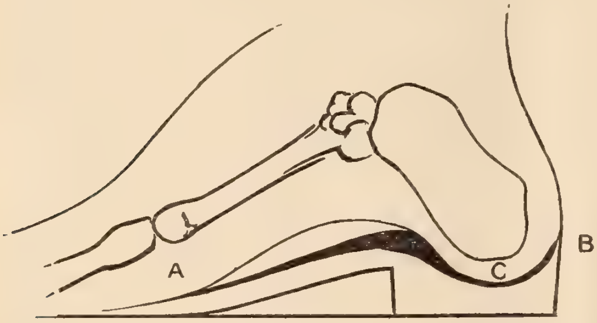

Fig. 1.—Diagram of normal foot with elevation in place, indicated by heavy black line, A to C, or to B, consisting of one solid piece of harness leather shaped to suit and applied on top of an ordinary sole inside any shoe. It is useful in any foot and prevents the forward sliding of the foot toward front and crowding of toes, thereby proving of use in relieving lateral pressure in bunions and corns and anterior metatarsalgia (Morton's painful foot), etc.

There are those who extol so called "arch supports" and apparently get good results therefrom. To my mind they seem to act on a wrong principle. Most certainly I have encountered a multitude who were reduced by their use from an evil state into a worse, from discomfort to distress and an increasing lameness. It seems to me almost as much harm is done by misuse of supports as by neglect. I will briefly describe a more scientific equivalent, the elevation devised by the late Morris Longstreth and give an explanation which is probably all his as I recall it, with little of my own except the twenty-five years of confirmatory experience.

Whatever is the cause of the primary giving way, the settling down of the arch, and the referred pains, the phenomena are those of a projection posteriorly of the lower end of the calcaneum. The question of rotation, of falling to right or left of the vertical line, is another matter and will be discussed later. This posterior projection of the heel bone is accompanied by a sagging or settling of the metatarsal bones due to a relaxation of the ligaments, the whole of which makes for a dull increasing ache in the foot or oftener in the midcalf or knee, or yet higher up, the midthigh or even "back ache" as may happen. Much of Morton's painful toe, or anterior metatarsalgia, is due to faulty postures of the feet and relievable by similar means. The obvious thing to do is to brace up this sagging arch, to fill it up, to fit a mass into the breach. Of course this gives instant relief in proportion as it is well modeled. The best means is to make a cast of the foot, a sort of autogenous arch support. Note what happens. First, the ligaments are thrown completely out of commission, are practically paralyzed by disuse, and second, a steady pressure is exerted upon those ligaments which are not designed to endure a constant pressure. What is done to the attitude of the leg as a whole varies; at least it is thrown less or more out of alignment. Instead of the arch support I make use of a slight elevation on the floor of the boot immediately anterior to the anterior surface of the lower end of the os calcis or calcaneum, just enough to let the end of that bone descend a little into a suitable depression. Relief is thus afforded to the backward strain of the calcaneum without any pressure on the arch except at one point (see Fig. 1) as described.

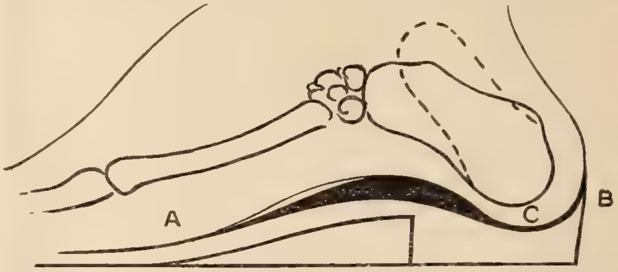

Fig. 2.—Flat foot, showing elevation applied; as foot becomes accustomed to lower elevations, the calcaneum tends to rotate or slip down posteriorly, and to become more erect and more normally placed. Dotted lines show position of bone after reaching a normal position.

This serves another purpose, i. e., to prevent the forward slipping of the foot toward the toe of the shoe from the incline which the heel causes; this elevation acts as a check or obstruction. This holding back of the foot prevents the otherwise inevitable compression of the toes by the sides of the uppers, and this relief is peculiarly grateful in metatarsalgia. The height of this elevation is made first one eighth of an inch; second, two eighths; third, three eighths; and rarely fourth, four eighths of an inch. Care is taken to build this of applied harness leather so as to thrust the foot to one or the other side as needed, to correct any error in

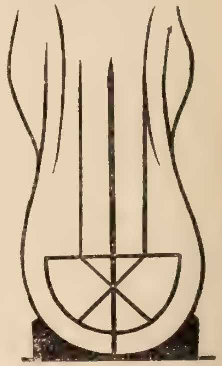

Fig. 3.—Rear view of foot; diagram of half sphere of lower surface of calcaneum with vertical and eccentric parallel lines showing distribution of weight when it is faultily applied, inducing lateral strains, hence initiating transferred pains. Also deep black line at base shows leather cup (depression) — part of that used for elevation — affording some lateral support for the heel bone.

lateral alignment. At first there is some soreness produced by the unaccustomed pressure which soon, e. g., in about one week, wears away. The height being first only one eighth of an inch, this is easily endured. Then in two or three weeks two eighths of an inch is used. This usually suffices, though three eighths of an inch is occasionally used. You will note that this elevation, first, second, or third, serves all the best purposes of an arch support while avoiding its worst faults. This can be used with advantage by a normal foot as a means of preventing the pinching or lateral compression of the toes as the foot slides forward even while using a relatively low heel. I have worn the second elevation for twenty-five years for the relief of a mild anterior traumatic metatarsalgia, which now gives me trouble only when wearing shoes which pinch my toes.

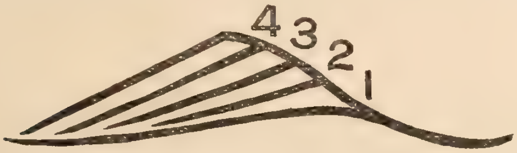

FIG. 4.—Diagram of elevations which, for convenience, are made in four degrees, each about one eighth of an inch high. Those most commonly used are the second and third. These devices can be made by an intelligent shoemaker. Some skill and experience are needed. For ordinary use begin with No. 2 and increase to third or rarely the fourth at intervals of a month. The acute angle shown is of course rounded off somewhat but should be more defined. The slight soreness caused by the bruising of the tissues soon passes away.

The most reliable training remedies in my experience are: 1, to learn, or relearn, how to stand and walk normally, for in errors of leg action reside the primary causes; 2, to use the foot as Nature intended, bare and directly on the earth, such as barefoot walking on the sand or turf. The pains in flat foot and weak foot are not "rheumatic," i. e., have no, or rare, relationship to rheumatism. They are chiefly referred pains from disturbances in the muscle balance causing a strain to fall more on one group of muscles and inducing a compensatory, yet lessened, strain on another relaxed group concerned in the sum total of action. Distant referred pains are due often to injuries of muscles caused by disturbances in muscle balance. It is interesting to note that the importance of flat foot and weak foot is vastly overestimated and wrongly estimated, yet referred pain due to arch strain is often overlooked, i. e., treated for something quite different. In arch strain there is no tenderness in the foot; the arches may appear normal or even higher than normal until the individual has occasion to stand unduly long. A test is to pad the arch with some soft supporting stuff and pain will promptly disappear.

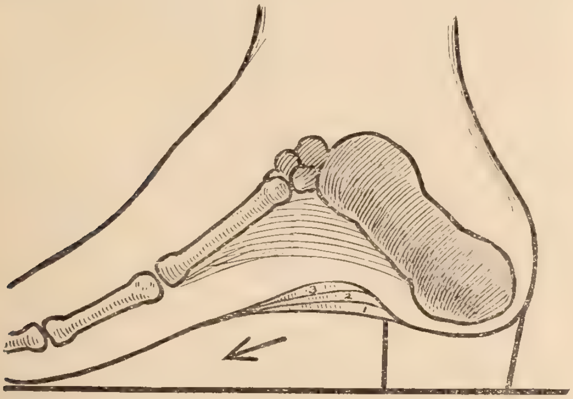

FIG. 5.—The third elevation in place and the aid it gives in holding foot back, preventing undue forward action and encouraging the os calcis to fall into proper place, at the same time preventing excess pressure on plantar ligaments.

One word as to why bad, selfselected arch supports so often fail to accomplish any permanent good, indeed why they often produce in the long run, actual harm. Artificial arch supports induce pressure on the plantar ligaments, those which hold the front and rear bones of the foot together so as to form an arch. The primary effect is to relieve. Used too long these ligaments become weaker and so do the muscles which combine to maintain erectness. No proper or normal adjustment is called for; joints, tendons, and their muscular origins fail of normal use, function is distorted, and the whole foot and leg is in a worse state than at first.

Another group of causes for flat foot, painful foot, weakened arches, as well as variegated referred pains, is explained by the effects of posture and wrong distribution of force on the heel bone. The lower end of the heel bone is shaped like a half sphere with the flat side up. This semiglobular shape of the inferior bearing surface of the os calcis is the point of bearing of the vertical stress from above. The whole body poises first on one foot and then on the other. The normal attitude in plantigrade progression, heel and toe walking, involves a leaning one way and another to throw the weight as required, and changing the direction of forces exerted by the muscles attached to the heel bone. As long as the downward and lateral bearing, the transmission of force, is exerted upon the exact centre of this half sphere, all goes well. The action is like that of a boy walking on stilts. If for any reason, as weakness or error in carrying the load, this centre is disturbed and thrown out of normal adjustment, a strain is put upon the side supports. The holding erect structures thus work at a disadvantage, and if long continued either in standing or walking, local fatigue is induced. This strain soon or late aggravates any latent nutritive error, or metabolic fault, such as gouty or so called "rheumatic state," and overstretching, relaxation, and deformity follow, and also a complex series of distresses or referred pains. A lateral instability of the foot is produced, a giving way of the structures which is most apparent in the arch of the foot. The arch of the foot is practically the pivot on which the anterior flexor, pulling, muscles and the posterior extensor, pushing, muscles of the legs are riveted. Any disturbance of the integrity of this arch causes more strain to fall on one group of muscles and a compensatory reduction of strain on other groups. Hence the discomforts as well as the disabilities result from uneconomies in, or disarrangements of, muscle balance.

The cure consists of attaining as nearly as possible an erect attitude, or orthograde posture, and maintaining this under all changes as in standing, walking, or running, especially in side stepping. This includes a right placing of vertical structures directly in the centre of the flat surface of the half sphere, the os calcis. The cure also involves the exercise of more varied normal acts and uses, of the leg and thigh muscles, the whole group employed in standing and progressing. Also relative rest is needed of those muscles which are overstrained with the ligaments of the arch. General posture as well as local attitude is a large factor in causation of foot pains as well as in repair. Hence restitution by training in normal attitudes is required. This can be achieved by learning to sway the pelvis back and forth till it comes to rest naturally in its proper position of level, thirty degrees from horizontal, and by learning to place the foot flat down in walking, not only on the ball or forward joints of the foot. Also, in walking use the pull of the rear muscles, flexors, as well, and as much as the front muscles, extensors. Vary the movements of the legs and feet, especially while barefoot or with soft moccasins on. This last should be practised daily for ten minutes, preferably on a grass surface or sand Another valuable means of restoring pliancy to the legs is to kneel on a bed or couch, stretching the foot far back, and raise and lower the weight of the body three or four times. In short, posture, the static element, attitude, the action, plus balancing exercises should play a larger rôle than they do in therapeutics. I take pleasure and satisfaction in directly supervising the exercises needed, which demand not a little tact, sympathy, and ample understanding of the principles and niceties of kinesitherapy. Let me remark in conclusion, that this subject is of larger scope and significance than most general practitioners admit or realize.

1504 Pine Street.

TRAUMATIC HYSTERIA.*

By C. P. Oberndorf, M. D.,
New York,
Adjunct Neurologist, Bellevue Hospital.

The existence of such a condition as traumatic hysteria is questioned by some competent judges. For example, when recently I made such a diagnosis in a case examined for a liability assurance corporation, another neurologist, retained by the State Workingman's Compensation Commission to review the findings, remarked to me: "Traumatic hysteria is purely a term of the law courts and what one can find only in the courts of law and never outside of them is not a medical actuality." In similar strain another neurologist commented that traumatic neurosis might be better designated "litigation neurosis." Such a categorical view of traumatic hysteria is not warranted by fact or justice. Even if we restrict the term "traumatic" to actual physical violence, such as blows, crushes, and wounds, there exist innumerable cases of traumatic hysteria in which litigation is not present and the idea of suit has never been entertained by the patient. Ordinarily the variegated clinical picture of hysteria and neurasthenia makes its appearance without any very definite causative factors. Textbook writers, as Oppenheim and Dana, agree that the symptomatologically traumatic hysteria differs in no essential detail from familiar hysterical conditions, with the exception that it develops immediately or a short time after a physical shock. It also differs in the characteristic tendency of the patient to refer all the symptoms tenaciously to the trauma, thereby superficially altering the picture presented. It is also generally conceded that the intensity of the trauma and even the circumstances attendant upon its occurrence are of minor import.

However, in refutation of the assertion that traumatic hysteria develops only when there is a possibility of suit for damages, I would cite two cases observed by me within the last year. In the first case a tenement house mother went to the support of her seven year old daughter who was squabbling with another child. The second child's mother also came upon the scene, and, during the altercation between the women which ensued, slapped my patient with no great force over the left parietal region. After a few days, the woman who had received the blow developed persistent headache at the site of the injury, tremulousness, sleeplessness, and anorexia. She insisted that all these symptoms, which had already lasted some time, had been caused by the slap. In other words, the case embodied etiologically and symptomatically all the essentials of traumatic hysteria. Inasmuch as the aggressor in this instance was extremely poor, the question of financial redress could not have been entertained and certainly was not an issue when the patient came to the dispensary for treatment. Although there probably existed some more potent disturbing factor in the patient's psyche, the obvious explanation of her reaction is that she, worsted and offended in her encounter, gained solace through her nervous condition in the commiseration extended her by her husband and child.

The second case concerns a young English shopgirl, twenty-four years of age, who came complaining of unbearable anxiety, insomnia, paresthesias, and a fear of suicide. She explained that she had been in London at the time of a Zeppelin raid, and a bomb had exploded on the house in which she was staying. Her nervous condition, she said, had arisen as a result of the intense shock and fright attendant upon the terrific detonation. Although the sincerity of the patient's sufferings could not be questioned, I regarded the alleged etiology with scepticism. Too great a discrepancy existed between the dynamic forces of the shock and the symptom she manifested. The average individual reacts in much the same way to purely external, impersonal shocks of this type. After transient fright, the joy of safety quickly effaces the fear of impending destruction. Were this not so, thousands of other English men and women would have fallen prey to a similiar neurosis, but the patient herself admitted that she knew of no reaction similiar to her own among all her London acquaintances who had been subjected to the shock. Naturally the deduction followed that her own reaction depended upon her preexistent nervous susceptibility, and by careful questioning, the following situation in her own life was disclosed: Five months before the Zeppelin raid she had been married to a poor clerk of her own class and religion. Prior to this she had been indiscreet with a young lord and shortly after her marriage, informed her husband, whom she did not love, of her previous liaison. Much to her chagrin he condoned her, thereby disarming her of the excuse she hoped to obtain through her confession for leaving him. For three months her conflict between her sense of duty to her indulgent and magnanimous husband and her strong desires to return to her former more attractive life, had waxed increasingly tense and was reaching the bursting point. Then came the Zeppelin explosion in which she found a pretext for venting her fears that she would commit suicide—perhaps equivalent to leaving her husband, i. e., committing moral suicide—her sleeplessness over her own perplexity and her anxiety over her desire for a moral breach. The neurosis which really represented her own little psychical explosion, afforded her an outlet and a relief for the repressed emotional struggle, displaced, probably unconsciously, on a tangible and really well selected substitute.

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This case, a transatlantic echo of the European conflict, may be used to focus our attention on the present war, which constitutes the most favorable field in history for the development of traumatic neurasthenic states. The wounded, in addition to actual injuries, simultaneously sustain ghastly and violent shocks of a psychical nature. In connection with injuries sustained by soldiers, Nonne (1), of Hamburg, states that among 1,800 wounded men coming under his care, he saw twenty-six instances of traumatic nervous affections. This 1.5 per cent. corresponds closely to well established statistics of the frequency with which neuroses develop after accidents in times of peace. Although one half of Nonne's traumatic cases failed to reveal even after careful anamnesis, indications of preexisting neuropathic traits, Nonne concludes, as a result of his war experience, that in certain individuals whose nervous systems are perfectly capable of bearing the burdens of civil life, hysterical symptom complexes develop under stress of military service. The proportion of such persons is greater than had been heretofore suspected.

The views of Nonne are corroborated by the observations generally of psychiatrists of different nationalities working in the war zone. Such a thing as a distinct war psychosis does not exist as a result of the stress of battle. Even "shell shock" does not appear to constitute a new clinical entity, but, falls in the category of psychic neuroses. Thus Wiltshire (2) writes: "While it is theoretically possible that physical concussion resulting from shell explosion might cause shell shock, it is certain that this must be regarded as an extremely rare and unusual cause. In the vast majority of cases of shell shock, the exciting cause is psychic." Morton Prince (3) states: "Shell shock should be more properly described as 'shell fear' or 'shell funk.'" The different mental disorders of military life have been found to fit into well recognized preexistent psychiatrical groups. Even the Swiss army which was mobilized and kept on guard duty without participating in actual warfare, developed its full quota of a wide range of neuroses, including hysterical attacks, insomnia, choreiform manifestations, etc. (4). In other words here we have the usual military neuroses without physical traumata. From Nonne's study we may conclude that in a certain proportion of all persons exposed to trauma, neurasthenic states tend to develop. The manner in which the injury is received or the possible gain in a financial way to the recipient from the development of the neurosis makes little difference. The gain through the sickness may vary from the possibility of avoiding death itself by exemption from military duty or paltry monetary gain in cases of civil suit to insignificant selfsatisfaction in nonlitigious instances such as those mentioned previously.

This leads us to the conception that a certain susceptibility of the nervous system is after all the crucial element in the development of hysteria. Some type of trauma is an exciting factor, present and operative according to the psychanalytic school in all cases of hysteria. Such traumata which, in the psychanalytic sense, may be psychical as well as physical, are often sexual in nature and may be received early in life. These injuries or insults to our psychical system, with reactionary tendencies engendered by them, sink into the unconscious mind but none the less may be potent in disturbing the emotional equilibrium of the person harboring them. Closely related to this interpretation of ordinary hysteria is the influence of the unconscious in traumatic hysteria following railway accidents, falls, blows, etc., emphasized by Pearce Bailey (5). He maintains that the explanation of every traumatic neurosis is found in a disturbance of consciousness and that the accident affects consciousness more or less violently and begins to loosen the restraint of the unconscious regions.

If these theories are correct, it is not only the individual susceptibility, but more particularly the unconscious mental equipment of the patient, which is of paramount importance in neurotic conditions, whether they arise as a result of obvious or submerged physical or psychical traumata. It is almost impossible to investigate analytically the personal reactions operative in the mind of a litigating traumatic hysterical patient. On account of motives, largely unconscious, the litigating patient regards the physician with a suspicion which prevents frank cooperation. It is therefore from analogy rather than from actual proof that I am of the opinion that we should find little essential difference in the underlying mental mechanisms—e. g., the displacement mechanism in the Zeppelin raid case —in litigating cases from those in which no desire for material gain exists. The traumatic litigating neurotic, however, in addition to his displacement or retrogressive selflove, converts his weakness into a virtue, whereby he becomes the injured party who is to be rewarded for his suffering instead of merely enduring it.

Disregarding the tantalizing obstacles which sometimes must be overcome before we can distinguish between organic disease and hysteria, and granted that we have accepted the diagnosis of "functional nervous disorder," it is necessary to differentiate between simulation with desire to defraud and purely hysterical manifestations. The malingerer consciously intends to manufacture disabling symptoms, whereas in the hysteric they appear against his will.

Here again the distinction between malingering and hysteria resolves itself then into a question of consciousness, and as we attach responsibility to a person only for that which he consciously wills, it seems perfectly logical to rebuke the fraud and treat the neurotic as a diseased individual. A punctilious distinction of this kind undoubtedly inflicts many hardships and through the erroneous verdicts on the part of the medical judge at times injustice is done, both in excusing valid persons and more often in forcing invalid ones beyond the threshold of their nervous resistance. Notwithstanding the inevitable fallibility of our delicate judgment, the fact remains that relative consciousness has been accepted as the standard in weighing traumatic neurosis by the psychiatrists of all the belligerent nations in the present world war. Deliberate malingering is pitilessly punished, while neurotics, many of whom on other occasions have been distinguished for bravery, whose conscious courage and worth can not be doubted, are put under medical supervision (6). Thus, if hysteria, as under the circumstances of the Swiss mobilization, and more specifically traumatic hysteria, is accorded recognition in the rough judgment of ruthless war conditions, it seems only fair to consider it in a similar light under the finer adjustments of society in a peaceful state.

In hysterical conditions, not associated with physical trauma, one of the first facts which the analytic neurologist seeks to discover is the end which the patient hopes for or is more or less consciously achieving by his illness. In simple cases there often is no great mystery in this regard. It may be the sympathy of a husband, the solicitations of a mother or the avoidance of a disagreeable task. Bailey (5) has maintained that a desire for revenge against the injuring party is a potent force in the development of traumatic neurosis. If this be so, it seems best to consider it merely as an incidental example of the general infantile emotional reactions of the neurotic. The spirit of revenge is rather an aggressive conversion of the selfpity in which neurotics are prone to indulge themselves, and which often finds a convenient outlet in the accident which chance has given them. Whether it be a desire for revenge or the more subtly disguised selflove which actuates a neurotic, the analytic school contends that by bringing fully into the patient's consciousness the more or less unconscious desires expressed in this neurosis, he is given the means of solving his problem in a rational manner. Traumatic litigating hysterical cases resist treatment from the outset and are therefore inaccessible by analysis.

Nonne claims to have achieved satisfactory results with hypnosis in curing traumatic neuroses in soldiers, but this method is also practically precluded in litigating neurotics. Moreover, Nonne, in common with most psychotherapists now engaged in military work, advocates that after successful hypnotic treatment, the restored soldier be assigned to garrison duty. In other words, Nonne accedes to the soldier's unconscious wish to avoid the battlefront. In ordinary hysterical manifestations, unless the patient has sufficient force to adjust himself to his wish when the latter is made conscious to him, or is afforded some substitute for that wish, the neurosis is likely to continue. Inasmuch as most litigating neurotics harbor a more or less unconscious wish for reimbursement, until that desire is fulfilled, the chances for cure at the hands of the physician by any method are meagre. Even after financial adjustment the symptoms may persist as an unconscious retribution of the patient to his own conscience. In general, therefore, if a traumatic litigating hysteric is reimbursed shortly after his symptoms, thus pandering to his unconscious wish, instead of deferring adjustment as long as possible. it is advantageous to both the company and the patient.

To recapitulate briefly, the contentions made are:

1. Traumatic neurosis is not primarily dependent upon litigation.

2. All hysterias are dependent to a great extent upon traumata, psychical rather than physical. The mental mechanism in litigious cases probably parallels the nonlitigious ones.

3. The constitutional makeup of the patient, more specifically his unconscious mental equipment, is the most important factor determining the development of hysteria.

4. All hysterics are unconsciously attempting to achieve something through their illness and until that aim is brought clearly into consciousness or some substitute for it is provided them, there is little hope for permanent cure.

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249 West Seventy-fourth Street.

CLINICAL OBSERVATIONS FROM THE STUDY OF 371 CASES PRESENTING SYMPTOMS OF NEPHROLITHIASIS.*

By R. F. O'Neil, M. D., F. A. C. S.,

Boston,

Genitourinary Surgeon to Out Patients, Massachusetts General Hospital.

The large number of patients presenting symptoms of lithiasis seen by the genitourinary department in connection with other departments led me to look over the records of a considerable number of patients in whom the provisional diagnosis was nephrolithiasis, in order to ascertain, if possible, the proportion of cases in which stone was the cause of the symptoms. In by far the greater number referred to us for investigation, acute or chronic pain in the back, loin, or abdomen was the principal complaint, sometimes associated with urinary symptoms and an abnormal urine, often not. On the other hand, we have often called in other departments, notably the general surgical and orthopedic, when we have been unable to fix the responsibility for the symptoms on the urinary tract. It may be stated that in a number of patients, although no calculus was found, other definite pathological lesions of the kidney or ureter were present.

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The symptom of pain located in the back, abdomen, or loin, whether referred to other organs or not, with or without urinary symptoms, is of interest alike to the general surgeon, the orthopedist, and the genitourinary surgeon, and in many borderline cases the assistance of all three may be needed to arrive at a correct diagnosis. In all, 371 cases from the records of the Massachusetts General Hospital were investigated; they run back as far as October, 1911, divided as follows:

House cases positive for stone	141
House cases negative for stone	32
	173
O. P. D. cases:	
Negative	98
Doubtful	13
Positive	25
Insufficient data	59
	371

Fifty-nine of these were disregarded because of insufficient data, leaving 312 cases. Of these, 173 were house cases and 139 out patient cases. Of the house cases thirty were admitted to the ward directly, leaving 143 from the out patient department, or a total of 282 cases studied in that department. These records are quite complete and include x ray and cystoscopic findings, uranalysis, and general examinations. About fifty-five per cent. of these cases were lithiasis on the evidence found. I think, however, it is fair to assume that the proportion would be greater if further study were possible. To take this series a little more in detail. Of the 141 positive cases in the house, five passed a calculus while waiting. Of the remaining 136, 103 were males and thirty-three females; the greater number of stones occurred in the ages between twenty and forty years. One hundred and twenty-three patients were in the genitourinary service. Of this number sixty-five were renal, forty-three ureteral, and fifteen bilateral. Six refused or were refused operation. On the remaining 114 patients, 133 operations were performed; this includes the bilateral cases and some cases where multiple operations, as litholapaxy or operation for stricture of the urethra, or both ureterotomy and pyelotomy, were performed on the same patient. The operations were as follows: Pyelotomy, fifty-six; ureterotomy, twenty-five; ureterotomy with reimplantation of ureter, one; ureterotomy with perineal section, two; primary nephrectomy, nineteen; secondary nephrectomy, two; nephrotomy, thirteen; suprapubic operation with ureterotomy, four; vaginal ureterotomy, one; litholapaxy, five; intravesical operation, eight; stone passed, three; stone not passed, one; stone removed by ureterotomy later, four. The results recorded were as follows: There were 112 recoveries—sixty-one renal, fifty-eight ureteral, and thirteen bilateral. Six refused operation—two renal, two bilateral, and two ureteral. There were five deaths in 130 cases; in one pyelotomy death occurred from pneumonia due to bad anesthesia; one was due to gas oxygen poisoning before nephrectomy had been completed; in one nephrotomy with ureterotomy peritonitis set in; in one ureterotomy intestinal paralysis occurred; in one nephrectomy for calculus pyonephrosis, there was hemorrhage; operation was not advised but was done at the patient's request. Of the thirteen cases on the surgical service, nine were renal, three ureteral and one bilateral. Seventeen operations were performed on these thirteen patients: pyelotomy, six; ureterotomy, three; primary nephrectomy, one; secondary nephrectomy for bleeding, one; nephrotomy, four; vesical calculus, one. There were no deaths.

There are some points in connection with the statistics of the various operative procedures to which I wish briefly to allude at this time. It will be noticed that pyelotomy, done sixty-two times, heads the list of operations on the kidney by a large majority. That this operation is the one of election for renal stone admits of no discussion; it should be carried out whenever possible. It is attended with less danger from hemorrhage and infection, and, as statistics show, less likelihood of the recurrence than in cases where nephrotomy is performed. This was pointed out in a paper published by Cabot and Crabtree last year. Occasionally it will be necessary from the size or location of the calculus to combine the operations of nephrotomy and pyelotomy. This was done in several instances in this series. Next in order comes nephrectomy. This was performed twenty times for calculus pyonephrosis when the kidney had been entirely destroyed either by multiple calculi or, as in some cases, by a comparatively small stone at the ureteropelvic junction, causing complete obstruction. Secondary nephrectomy was performed only three times; once made necessary by secondary hemorrhage following nephrotomy; once after the drainage of a pyonephrotic kidney in a very ill patient, and once for an infection of the kidney following ureterotomy with urinary sinus. Nephrotomy comes third on the list with seventeen cases. As has been stated, there are definite objections to this operation, but in certain cases its performance cannot be avoided. Splitting the kidney with a wire and careful suture of the kidney about a rubber tube have proved the most effective means of preventing hemorrhage in my hands, although many surgeons do not consider this latter necessary. Vesical calculus was present as well in six cases and was removed by litholapaxy.

There were forty-one operations on the ureter. In the greater number of these an incision was made in the ureter over the calculus or a varying distance above it and the stone either milked up the ureter or extracted with some form of forceps. A certain number of cases, however, where the stone was low in the ureter or very near the vesical end, present some points of interest. Suprapubic cystostomy with removal of the calculus from the ureter through the bladder was performed four times; in one of these it was necessary to open the ureter as well. Vaginal ureterotomy was performed once; this was followed by a persistent urinary fistula. Resection and reimplantation of the ureter for stricture was successfully done in one case. The intravesical operation with the operating cystoscope, consisting of cutting the ureteral meatus, dilating the ureter, and attempting to extract the stone, was done eight times in this series, three cases successfully, one stone not known to have been passed, and in four cases ureterotomy was later successfully carried out, no change having been effected in the position of the calculus. That the manipulation is of value in a certain limited number of cases there can be no doubt; it should be tried out in all cases of low calculus where there is a chance of the stone being passed before the extensive and very often very difficult operations for removal of calculi in this location are advised. Of course these cases are too few in number to draw any conclusions from, and it may well be argued that the patient might have passed the calculus anyway. But we have seen peristalsis excited by manipulation and the calculus passed so promptly as to leave no doubt as to cause and effect. Of course in cases of long standing and impaction it is of no value.

In regard to the results, in brief, there were five deaths. In one, pneumonia started immediately after operation probably directly due to inhalation. The patient took ether badly and was overanesthetized. One patient in whom nephrectomy was to be performed died suddenly under the anesthetic, gas oxygen, before the kidney was tied off. In a nephrotomy with ureterotomy, the patient died of peritonitis due evidently to an undiscovered and unrepaired tear at operation. In a fourth in which ureterotomy was done "intestinal paralysis" set in, and in one nephrectomy for calculus pyonephrosis, the patient died of hemorrhage. Operation was done at request of patient but was not advised. It will be seen that the actual mortality from operation was small. With the exception of the hemorrhage case there is nothing in the cause of death peculiar to these operations that might not have happened in any surgical procedure. In the case in which peritonitis set in the peritoneum was probably opened without its being discovered. Six patients refused or were refused operation for various reasons.

I have not attempted to go into the question of recurrence of stone; that is a long range subject. Suffice it to say that rapid recurrence was noted in some cases; also, the proportion of cases in which infection was present cannot be stated as in many cases cultures were not made. In some cases there is a persistence of urinary symptoms due to a residual pyelocystitis, and in others, although symptomatically well, some abnormality of the urine is to be noted. Perhaps the most interesting, and to the surgeon the most troublesome cases are those in which a urinary fistula persists for a greater or less time due to angulation or stricture of the ureter. I found notes of six such cases, in one of which a vaginal ureterotomy was performed. The fistula leaked freely and persistently and all attempts to pass a ureter catheter from below failed. Operation was advised but a bronchitis developed and the patient left the hospital. When last heard from it was still leaking weeks after the operation. Further surgery was refused by the patient. Another, in which ureterotomy for a stone impacted low in the ureter was done, broke down after the patient left the hospital. Five months after the first operation, after repeated failures to pass a catheter from below, an unsuccessful attempt was made to pass an instrument from above. There was still leaking when the patient was last seen. In such cases, cure can only be obtained by reimplantation of the ureter, a plastic being out of the question on account of the depth of the lesion and the infiltration of the tissues. This failing, a nephrectomy will effect a cure—a truly radical method.

In a case of my own, a man in whom leakage was immediate and persistent following a difficult ureterotomy, an exploratory operation was done three weeks following the first, after several unsuccessful attempts to pass a ureteral catheter. The ureter was found drawn into a sharp angle by the scar tissue with a hole on the top. The ureter was freed, the sinus dissected out, and a ureter catheter passed up to the kidney and down into the bladder and drawn out through the urethra by means of a lithotrite. It drained well for ten days, when it was removed. The recovery was satisfactory without further leakage. In the fourth case, a woman, the sinus followed a ureterotomy; it was closed five weeks after operation by constant ureteral drainage. The fifth case, one of nephrotomy with pyelotomy, was finally cured by dissecting out the sinus, freeing the kidney, and passing a catheter from above down and drawing it out through the urethra as already described, constant ureteral drainage from below having previously failed without the removal of the stiff walled sinus. The sixth case closed spontaneously after eight weeks, several attempts having been made to get up from below. I have at present a case in the ward three weeks after operation where an impacted stone low in the ureter was extracted with difficulty, the history going back six years. The woman had had a previous cholecystectomy and appendicectomy. There was no leakage until the ninth day, when it became free. All attempts to pass a catheter from below have failed. I think in the cases where the removal of a low stone is attended with difficulty, ureteral drainage instituted at the time of operation would be a valuable addition to the technic of preventing these troublesome sinuses.

A brief analysis of the bilateral cases is not without interest. These were sixteen in number; fourteen males and two females. The x ray was positive in all. The urine was positive in thirteen, not stated in three. In regard to the age, they correspond to the larger statistics; twelve were from twenty to forty years of age; two from forty to fifty; one between fifty and sixty and one was younger than twenty years. In thirteen of these cases there were calculi in both kidneys; one patient having a stone in the ureter as well. In one, there was a calculus in each ureter, one stone being passed into the bladder following cystoscopy. In two cases there were stones in one ureter and one kidney. It is interesting to note that in two cases a horseshoe kidney was found. Calculi were removed at two sittings in one of them. In the other a stone was removed from the left side, that on the right being so small that removal was not attempted because of the difficulty of approach. One other case of horseshoe kidney was found in the unilateral series.

Fourteen of these patients were operated upon; two refused operation. There were no deaths. Simultaneous bilateral operation was performed in five cases. In seven it was deemed unwise to operate on more than one side at a time. In these cases we followed the principle of operating first upon the kidney which by x ray findings and function we considered to be the better of the two, which is the procedure to be carried out in cases of bilateral calculous anuria when the condition of the patient will permit one side only to be done. It may be stated that none of these were emergencies of this type. In two cases, only one side was operated upon as before cited—one where a ureteral calculus was passed following cystoscopy, the other, the horseshoe kidney, where removal of a small stone was not attempted. It is interesting to note that one of the most striking cases of the series, where there were twenty-six calculi in the right kidney and a stone the size of a golf ball in the left, had been the victim of two previous surgical assaults—one an "operation for hydronephrosis," the other an appendicectomy. In one case following a ureterotomy the kidney became infected and had to be removed.

All of these cases presented more or less typical symptoms of stone, i. e., pain, colic, nausea and vomiting, and urinary symptoms, but in a few only, were they such as to suggest a bilateral process, this being demonstrated by the radiograph. Two of these patients have since died, both of renal insufficiency; one a year and a half after operation, the other four years after. In two others there is a recurrence; one recurring a few months after operation.

The diagnosis on all of these 136 cases was made on symptomatology, x ray and cystoscopic findings, and urine examination. A positive x ray was obtained in 130 of these cases; no record in three; negative in three, one of which showed a scratch mark on a wax tipped catheter. There is some question as to the other two; the stone was either passed or not found. On several occasions the x ray was at first negative, later positive. The urine examination in eighty-eight renal cases was positive; negative in one case only in which nephrotomy was done for a calculus in one of the calyces. In another case the urine was negative at one examination. There was no record in four cases. In forty-six ureteral cases the urine was negative in five; negative at time of operation, history of blood, one; negative twice out of six examinations, one; negative at one examination, one; not stated, five. Sixteen of these patients had been subjected to previous operations, and three treated medically for a varying length of time. In these sixteen cases, the appendix had been removed without benefit in eleven cases. In one of these the left ureter was explored at the same time and nothing found, although a stone was there and removed later. Just why the appendix was removed in this case is hard to see. Another of these was followed by an operation upon the kidney which was found "twisted." In one case where the appendix was removed, a diagnosis of pyelitis was made at the time of operation, the kidney being explored and was then undoubtedly the seat of a calculus. In another case, one of bilateral stone, an operation for hydronephrosis was done previous to the removal of the appendix. In one other the gallbladder was removed at the same time. In this case I removed a calculus from the right ureter three weeks ago, there having been symptoms for six years. Of course, it is the rightsided calculi that are mistaken for acute or chronic appendicitis or cholecystitis, although in one case the calculus was in the left ureter.

Nephropexy on a kidney containing stones had been done three times; one of multiple calculi requiring nephrectomy; another of these was followed by "enterotomy." One case in which the kidney contained five calculi, had been curetted; later on, first one ovary was removed, then the other. In another, an exploration of the kidney by nephrotomy where no stone was found, was followed by an exploration of the ureter with the same result. We all know, however, that at times it is very difficult to locate a stone by nephrotomy. It seems in the other cases that with reasonable care a diagnosis could have been made, as in many of them an abnormal urine was present, as shown by the record of small amounts of albumin and blood. Of the cases treated medically, we found one a bilateral case, treated two years for malaria; one diagnosed as pyelitis of pregnancy in which a large calculus required nephrectomy; and one with intermittent hematuria for years which was treated for Bright's with restricted diet and in which a large calculus required nephrectomy.

The symptomatology is of interest. Practically all cases had pain or a history of pain, beginning in the back or loin, groin, or abdomen, sometimes referred to various regions; described as dull, grumbling, acute and knifelike, or colicky. In fact, all shades and varieties were present in the records and they were impossible to classify. They were often described as a "sudden sharp pain in back and side." In sixty-two cases, nausea and vomiting were present in nineteen. Urinary symptoms were often present but by no means constant; they were generally described as a "burning" or "scalding" or at times "difficulty in passing water" and often frequency were complained of. In some cases hematuria was the presenting symptom. The physical examination also varied to a marked extent. At times costovertebral tenderness was present, spasm of back muscles or of abdomen, tenderness over appendix, kidney, gallbladder, or urinary bladder; again, no definite picture. The typical textbook picture of severe colicky pain beginning in back and radiating to the testicle, with renal tenderness, was present but not common by any means. Of course stones in the ureter gave a much more definite picture than those in the kidney.

A very interesting and instructive group of cases were the thirty-two referred to the house as nephrolithiasis in which other lesions were proved to be present. They were as follows: 1, hydronephrosis with kinked ureter—previous operation for appendix—x ray shadow proved to be calcified gland; 2, left hydronephrosis; 3, movable kidney—urine negative; 4, stricture of ureter—x ray negative—phlebolith; 5, kinked ureter—previous operation for appendix; 6, movable kidney; 7, bilateral pyelitis; 8, case with positive urine and shadow shown by x ray—stone was not found at operation, but the x ray, which had been typical before, was negative afterward. I feel sure that the stone was lost and probably came out with a blood clot at operation. Therefore, this case does not strictly belong in this group, as the diagnosis, renal calculus, was in all probability correct. There were four cases with typical symptoms and positive urine. 9, appendix; 10, acute abdominal—constipation—relieved by enema; 11, pyelitis; 12, no demonstrable lesion; 13, gallstones—x ray showed gallstones or renal calculus; 14, chronic lead poisoning; 15-18, cholelithiasis—four cases; 19, arteriosclerosis; 20, abdominal glands; 21, vesical calculus; 22, nephritis—faulty position—hypertrophic arthritis; 23, appendix—kidney explored—urine and x ray negative; 24-26, no evidence of stone; 27, no symptoms while in house—no stone found—examinations all negative; 28, four years previous, nephrotomy for stone and an appendix operation before that—nephrotomy for stone; not found—secondary nephrectomy for bleeding—death; 29, appendicectomy—symptoms of right ureteral calculus—passed blood and gravel—ureter catheter passed two and one half inches; colic—patient sure she passed calculus—none found—x ray shows faint shadow—operation—plastic for stricture of ureter; 30, intermittent hydronephrosis—typical symptoms of calculus—urine positive—x ray positive—at operation a hydronephrotic kidney was found; abnormal renal vessel causing kink of ureter—calculi probably secondary—nephrectomy for totally destroyed kidney; 31, pyelitis—no present evidence of stone—if present, probably has been passed; 32, not classed as stone—right renal tuberculosis; right ureteral calculus—x ray typical, but may have been calcified matter from kidney—nephrectomy and ureterectomy. These cases all had negative x rays except as herein stated; some had positive urine examinations and all had more or less typical symptoms. It is to be noted that fifty per cent. of these had some lesion of the urinary tract other than calculus. Their diagnosis will be discussed later.

The out patient department cases were classified as follows: negative, ninety-eight; orthopedic, thirty-two, with four more doubtful; various surgical and medical lesions, eleven; syphilis, two; gallbladder, one; chronic appendix, two; hernia, one; Lane's kink, one; and constipation, four; no demonstrable lesion, seventeen; gynecological conditions, four; nerve cases—syphilis of central nervous system, three; genitourinary lesions, thirty-one. Four of these last were in the lower tract, and twenty-seven in the upper tract. The lesions in the upper tract were as follows: renal tuberculosis, three; stricture of ureter, two; movable kidney, five; abnormality of renal pelvis, one; colon bacillus pyelitis, five; nephritis, one; albuminuria, two; cystitis, one; carcinoma of prostate, one; urinary symptoms negative for stone, six. There were thirteen doubtful cases: four orthopedic, four gallbladder, four appendix, and one hernia. These were doubtful because of lack of urine examinations or positive urine. All had negative x rays. Eighteen patients with positive findings went to other institutions or failed to enter the house. Cases that were probably positive, seven, and three cases were unclassified. Fifty-nine cases were disregarded because of lack of data.

Leaving out the orthopedic and doubtful cases for a moment, we find fifty-three negative cases, other lesions of the genitourinary tract being most common. In regard to lesions of the lower tract I recollect a case of seminal vesiculitis, where the pain on the right was colicky in character and very suggestive of ureteral calculus. There were thirty-one cases of various surgical lesions and a class put under the heading "no demonstrable lesions." These are cases which give a more or less typical history of pain, which is perfectly compatible with renal calculus, but all examinations of urine and x ray are negative, often repeatedly so. The thirteen doubtful cases were so called because of lack of urine examination or the presence of a trace of albumin. The symptoms were more or less typical, and in every case the x ray was negative, but they could not be definitely excluded. Four were orthopedic, four were thought to be gallbladder, four were appendix, and one was hernia. The preliminary diagnosis in the remaining groups of cases were undoubtedly suggested by the character and location of the pain and was later ruled out by the x ray, uranalysis, and general examinations.

We see a considerable number of patients with the orthopedic department, and the relation of the orthopedic conditions to the diagnosis of urinary lesions is one of great interest. In general the pain characteristic of orthopedic conditions falls into three classes: 1. When there is some definite lesion of the spine, as tuberculosis or hypertrophic arthritis, the pain is of a referred type and can be produced by some distinct motion. Examination of the spine will show stiffness, change of position, and muscular spasm. This is the easiest type to recognize and eliminate. 2. Where there are general relaxed positions the pain is much less definite. Urinary symptoms are frequently met with in this class, and they, as well as the pain, are relieved in a striking manner by removing the weight by proper support, etc. 3. When to the general relaxed condition there is the added strain to the relaxed back or sacroiliac the chronic pain is with great difficulty associated with a calculus.

In this series there are thirty-six cases. I have divided them into two groups: twenty-four with urinary symptoms and twelve without. The ones with urinary symptoms have been further divided into fifteen with a normal urine and nine with an abnormal urine. In the twelve cases without urinary symptoms the x ray examinations are all negative for calculus. Urine was negative six times; not given six times. The orthopedic diagnosis was postural strain, seven; flat foot, with abnormal twelfth vertebra, one; hypertrophic arthritis of spine, one; scoliosis, abnormal fourth and fifth lumbar, one; ptosis, one; obesity with back strain, one. The symptoms are not incompatible with some renal lesions. In cases of postural strain the pain is described as attacks of pain in right side, radiating to back and right leg; pain in centre of back, pain in right side and back, pain in right side and groin, pain in left abdomen, pain in right lumbar region. The other lesions gave a similar history. A case of ptosis gave a history of attacks of knifelike pain for two years.

Of the fifteen cases with urinary symptoms and negative urine, the urinary symptoms are slight and are described as a slight burning or scalding or a moderate frequency. As has been previously stated, these mild urinary symptoms are frequently met with in postural strain. The x ray was negative for calculus in fourteen cases and was not given in one. The orthopedic diagnosis was postural strain. The symptoms were: right sided pain, typical of renal colic; pain in hypochondrium and lumbar region; three days severe pain in right renal region; pain in left costovertebral angle; pain in right back, side, and suprapubic; three attacks of left costovertebral pain with nausea; pain about umbilicus up to right side. Six other cases in the group had similar symptoms: Orthopedic diagnosis was: hypertrophic arthritis, one; abnormality of fourth and fifth lumbar, three; orthopedic, one; backstrain—pronated feet, one.

There were nine cases presenting an abnormal urine. In five of these the only abnormality was the slightest possible trace of albumin. X rays were all negative. The orthopedic diagnosis was: One case of hypertrophic arthritis in which there were dull pain in left upper quadrant and some tenderness; two cases of postural back strain, with pain in right costovertebral angle; one case of sacroiliac strain, with pain across back, limitation of motion, and marked deformity of fifth lumbar; one case of sacrolized transverse process of the fifth lumbar, with pain in left hypochondrium. In four cases the urine showed marked abnormality and in spite of negative x ray and a definite orthopedic diagnosis, it did not seem as if calculus could be excluded. They were as follows: faulty posture; hematuria one year ago; since then two or three similar attacks; pain in low lumbar region; cystoscopy showed trigone reddened; dilated vessels; clear urine from kidney. Bleeding may have come from bladder. Abnormality of fourth and fifth lumbar: severe pain in right costovertebral angle three days previous; nausea and vomiting; urinary frequency, with hazy urine; albumin, trace. Postural strain: sudden pain in right lower quadrant and groin referred to testicle; urine bloody until ten days previous. Extensive hypertrophic arthritis, third and fourth: sudden ache in region of kidney; urine smoky; sediment showed blood and pus.

The study of this series of cases so briefly presented brings out several points in the differential diagnosis of lithiasis.

Pain.—First, as regards the value of the symptom of pain, it will be noticed from the character of the pain described and the number of conditions found that there is no definite type and that the pain of lithiasis can be simulated by, or simulate, a great variety of intraabdominal conditions as well as other urinary lesions which is well illustrated by the series of thirty-two cases admitted to the house with typical symptoms of lithiasis definitely proved to have other conditions. Pain, or the history of pain, was present at some time in practically all cases of calculus. That it may be remote is shown by the absence of pain for a long time, as in the cases of large, so called silent calculi which remain symptomless for years, only to be discovered in a routine examination. Of course, in a certain number of cases the character and location of the pain will be typical of the lesion, whether it be gallbladder, appendix, calculus, or back strain, and if the patient is seen in the acute attack, the diagnosis may be pretty accurately made. It is to be remembered, however, that in many acute cases associated with general abdominal pain, nausea, and vomiting, distention, tenderness, and spasm, the picture is by no means suggestive of calculus and has led to exploration by competent surgeons for appendicitis, cholecystitis, intestinal obstruction, etc. In chronic cases, as has been shown, there is nothing characteristic in the history of pain in the loin and back to differentiate that due to stone from various other conditions, even when accompanied by blood and pus in the urine, as this is not uncommonly associated with other kidney lesions. Certain cases show an exacerbation of pain after exercise. Pain as a symptom, therefore, must be regarded as unreliable, although often suggestive.

Urinary examination.—While it is true that a few cases of ureteral calculus present a persistently normal urine, these are rare, only five being found in this series. The vast majority of cases of lithiasis present an abnormal urine; at times these changes may be light or temporarily absent. Repeated examinations of the urine should be made in the negative cases for microscopic blood and albumin, and when found these should be given due consideration. For example, see some of the cases cited, where unnecessary operations have been performed on an unoffending organ. In the female, a catheter specimen should always be obtained, and the male, the lower genitourinary tract eliminated.

X ray.—This is without question the most valuable single method of diagnosis we have. Failure of the x ray to show calculi has been estimated to occur in from six to fifteen per cent. of the cases. This I believe to be greatly in excess of the facts. With a good technic, good preparation, and multiple exposures, few stones will escape. Dr. Percy Brown tells me that he puts it at ninety-six per cent. positive. It must be admitted, however, that some calculi, and good sized ones at that, are persistently negative to the x rays. A satisfactory x ray should show, besides the bony detail, the outline of the kidney and the soft parts, as the psoas muscle, as well. The main sources of error are the extrarenal and ureteral shadows, as gallstones, the calcified tip of the transverse processes of the vertebræ, substance in the intestine, phleboliths, and calcified glands, especially in relation to the renal pelvis or in the course of the ureter and adherent to it. I recollect a striking case in which the radiograph ureter catheter was arrested several inches up the ureter, apparently in direct line and in contact with a calculus in the ureter. At operation the shadow was found to be a small calcified gland, the ureter being kinked at this point. An injected radiograph would have revealed the true condition. Glands in the region of the renal pelvis have frequently been mistaken for calculi. The varying density of the shadow will generally enable one to differentiate them. The proper employment of the x ray catheter, the injected radiograph, and stereoscopic plates will serve to eliminate these artifacts. Occasionally a calculus previously negative to x ray will become visible after being stained with collargol or some of the allied preparations employed in pyelography.

Cystoscopy and ureteral catheterization.—The edematous appearance of a ureter with a stone in the lower end may be very typical, but aside from this, there is nothing in inspection cystoscopy to differentiate calculi from other lesions of the upper tract. The urine obtained from either side may or may not be of assistance. The presence of a little blood is of no value whatever; pus, of course, is indicative of an inflammation of the renal pelvis. The function of a kidney containing a calculus, as shown by the phenolsulphonephthalein output, is generally diminished. This function tends to improve after the removal of the stone. The fact that a ureteral catheter passes without obstruction is not presumptive evidence that calculus is absent, any more than obstruction, or temporary obstruction, to its passage is an indication of the presence of a calculus, without confirmatory evidence by the x ray, as such obstructions are frequently due to a fold or kink in the ureter, especially common a short distance within the meatus and at the pelvic brim. Scratches on a wax tipped catheter carefully passed, are absolute evidence of the presence of a stone and the method is of great value when the x ray is negative.

Physical examination.—This is particularly important where there is any question of differentiation from an orthopedic condition. However, palpation of the loins and abdomen is frequently negative and presents nothing pathognomonic of calculus disease, as spasm, tenderness, and masses in the abdomen are met with in a variety of conditions. It may be actually misleading in renal lesions, as not infrequently the tender and palpable organ is the healthy one. It should not be relied upon without confirmation by some of the other diagnostic measures.

From the foregoing it will be seen that definite reliance cannot be placed upon the character or location of pain, the absence of abnormality of the urine, nor the positive or negative findings of the x ray. As a cause of obscure abdominal pain, nephrolithiasis is always to be reckoned with, and the employment of any or all of the foregoing measures may be necessary for an accurate diagnosis.

In conclusion it may be stated that a persistently normal urine and a persistently negative x ray in connection with pain in the lower back or abdomen must be a very great rarity, if it ever occurs, in cases of lithiasis.

379 Beacon Street.

The Alleged Increase of Cancer.—One of the most argued questions of the day is whether or not cancer is increasing. Wilcox (*Journal of Cancer Research, July,* 1917) reviews a great mass of statistical information on the subject that he has studied. He grants that the reported mortality from cancer is increasing in almost every part of the world from which reports exist, yet he believes that the real mortality, if increasing at all, is certainly not increasing with equal rapidity. His conclusion is that "the cumulative evidence that improvements in diagnosis and changes in age explain away more than half, and perhaps all, of the apparent increase in cancer mortality," contradicts the presumption raised by the figures, and make it more probable, although far from certain, that cancer mortality is not increasing.

FACTORS OF RACE IMROVEMENT.*

By Casper L. Redfield, M. D.,
Chicago.

It is well known that some machines are better than others. It is a common observation that a machine made in one way is much more powerful than the same machine made in a different way. From these facts many persons have thought that if they could only get the proper combination of parts—a proper structure—they could make a machine which would run of itself and furnish power. Direct scientific investigations as to the nature of power, technically called energy, show that there is a fallacy at the foundation of all such attempts to make a perpetual motion machine. That fallacy lies in the fact that power is an entity totally distinct from structure, and that no structure of any kind has anything to do with the existence or nonexistence of the power necessary to operate it. At its best, structure is simply the vehicle or tool of power, and one structure is better than another only as one tool is better than another tool. Naturalists and biologists have observed that animals vary in structure and power from generation to generation; also, that animals of certain structure are more powerful than other animals of a somewhat different structure. From these observations they have jumped at the conclusion that the power of an animal is a function of its structure. It is the same fallacy which leads a man to attempt to make a perpetual motion machine. Biologists have given their attention to the study of animal structure, and not at all to the study of animal power. What they have to say about the evolution of animal power is based on their study of structure and not upon a direct investigation of power as such. Thus they know that animals vary and that by selection they can bring about considerable changes in structure when the selection is continued for many generations. On this basis, but without investigation, they tell us that the improvement in the American trotter during the nineteenth century was brought about by selection. Also, on the same basis, they tell us that the way to improve the human family is to select superior young men and young women and encourage them to marry early so that they may raise large families. The first of these is demonstrably untrue, and the second is demonstrably unsound. Making these demonstrations is one way of showing that studying animal structure is not a way of solving questions of animal power. Simply that breeders use selection and improved trotters have appeared in the hands of breeders is not evidence that the selection used had anything to do with the improvement obtained. If we could make improvement dependent upon selection by such an argument as that, we could say that because men drink whiskey and men make scientific improvements, therefore the advance in science is due to whiskey drinking.

To determine the facts in the matter we may trace the lines of descent in which the improvement occurred and then compare the relationship between those lines and the selection used. When

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*The facts referred to in this article have been condensed and analyzed in *Dynamic Evolution* published by G. P. Putnam & Sons. The facts in detail may be found in the eighty-odd contributions listed on page 205 of that book.

we do this we find that the improvement occurred at one place and the selection at a different place, and that the only relationship between them involves the absent treatment method of accomplishing results. We may see this by considering what is necessary to have selection. For selection to be possible there must be a plurality of animals from which to make selections, and to have any considerable amount of selection large numbers of animals must be bred. In normal horsebreeding operations there are ten generations to the century, but in selective breeding there are from fifteen to twenty generations in that time. In the lines of descent, however, in which the actual improvement occurred there are only seven generations to the century, and many of the animals in these lines had no brothers or sisters other than a very small number of half brothers and half sisters by the same sire. Selection propagated improvements after they were made, but it had absolutely nothing to do with bringing about the improvement itself. The conditions necessary to bring about improvement are those which necessarily eliminate selection during the time the improvement is being made.

We may now consider the general eugenic problem of selecting young men and women of superior qualities and marrying them early for the purpose of improving the race. The idea that race improvement may be brought about by this method rests upon the theory that Darwinian selection is as applicable to mental and moral qualities as it is to those characteristics by which naturalists distinguish one species from another. It involves the fundamental error that power, mental in this case, is a function of structure. That error pervades all of the eugenic teaching of the present day. The propositions to sterilize or segregate large parts of the present population rest upon the selection dogma as their sole basis.

There are several ways of attacking this problem, one of which is to investigate the process by which the superior men and women of history have been produced. Another is to investigate marriage customs of the past for the purpose of seeing what relationship they had to the advancement or degeneracy of the races adopting them. A third is to investigate the actual results to human beings obtained by following the advice of the eugenists. If there is any advantage in having superior young men and women marry at an early age it must be because the children of their youth will be superior. When we look over those intellectually superior men who have done so much for the world's advancement we find them to have been predominantly the sons of elderly parents, and only rarely the sons of men less than twenty-five years of age. When we push the matter a little further we find that under no circumstances is a superior person produced by comparatively young parents when those parents were themselves the children of young parents. This is not because superior men do not marry and become parents in early life. Cromwell, Peter the Great, Louis XIV of France, Coleridge, Franklin, and many others of the same character, became fathers at an early age, but the resultant sons were much inferior. It is because it is physically impossible to get intellectually superior men and women when generations follow each other rapidly.

Marriage customs have been and still are very various. In early times men got their mates the same way that other animals got theirs, simply by association. That practice still exists in some of the lowest tribes. Whenever a tribe of people took up the custom of capturing or purchasing wives, young men did not get married so soon, and consequently did not begin producing children at such early ages. Prohibition against the marriage of near relatives, the introduction of elaborate marriage ceremonies, and the military demands of the state are other conditions which acted on the general community to delay the time of marriage and consequently the time at which reproduction commenced. When a tribe adopted a custom which had this effect upon the beginning of reproduction, that tribe immediately advanced from a lower to a higher stage in civilization. The interference which caused the advance was one which decreased the proportion of children born to young parents and increased that born to older parents.

The eugenists believe in the selection of superior young men and women and their marriage at an early age. They say that that process, and that process alone, will improve the human race. The exact thing which the eugenists propose has been in practical operation on a large scale for about seven hundred years, and has proved to be a flat failure. About seven hundred years ago England adopted the practice of selecting from her population men of exceptional mental ability and raising them to the peerage, and she has kept up that practice to the present day. At first men were raised to the peerage because of some special services, principally military, which they rendered to the state. Later she applied the system as a recognition of merit in men who had achieved great things in literature, art, science, invention, law, or anything else which involved real mental superiority. The sons of these carefully selected men married the daughters of other men selected with the same care, and the title was handed down to the eldest son of the eldest son in continuous succession. Many eminent men have come out of the British peerage, but in seven hundred years none has been produced when "the eldest son of the eldest son" meant reproduction at a rate averaging faster than thirty years from father to son. It is a plain fact beyond all dispute that increasing length of time between generations is a factor in improving the mental and physical powers of man and other animals. But time is not a factor in measuring structure or any of the things by which biologists distinguish one species of animal from another. The fact that time between generations is a factor in animal power but not a factor in animal structure should make it evident that investigating animal structure is not investigating animal power. And the fact that biologists, in all of their literature, have never taken this factor into consideration shows that they have no scientific information on the subject. What they say on the question of improving human beings is empty assertion.

There is another angle to this matter, and that may be expressed by the term "educating the grandfather." The biologists enter into learned discussions in which they tell us that there is no advantage in a hereditary sense in having an educated grandfather, but it never occurred to them to examine descent from grandfathers educated to different extents. They are like the medieval theologians who discussed the question as to now many teeth a horse had without thinking of the expedient of looking into the horse's mouth. Education develops the mental powers exactly as taking physical training develops physical powers. Getting an education also requires time, and this time is the time between generations which is necessary to bring about hereditary improvement in mental powers. This may be seen by looking at what the grandfathers did as well as looking at the amount of time employed. When we do this, and the reader can easily verify the matter for himself, we find that educating the grandfather is the real method of improving the race. By "grandfather" is meant the aggregate of ancestors in several generations, and includes parents, grandparents, great grandparents, and even earlier generations.

What is true of mental education is also true of physical education, which is most easily seen in the trotting horse. With the horse, the average time from sire to offspring is ten years, but to get the improvement which occurred during the nineteenth century this time was lengthened out to fourteen years. The horses which "bred on" to success were the old sires, not the young ones. But the old sires which were successful were the ones which earned the bulk of their oats on the road or the racetrack, not the ones which stood idly in the stud. The particular horse which was the greatest grandsire of fast trotters was the horse George Wilkes, which was trained and raced for more years than any other stallion known to horse history. All of his valuable progeny were got after his long racing career. Those got earlier amounted to practically nothing.

The above represents a few items out of a great mass of concrete facts which have been presented to biologists. The biologists, however, have chosen to ignore those facts and even to state that they do not exist. The fact is that they are committed to certain preconceived theories and do not like to have these facts mentioned in public. Fortunately, however, there is no difficulty other than labor involved in verifying the facts. The facts are parts of the public records of breeding associations and are not data concocted in a private laboratory by some one endeavoring to verify some preconceived theory. On this matter no one need be dependent upon others for the facts unless he chooses to be so dependent.

525 Monadnock Block.

Scarlet Fever.—F. Bindi (*Gazzetta degli ospedali e delle cliniche,* July 5, 1917) reports a case of scarlatina complicated by a cellulitis of the left forearm and hand, from the pus of which streptococci were isolated in pure culture. In spite of the fact that many different organisms have been claimed to be the causative factor in scarlet fever, Bindi states that the isolation of streptococci in pure culture is a strong proof that the disease is in reality a streptococcus septicemia.

VENTILATION AND CUBIC SPACE FOR INFANTS IN INSTITUTIONS.

A Report.

By the Public Health Committee of the New York Academy of Medicine.*

The attention of the Public Health Committee of the New York Academy of Medicine has been called to the dangerous overcrowding existing in institutions for infants. It has been pointed out to the committee that the law regulating air space for each inmate in institutions is based on an arbitrary standard and its enforcement is lax. The committee felt that in view of the recent researches in ventilation a revision of existing laws might be indicated, and accordingly requested the Pediatric Section of the Academy to make a study of the matter and to inform the committee as to what constitutes the proper basis for a law to prevent overcrowding in institutions, a condition recognized as prejudicial to the health of children. A joint committee representing the Pediatric Section and the Public Health Committee was appointed to investigate the matter and the following report is the result of its investigation. The report after a careful scrutiny has been endorsed by the Public Health Committee.

The New York State Law.—The section of the New York State Laws, Chapter XLV of Consolidated Laws, Paragraph 315, referring to the subject of ventilation in "institutions in this State, incorporated for the express purpose of receiving or caring for orphan, vagrant or destitute children, or juvenile delinquents, except hospitals," provides that:

> The beds in every dormitory in such institutions shall be separated by a passageway of not less than two feet in width, and so arranged that under each the air shall freely circulate, and there shall be adequate ventilation of each bed, and each dormitory shall be furnished with such means of ventilation as the local board of health shall prescribe. In every dormitory 600 cubic feet of air space shall be provided and allowed for each bed or occupant, and no more beds or occupants shall be permitted than are thus provided for, unless free and adequate means of ventilation exists approved by the local board of health, and a special permit in writing therefor be granted by such board specifying the number of beds per cubic space which shall under special circumstances be allowed, which permits shall be kept conspicuously posted in such dormitory. The physician of the institution shall immediately notify in writing the local board of health and the board of managers or directors of the institution of any violation of any provision of the section.

An examination of this law seems to show that it was designed to apply to the dormitories or sleeping quarters of older children, and that there is no evidence that the framers of the law had in mind its application to infants. Nutrition and the susceptibility of infants to disease call for the best possible care and hygienic surroundings, differing in no essential respect from those obtaining in hospital wards. That hospitals are specifically exempted by the law strongly supports this view. It has, however, for many years been applied to such infant wards in institutions. While specifying 600 cubic feet as a minimum, the law gives the local board of health the power to reduce this allowance for each occupant of the ward to any degree which they approve. Under this clause the space required for each inmate has been reduced in many institutions caring for infants to about 500 cubic feet, and printed and written permits are issued therefor which are displayed in the wards.

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*The report was prepared by Thomas S. Southworth, M. D., William L. Stowell, M. D., and Philip Van Ingen, M. D., as a joint subcommittee of the Public Health Committee and the Pediatric Section of the New York Academy of Medicine.

In the *Monthly Bulletin* of the New York Board of Health, August, 1916, we find that "it is considered that anything below 500 cubic feet per person is insufficient for an office worker who is obliged to remain indoors practically throughout the year." Adult workers have opportunities for securing much more fresh air during their nonworking hours. Institution infants throughout a considerable part of the year remain usually in the same crib and ward practically during the entire twenty-four hours, and their attendants, who are not considered nor included in the permit, help to vitiate the air of the ward.

Space requirements for infants.—Three main factors enter into the question of cubic space for an infant in a ward: 1, space to afford reasonably pure air for respiration; 2, space to allow sufficient separation of the cribs in order to minimize air borne infections; 3, space to avoid overcrowding which operates to reduce the individual care which can be given to each infant by a limited number of nurses and attendants.

The atmosphere consists of seventy-nine parts of nitrogen, twenty parts of oxygen, and varying amounts of carbon dioxide, watery vapor, ammonia, ozone, etc. Its purity is impaired by dust, disease germs, gases, odors, and by an excess of carbon dioxide or of moisture. The experiments of Vierordt and others make it clear that the respiratory need is but one factor in metabolism; equally important elements are the temperature of the air, its humidity, the barometric pressure, and the rapidity of its motion. All of these are determining factors in the heat expenditure of the body. According to Lusk the heat production of a newborn infant is 2.6 times that of its mother, based upon calories produced per kilogram of body weight. The surface area per kilogram of a small body is two to three times greater than that of a large body. The smaller the animal or child, the greater the relative surface exposed for evaporation and for giving off or receiving heat. The infant and the adult have relatively different needs because of the disproportion between weight and surface area. The heat expenditure of a six months old infant is 130 calories a kilogram of body weight, while that of a child eighteen months old is only ninety-one calories a kilogram.

The chief organ concerned in metabolism is the liver; its weight in the infant is to the body weight as one to twenty, while in adults the ratio is only one to forty. The infant requires daily 105 to 110 calories of food per kilogram of body weight, and the adult requires only thirty-five calories per kilogram. An infant of ten weeks eliminates 1.6 grams of perspiration per kilogram of weight, while an adult eliminates one half of the amount, 0.8 grams. A fifteen pound child develops ninety B. T. U. per hour, while a 150 pound man at light exercise develops about 400 B. T. U. per hour. The man is ten times heavier than the child but produces only four and a half times as much heat. The infant breathes one and a half to two times as fast as the adult. These deductions from careful experiments demonstrate that the metabolic requirements of the infant are relatively much greater than those of the adult. The important part played by oxygen in metabolism consequently makes the need of fresh air imperative for the infant. Country air contains two or three parts of CO_2 per 10,000. An adult, if allowed 6,000 cubic feet of air an hour, will raise the carbon dioxide one part per 10,000. Air to be considered pure should not contain more than six parts of CO_2 in 10,000. Such an amount of carbon dioxide will precipitate or cloud half an ounce of lime water if shaken in a ten and a half ounce bottle. When such conditions prevail with reference to CO_2, the presumption is that the more important elements of air vitiation, such as excess of heat, moisture, and body exhalations, are also present.

Artificially fed babies are theoretically the same as breast fed babies. However, the testimony of pediatrists is that seventy-five to ninety-five per cent. of bottle fed babies consume more food and void more urine and feces than breast fed babies, indicating that there is imperfect metabolism. They are often restless and fretful, using an undue amount of energy, even when their assimilation is already below the point of normal needs, without allowance for growth. While experience has shown that breast fed babies may do fairly well under conditions of overcrowding which are fatal to bottle fed babies, the artificially fed infant requires a maximum of space in order to thrive.

For respiratory purposes an adult needs thirty cubic feet of fresh air a minute. By old standards it was thought that 600 to 1,000 cubic feet of air space would suffice if the air was changed three times an hour, but modern hospitals for adults require 1,800 to 2,000 cubic feet, with more for infectious cases. Inquiry shows that in the judgment of modern pediatrists, children should have 1,000 to 1,500 cubic feet available, and these amounts at least are provided in most modern hospitals for infants.

Methods of ventilation.—The present law refers to ventilation, free and adequate, as if it were the simplest matter in the world. It may be in the dormitories for older children, where the windows may be left open, but in the wards for young infants it is a vexing and highly confusing problem. Pure air may be obtained by forced fan pressure or by properly managed windows. Each method, however, demands a sensible mind behind it at all times. Mechanical methods of forced ventilation are admittedly unreliable, although nobody would dispute that in many places it is necessary to instal gravity exhaust ducts for carrying off impure air, especially in inclement weather. Mechanical devices, moreover, do not exist in the older types of institutions, and could not be readily or economically introduced. The requirements in certain laws that so many cubic feet of air shall be furnished to each patient in an hour, or that the air shall be changed so many times an hour, may satisfy the maker of the law, but become a dead letter from failure in execution. The mere presence of windows as noted at an annual official inspection does not guarantee their use nor their effectiveness in ventilation. In common practice, window ventilation is used chiefly to cool overheated wards or to remove or mitigate odors. There is no common utilizable standard or indicator of the freshness of air in a ward except that of the senses in relation to temperature and smell. The difference between theory and practice is nowhere more manifest than in the matter of ventilation. Attendants, unless under constant and interested supervision, are prone to open the windows when it is more comfortable for them to have them open. They shut them and keep them shut when their comfort calls for this. The use of window deflectors with radiators under them to warm the cold air as it passes should be emphasized as a desirable adjunct of window ventilation.

When windows of a ward are open, the degree to which they actually change the air of the ward depends upon the position of the building, the number of outside walls, the location of the windows, and the presence and direction of wind or breeze. When the weather conditions permit the opening of certain windows, the change of air which is actually effected depends largely upon the construction of the windows themselves, whether ordinary windows or French windows opening like a door or windows having a tilt like a transom, and what is more important, on the presence and absence of fixtures, as deflecting screens of glass, wood or fabric, to prevent direct drafts upon the infants.

When the windows are all closed, as obtains during the severe months of our winters, the whole provision for ventilation may be nullified for days or weeks at a time. Nevertheless, the number of patients permitted, based upon the existence of free and adequate ventilation, remains the same. It is absurd to base the law of cubic space for infants upon standards so low. In order to prevent injury or fatalities to the infants, the present law must be amended in conformity with scientific standards. These standards of ventilation should be fixed and enforced by the State Board of Health.

Prevention of cross infections.—When one considers the part played by ward infections in the morbidity and mortality of infants, the present proximity of cribs permitted by the law is to be condemned. It is agreed by pediatrists that not only is the spread of the common eruptive diseases favored by overcrowding, but, more important in infancy, the dangers from infections of the respiratory tract spread by coughing and sneezing—infectious colds, influenza, pneumonia, diphtheria, etc.—are greatly enhanced by proximity. The minimum distance permitted by the present law is but two feet, and no greater separation is usually possible when the allowance of cubic feet is but 500 cubic feet. The pediatrists of the infants' wards in the hospitals of the University of Minnesota, after careful study concerning the prevention of cross infection, have specified six feet as the desirable minimum for the separation of cribs. If every infant were allowed a minimum of 100 square feet of floor space there would be more than six feet of space between beds.

Overcrowding and infant mortality.—The greater the number of infants in a ward the less, as a rule, the attention which can be given to each individual. In many wards there are so many babies that the nurses cannot give proper attention to their bodily needs, their feeding, or their medical treatment. Overcrowding invariably results in undercare and pediatrists are unanimous in asserting that care is imperative if artificially fed babies are to thrive. Mortality rises steadily in proportion as the number of cases in the ward is increased. Space, therefore, has more than one bearing upon infant mortality. It is a basic factor which underlies many other essentials for survival of the infant.

Elements entering into the problem of ventilation.—It is important to lay particular emphasis upon the fact that cubic space is not a perfect standard for respiratory needs. Ventilation is important and complementary. In a well kept, efficiently managed, and properly ventilated modern institution, less than 1,000 to 1,500 cubic feet for an infant might perhaps be allowed with safety. The elements that must be considered when scientific standards for ventilation are formulated are as follows: floor space allowed for each bed; height of rooms; window space; sunlight exposure; facilities for ventilation, as number and position of windows, doors, transoms, and position of beds; method employed to secure ventilation, if artificial; character of the babies cared for, including age, condition of health, whether breast or bottle fed; number of babies in a given ward, length of time spent in the ward, and proportion of nurses or adults in the ward to the number of babies cared for; the infant mortality at the institution in question; and, last, the purity of the air.

Standards of air purity.—The following are considered adequate standards for purity of the air: Temperature, 62 to 68° F.; humidity, 40 to 50 per cent.; wet bulb, thermometer should register below 70° F.; movements, gentle currents, three feet a second or two miles an hour—air moving more rapidly than three feet a second is felt as a draft; carbon dioxide content should not exceed six parts in 10,000 by the lime water test; freedom from dust, microorganisms, gases, and odors—air should not contain above fifty microorganisms a cubic foot (expose nutrient medium in Petri dishes and count colonies of growth); normal clinical effects on mucous membranes and upon blood pressure; quantity, not less than thirty cubic feet a minute for a child.

RECOMMENDATIONS.

The committee recommends that:

1. The present law relating to ventilation in institutions for children, which is utterly inadequate, should be abrogated and superseded by legislation which would be based on definite and scientifically grounded standards.

2. The air space allowed should be from 1,000 to 1,500 cubic feet for a child, especially for sick babies. Artificially fed babies, owing to the frequency of digestive disturbances, their susceptibility to illness, and their high mortality, should be rated as sick babies. There is no essential difference between institution wards and hospital wards when the infants are artificially fed. The longer stay in the institu-

tion than in the hospital increases the susceptibility to illness and malnutrition, and at least equalizes the requirements for space. Newborn infants might be allowed less space for the first two weeks of life, if nursed at the breast.

3. When the rooms are very high the cubic space for a child should be made liberal to prevent proximity of beds. Each bed should have 100 square feet of floor space.

4. In order to minimize the danger from cross infection, beds and cribs should be separated from each other by a distance considerably greater than the two feet required by the present law. Six feet would make a desirable distance between beds.

5. All rooms, and particularly those in which artificially fed infants are kept, should be provided with devices for proper window ventilation at all seasons.

6. The State Department of Health should possess the exclusive power of control and regulation, and no local board or department of health should have the power to alter the standards specified in the law. Exceptional permits to deviate from the normal standards may only be granted by the State commissioner of health upon the recommendation of an accredited inspector, accompanied by a written report showing adequate grounds for such recommendation.

7. Frequent inspection should be required, at irregular intervals.

AMAUROTIC FAMILY IDIOCY.

By J. Epstein, M. D.,
New York.

Amaurotic family idiocy is a disease of early childhood. It is characterized by a gradual physical and mental decay, blindness, and death. The etiology of this destructive disease is unknown. It usually affects healthy children during the second half of the first year, and for some obscure reason the disease attacks almost exclusively Jewish children of Russian or Polish parentage. In the majority of cases the disease is familial, affecting two or more children in the same family. In some families only one child may have the disease, the others being perperfectly normal. The pathology of amaurotic family idiocy, or Tay Sach's disease, is fairly clear and definite. It is a disease of the central nervous system consisting of a general degeneration and disintegration of the nerve cells of the brain and spinal cord, leading to a neuromuscular weakness, mental deterioration, blindness, and death. The symptomatology is that of physical and mental retrogression. An infant, healthy at birth and of apparently normal development in body and mind, without any known reason, begins at about the age of six months to go backward in its developmental progress. It gradually loses the power to hold up the head, sit up, or carry out properly any other motor function. The child becomes oblivious to its surroundings and the face assumes a dull, vacant, idiotic expression, as is shown in Fig. 1. As a result of optic atrophy and degeneration of the retinal ganglia, the power of vision is gradually lost, till there is total blindness. Hearing, as a rule, becomes hypersensitive, the child showing great hyperacusis, due probably to auditory nerve changes.

When the child comes under observation in the beginning of the illness, one should notice the peculiar facial expression of apathy, the impairment of vision, the hyperacusis, and the general muscular weakness. There may be, at this time, slight flaccidity or spasticity of the extremities with a diminution or increase in the reflexes, or there may be no appreciable change in the functions of the neuromuscular apparatus. Nutrition may be perfect. Later in the course of the disease the child loses entirely the power of vision. There is usually spasticity with increase in the reflexes, and general or local spasms. The mouth becomes almost locked and the child is unable to take food. He wastes to a skeleton and lies in a helpless condition till some intercurrent disease or exhaustion closes the painful scene.

The diagnosis is comparatively easy. The history as obtained from the mother is always suggestive. A healthy, usually breast fed infant, thriving both physically and mentally, begins at the age of about six months to fail in body and mind without any definite cause. The face has a certain characteristic expression of this disease that, when once seen, always lingers in the mind. The child may be well nourished, as is shown in Fig. 1, or emaciated, as is shown in Fig. 2, depending on the duration of the disease. The general physical examination may be negative or there may be changes in the neuromuscular system. Nystagmus and strabismus are not infrequent, and hyperacusis is almost constant. An ophthalmoscopic examination of the eyes is essential to a proper diagnosis. In every case of amaurotic family idiocy there is seen a cherry red spot surrounded by a grayish white halo in the region of the fovea centralis and macula lutea. It is probably formed as a result of a greater transparency of the choroidal bloodvessels at the point of the fovea centralis, which is normally the thinnest part of the retina. The thick macula lutea and the thin fovea centralis which is imbedded in it undergo ganglionic degeneration in this disease with the result that the macula lutea assumes a whitish tinge, while the fovea centralis becomes cherry red. This retinal red spot on a whitish background is so pathognomonic of this disease that its presence makes the diagnosis positive, while its absence is strong evidence against such a diagnosis. Failure of vision leading to total blindness is a constant symptom.

The following two cases of amaurotic family idiocy show some interesting points in the diagnosis and course of the disease:

Case I.—A female infant, the sixth child of healthy parents, Russian Hebrews, first cousins. There was no history of syphilis, tuberculosis, alcoholism, or any other chronic disease, and no history of miscarriages or taint of psychoses in either family. The child was born at full term and the labor was normal. She was breast fed and well in every way till eight months of age, when she had some gastrointestinal disturbance lasting about two weeks. At nine months of age, the mother noticed that the child was gradually losing in strength, could not hold up the head or sit up as well as before. She became indifferent to her surroundings and there was a gradual impairment of vision. The child steadily lost in weight and strength and lay in a helpless condition. She could not sleep unless the body was so bent forward that the head lay between the knees. Later the child became totally blind and had many attacks of convulsions, dying at the age of twenty-one months. Two months before this child died the mother gave birth to the seventh child, whose fate is described in the second case.

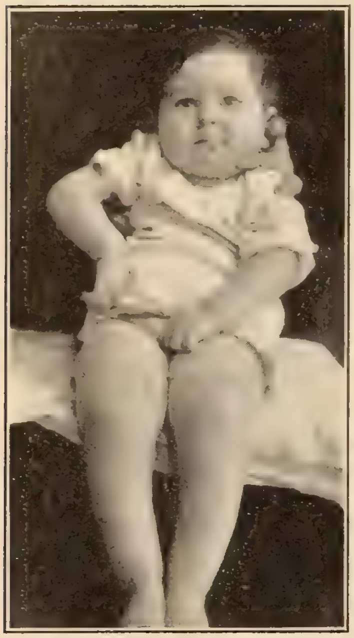

Fig. 1.—Case II. Amaurotic family idiot at eighteen months of age.

Case II.—A female infant, born at full term, normal labor and breast fed. When the baby was only a week old the mother noticed that she was sensitive to sounds; the slightest noise caused her to start as in fright. Between the fourth and the seventh month of age, the baby had frequent twitching of the upper eyelids; otherwise she was normal in every way. At the age of eight months the mother noticed that the child was unable to raise the head and did not make any effort to sit up. There was an entire change in the disposition of the child; she was dull and listless, and paid little or no attention to familiar people and objects. At the age of ten months the child came under my observation. The history of perfect physical and mental development up to eight months of age followed by a gradual weakness of body and mind at once suggested the diagnosis of amaurotic family idiocy. General physical examination was at that time negative. The anterior fontanelle was open, posterior closed, and cranial sutures closed. There was no nystagmus or strabismus and the child could see fairly well. The facial expression was stupid and indifferent. There was neither flaccidity nor spasticity and the reflexes were normal. Heart, lungs, and abdomen were negative. An ophthalmoscopic examination revealed the typical cherry red spot surrounded by a whitish zone on each retina in the area of the fovea centralis and macula lutea. Hyperacusis was marked. The weight was eighteen pounds; height, twenty-seven inches; head, seventeen and one half inches; chest, eighteen inches; abdomen, eighteen and one half inches. The von Pirquet test and the blood Wassermann test were negative; uranalysis was negative. There was no doubt of the diagnosis of amaurotic family idiocy.

I next saw the child at eighteen months of age. The period between the tenth and eighteenth month of age was marked by a gradual decline in motor function. The infant was unable to hold up the head or sit up unsupported. The face was idiotic. Vision was almost gone and the hyperacusis increased. There was a slight general spasticity and an increase in the reflexes. The child, however, gained in weight and was very well nourished, as is shown in Fig. 1. The third time I saw the little patient was at twenty-three months of age. During the period between the eighteenth and the twenty-third month the child grew rapidly worse. The mouth became almost locked, so that it was with great difficulty that a little water or milk could be given. She lost a great deal in weight and wasted to a mere skeleton. For weeks she kept the right eye tightly closed and had frequent attacks of convulsions. On examination at this time, the anterior fontanelle was larger than at ten months of age, the posterior fontanelle opened and the cranial sutures separated; evidently there was an accumulation of fluid in the cranial cavity. There was total blindness, the facial expression was idiotic, and the jaws were kept almost locked. General spasticity and opisthotonos were marked and the reflexes were exaggerated. No Kernig or Babinski sign, no ankle clonus, but a marked Chvostek sign was present. The child lay in a helpless condition with the arms and legs extended, the hands flexed and contracted, the feet markedly extended, as is shown in Fig. 2. There were frequent attacks of tonic and clonic convulsions and occasional facial spasms. A sudden sound or touching the child would set up a general convulsion. The weight at this time was thirteen and one quarter pounds; height, thirty inches; head, nineteen and one half inches; chest, fifteen and one half inches; abdomen, thirteen and one half inches. The ravages of this disease have thus changed a bright, happy, well nourished infant of eight months to a helpless, wasted, blind idiot at twenty-three months of age. The child succumbed at twenty-five months of age.

There is no known treatment of any value in this obscure and fatal disease. I have tried sodium bromide and calcium glycerophosphate with no benefit.

Amaurotic family idiocy is a disease which is mysterious in its etiology and in its choice of Jewish children exclusively. The parents of the infants of Cases I and II are first cousins, and the consanguinity probably has some etiological influence, but it is difficult to understand why the sixth and seventh child only in this family suffered. The disease is either congenital or acquired, or perhaps there may be a congenital predisposition to an early nervous disintegration and an acquired exciting factor which turns a dormant pathological state into an active process. In favor of its being a congenital nervous disease is the fact that it manifests itself very early in life. It is doubtful, as it is commonly supposed, that in amaurotic family idiocy the infant is of normal physical and mental development up to a certain age. If every child that later acquires this disease could be carefully observed from birth to the time when the symptoms and signs are well marked, one would probably notice that the child was at no time perfect in its physical and mental development. The mother of these two infants, having had the painful experience with patient number one, carefully watched the progress of the second sick child and noticed that when the child was only a week or two old it could not tolerate the slightest noise, and that very early in life and lasting for some months the baby had frequent attacks of twitching of the upper eyelids, showing some abnormality of the nervous system. Still there is no conclusive evidence of its congenital origin. To assume that it is an acquired disease would be necessary to assume the existence in the child of some toxemia which causes ganglionic degeneration, but this hypothetical ganglionic poison is still unknown. It is probable that the child is born with a nervous system which is predisposed to degeneration and disintegration under the stress of the wear and tear of life. All that is at present known of amaurotic family idiocy is that there is some defect in the makeup of the nervous system in

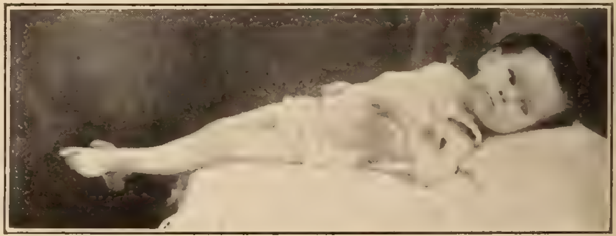

Fig. 2.—Case II. Same child as in Fig. 1 at twenty-three months of age.

which the span of life allotted to the nerve cells is very limited.

This infantile type of amaurotic family idiocy should be distinguished from the juvenile type, which it closely resembles. The juvenile form of amaurotic family idiocy affects older children, usually at the age of ten or twelve years, and attacks also other than Hebrew children. The characteristic changes in the macula lutea are not present in the juvenile type of this disease. The entire course is less severe and more chronic, leading to a prolonged physical and mental decay. Death finally ends the helpless wasted existence.

222 East Broadway.

A STUDY OF SOME FUNCTIONAL INEFFICIENCIES OF THE TEETH ASSOCIATED WITH OCCLUSAL ANOMALIES.*

By Milo Hellman, D. D. S.,
New York.

The relationship between the teeth and the living organism is so intimate that not only the odontologist but also the students of less closely allied sciences are beginning to emphasize its significance. When it is considered that the three most reliable sources of scientific evidence, paleontology, comparative anatomy, and embryology, are replete with records bearing upon the paramount importance of this relationship, it may be realized what extensive proportions the knowledge of the teeth is assuming. In the discoveries of fossils ample evidence is obtained in the dental organs that points the way to a better understanding of the nature of those extinct animals whose remains are found in the more remote earth crusts, and gives valuable information regarding evolutional incidents. Comparative anatomy discloses the progress made in the course of evolution in the manifestation of the advantages gained by the animals exhibiting variously specialized dental organs, adapting them to the exigencies of the different kinds and character of existing foods and equipping them with weapons for combat. Embryology, by its epitomized history of the development of a race, bears unmistakable evidence of the effects of hereditary, physiological, and pathological influences as reflected upon the teeth during the development of the individual.

The normal human masticatory apparatus has been thoroughly studied and aptly described by such authorities as Mühlreiter (1), Black (2), Angle (3), and others. The advantages gained by and benefits derived from sound teeth in normal occlusion cannot be exaggerated. Although a vast amount of literature is devoted in the commendation of the normal dental apparatus, the profession in general either fails to grasp the importance of the arguments adduced or misunderstands or misinterprets the principles involved when their application is necessitated in conditions arising in digressions from the normal. It is, therefore, intended in this paper to touch upon certain functional inefficiencies associated with the dental organs, emphasize their significance, and point out their probable immediate origin, and, in some instances, their possible prevention.

THE FUNCTION OF MASTICATION.

The primary function of teeth is the mastication of food. Perfect function necessitates a thoroughly efficient organ to perform it. A normal adult denture, consisting of thirty-two teeth, must be so constituted that each tooth is able to do its share of work in accordance with the law of physiological division of labor in the proper performance of its function when chewing food. If a tooth fails to do its full share of work in the act of mastication either through absence or pathological inability, the functional value of that denture is decreased not only to the extent of one thirty-second part of the normal human adult denture as is quoted by various authors, but a great deal more. Each tooth has a unique function which differs from that of any other tooth in the mouth. This depends upon its normal form, normal size, and normal position. In proportion as it deviates from these three fundamental conditions, it will individually affect functional efficiency. Furthermore, as every tooth in each jaw is opposed by two approximating teeth in the other jaw, with the exception of the lower central incisor and upper third molar (see Fig. 1), if functionally disabled, will also similarly involve its antagonists. It is consequently clear that, although one tooth constitutes numerically a thirty-second part of the adult human denture, it respresents a far greater quantity in more functional value. As the absence of a tooth breaks up the continuity in the series of elevations and depressions in the grinding plane of the denture and destroys the mutual support derived by the proximating contact, it also tends to allow displacement or migration of the adjacent teeth, and thereby further decreases functional efficiency. A fair illustration of the functional disturbance of a denture that would undoubtedly have reached its normal development if nothing had interfered with the natural course of events is represented in Fig. 2. It may be seen that owing to the loss of the lower left first permanent molar, which was extracted at an early period in the development of the denture, the adjacent teeth approximate each other, almost entirely obliterating the space of the extracted organ. Thus a valuable developmental stimulus has been eliminated; the result, as may have been expected, can be seen by the

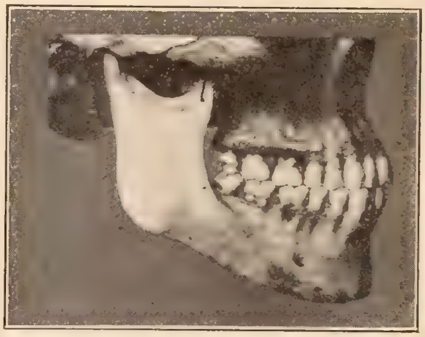

Fig. 1.—Normal occlusion, illustrating manner of interlocking of the teeth. (After Noyes.)

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*Read before the Harlem Dental Society, New York, October, 1916.

failure of forward growth of the alveolar process and teeth anterior to the extracted molar, they being in distal occlusion, and a forward and inward tilting of the teeth posterior to it. The vertical as well as the horizontal position of the teeth on that side is consequently abnormal. A better idea may be obtained by a comparison of the occlusion of this side with that of the undisturbed side, Fig. 2B. The protrusion of the upper teeth in the anterior part of the denture may also be observed. The extent to which the median line has been disturbed is seen by the vertical mark (Fig. 2C). So then, through the loss of one tooth in this instance, normal development has been interfered with and the efficiency of two thirds of the denture has been impaired. Beginning at the right canine region and proceeding toward the left and distally, all the teeth are in malocclusion. What is the moral of this case? Would it not strongly suggest that if the space left by the presumably inevitable extraction of the one tooth had been maintained by artificial means, this whole condition might have been prevented? It is undoubtedly much simpler, easier, and more economical—at least from the patient's viewpoint—to prevent the occurrence of such a disturbance than to create it and then necessitate the correction by orthodontic means.

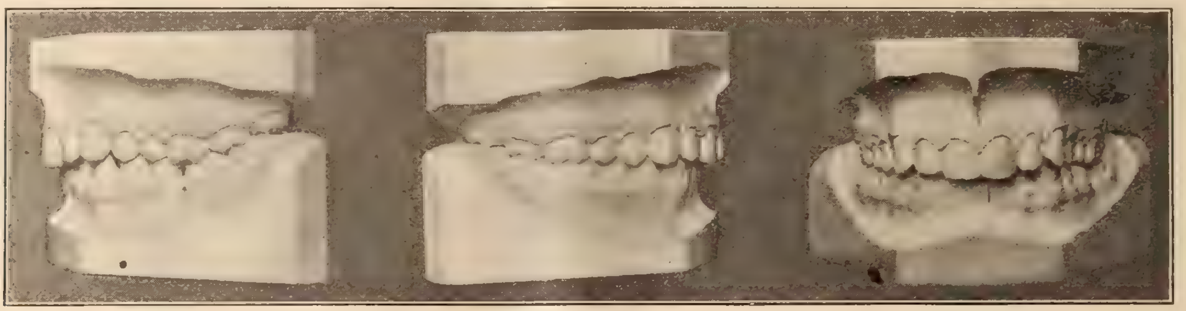
A. B. C.

Fig. 2.—A. Loss of lower first permanent molar caused lack of growth forward of alveolar process and teeth anterior and forward tilting of those posterior, obliterating space of missing tooth. B. Right side, showing normal occlusion on undisturbed side, but also protrusion of upper anterior teeth. C. Showing malrelation of median line in the anterior region of the denture.

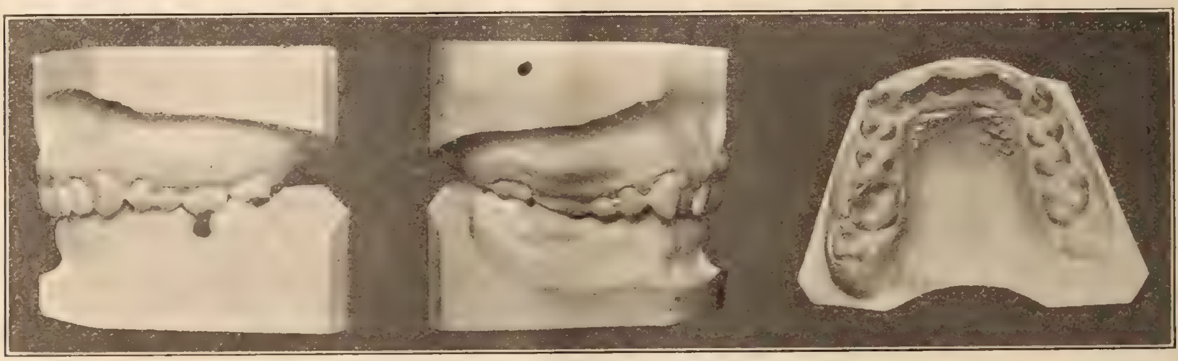
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Fig. 3.—A. Left side, showing diminution of space of extracted lower molar with lack of forward growth anteriorly and tilting of tooth posteriorly. B. Right side of case of Fig. A, showing condition and position of upper molars and hypertrophied gum tissue surrounding them. Collapse of the dental arch at the incisor region. C. Occlusal view of same case showing difference in condition of upper molar teeth on either side of the arch, and hypertrophied gum tissue surrounding diseased molar.

That similar causes bring about like effects will be evident in the consideration of another case. Besides the disturbance of the teeth in their occlusal relations, interfering with the masticatory function, there were in this case pathological complications of the soft tissues. In Fig. 3A it will be observed that the lower left first permanent molar is missing. The conditions created on this side of the mouth are similar to those in Fig. 2A. On the right side of this denture (Fig. 3B) it will be noticed that the upper first molar is broken down, and there are evidences of the dentist's interference. The result of this condition may be seen in the hypertrophied appearance of the gum tissue surrounding the first and second molars (Fig. 3C). Owing probably to the pathological condition of the upper first molar itself, the function of mastication seems to have been preferably performed on the left side of the mouth. Meanwhile, the lack of function, coupled with the carious condition of the molar and its infected pulp, produced the inflammation and hypertrophy of the soft tissues in that region to such an extent that the second upper molar is almost entirely covered by the gum. Another instructive lesson taught by the condition of the gum tissue when the two sides of the dental arch are compared is that the functional side presents a generally clean and hygienic appearance of both the teeth and gums, while the nonfunctional side is found covered with deposits of mucus and detritus of the foodstuffs which under normal conditions are removed by the massaging effect of the food gliding over these surfaces during mastication, as well as by the normal functional activity of the epithelial layer covering the oral cavity. In this, as in the previous case, a great advantage would have been gained if the space created by the extraction of the lower left first permanent molar had been mechanically maintained; and if the right upper first permanent molar had been properly treated, the malocclusal condition could have been, in a large measure at least, averted and the functional disturbance prevented.

It is obvious, then, that if the elimination of one tooth is liable to produce such marked occlusal disturbances, what may be the results of more extensive complications? In Fig. 4A and B is presented a denture the functional value of which is almost nil. If carefully examined it will be found that besides some developmental shortcomings, there are also certain peculiarities of growth, aggravated by inefficient dental operations. As it will be observed, this patient had the misfortune to be deprived by nature of two dental organs. The upper lateral incisors are missing and their germs seem never to have been developed. Fig. 4B shows that the lower left first molar was extracted when the patient was young, probably before the eruption of the second premolar, and the latter tooth has taken its position adjoining the second molar, leaving part of the space created by the loss of the first molar intervening between the two premolars. On the right side of the lower jaw (Fig. 4A) the first permanent molar seems also to have been defective; but owing to the corrective measures adopted by the dentist, the probable loss of that tooth was prevented. The manner in which this result was accomplished constitutes by no means a standard toward which the modern dentist would feel irresistibly attracted. Whatever the end in that case the dentist had in view, it is certainly not clearly demonstrated by the result. Esthetically, the gold crown upon the molar would hardly be considered a model of beauty; functionally, the tooth is not only worthless, but also harmful. As may be seen in Fig. 4A and C, the tooth is reduced in its anatomical dimensions, it has the form of anything but that of a lower molar, it serves as a splendid medium for the displacement of its upper antagonist, and it prevents the right lower second premolar from reaching its normal occlusal plane. As was said above, the primary function of a tooth is mastication, and in order to be able to perform this function it must be normal anatomically and it must occupy the position allotted to it by nature. If the efforts exerted in the saving of teeth falls short in either of these demands, they have been futile and the mission of the dentist has not been fulfilled.

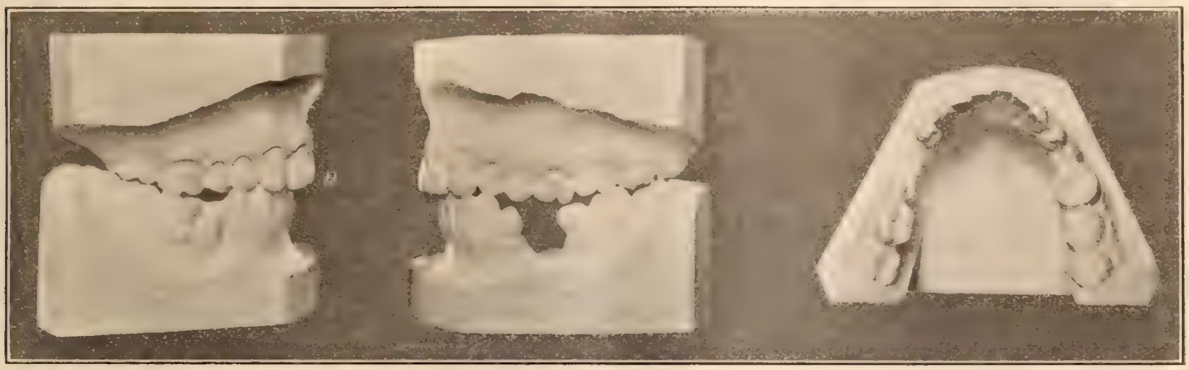
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FIG. 4.—A. Right side, showing lack of upper lateral incisors, malrelation of all teeth, gold crown on lower first molar which although diminished in size is interfering with eruption of lower second premolar. B. Left side, showing loss of first permanent molar and diminution of its space. Second lower premolar assuming its position adjoining second molar. All teeth in malrelation. C. Occlusal view; note right first molar, the form of the gold crown interfering with mastication and its size preventing eruption of the tooth anterior to it.

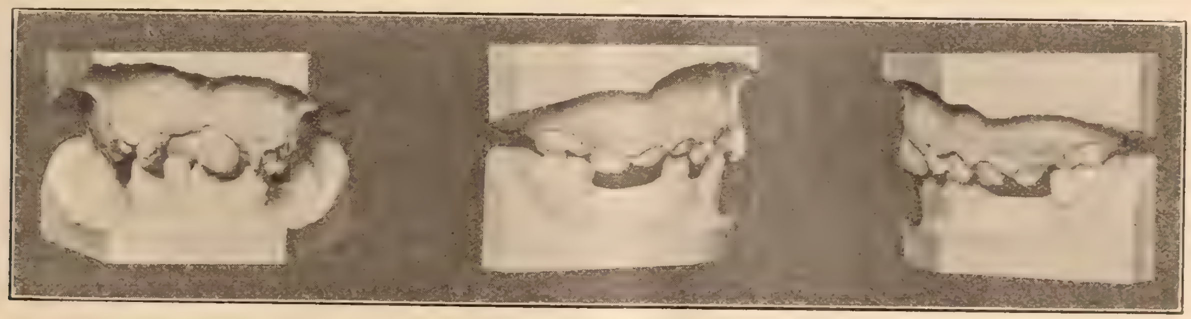
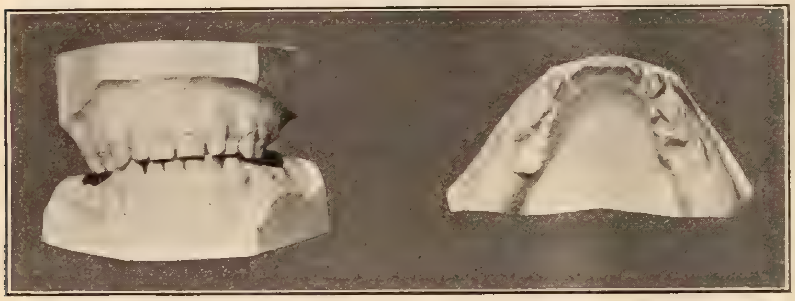

A. B. C.

FIG. 5.—A. Case of malocclusion caused mainly by extreme carious condition of deciduous teeth. B. Right side, showing the havoc on occlusion played by the decay and loss of teeth. C. Left side, showing similar conditions.

Another important consideration in this problem is the phenomenon of equilibrium between the activity of muscular force and the physical resistance of the teeth. In the normal masticatory apparatus the force exerted by the muscles of mastication must be counterbalanced by the resistance of the teeth, peridental membrane, and alveolar process during functional activity. If the muscular force remains normal and the denture, through mutilation or otherwise, is prevented from rendering the required resistance, the equilibrium is disturbed, and the overburdened teeth and their investing tissues greatly weakened. This may result in extensive wear of the tooth structure, if it is poorly calcified, or it may affect the peridental membrane and alveolar process if the tooth itself is sufficiently strong to withstand the force of the muscular pressure and the wear of the triturated substance. If, on the other hand, the muscles of mastication adapt themselves to the weakened condition of the dental organs they in turn will gradually lose their normal consistency and may eventually atrophy.

Normal development in general is dependent upon the correlated activity of many parts of the organism. If in any part stimuli and responses are lacking, the development of that part is arrested or inhibited. The stimuli may be physical, chemical, or nutritional. In the examples cited it is apparent how, by the elimination of one member of the dental series, the efficiency of the entire organ of mastication may be disturbed. The nature of the disturbance is in a large measure determined by the nature and state of the individual at the time it occurred and by the character of the disturbing factor. Similar causes may give rise to considerably more complicated conditions, while like results may be due to less significant causes if manifested at an earlier period of life. For instance, a carious cavity on the proximal side of a tooth, if it belongs to the deciduous series, may produce a decrease in the size of the entire dental arch as well as a change in its form.



A. B.

FIG. 6.—A. Decayed lower deciduous second molars and its consequence. Also left upper supernumerary deciduous lateral incisor. B. Occlusal view of lower jaw, showing condition of last molar teeth and gums surrounding them.

The proportion which disturbances of this character may assume as a result of decayed teeth will be evident from the models of a case, illustrated in Fig. 5A. The child was six years old when the impressions for these casts were taken. Notice the extent of the ravages of caries in that mouth and the effect this condition produced upon occlusion (Figs. 5B and C). Every deciduous tooth still present is irreparably disintegrated, while six of them had to be extracted. Consider, furthermore, the functional value of this masticatory apparatus. Is there any possibility of any solid food being masticated by such a denture? And were it possible, think of the number of bacteria lodged in those carious crevices that would be mingled with the food and carried into the alimentary canal. The carelessness of a physician who administered medicaments deleterious to tooth structure without the necessary precautionary measures and the neglect of the parents to apply to the dentist for the prompt and proper care of the teeth are entirely to blame for the dilapidated condition of this child's mouth.

Another case that may be of interest is portrayed by the models illustrated in Fig. 6. It represents the denture of a child five years old. The only decayed teeth noticeable are the lower second deciduous molars, which are almost entirely broken down (Fig. 6B). Owing to the extreme fear of this child for the dentist and probably lack of the proper psychical influence of the latter, the teeth were allowed to go by default. I am aware that it was impossible to control this child in the dental chair. It must, however, be stated that there was very little difficulty in the operation of obtaining impressions from which these models were made. That such a masticatory apparatus is entirely devoid of function will be readily admitted. The inevitable conclusion is that a thoroughly efficient masticatory apparatus demands not only the full complement of teeth in normal occlusion, but also morphological perfection, anatomical completeness, physiological potency of each tooth; or, as Angle states: "The shapes of the cusps, crowns, and roots, even the very structural material of the teeth and their attachments are all designed for the purpose of making occlusion the one grand object, in order that they may best serve the chief purpose for which they were intended, namely, the cutting and grinding of food." All human beings have the potentialities of an efficient masticatory apparatus with them, but, owing to numerous disturbances the individual is subject to, it devolves upon the knowledge of the parents, the advice of the physician, and the skill of the dentist to make them realities.

(To be concluded.)

Botulism.—Ernest C. Dickson (*Journal, A. M. A.*, September 22, 1917) says that there have been not less than twenty-two outbreaks in this country in the past twenty years, and probably many more have occurred. An important feature of eighteen of the outbreaks in which the source of poisoning could be determined is that eleven were due to vegetable foods, and of these all but one to home canned products. Six of the outbreaks were due to string beans. Experiments have shown that the botulinus toxin can be developed in a number of vegetables and fruits, such as beans, peas, corn, artichokes, asparagus, apricots, and peaches. Further experiments show that the cold pack method now advised, together with the single sterilization prescribed, is insufficient to destroy the spores of the Bacillus botulinus and if vegetables are contaminated with these spores there is considerable danger of the food being rendered dangerous by the development of the toxin. The sealed jar is also an ideal container for the development of the organism, which is an anaerobe. However, the botulinus toxin is readily destroyed by heat and all danger can be readily removed if canned vegetables and fruits are always boiled for a few minutes before being used. Such home canned vegetables should never be served as cold salads without previous boiling after removal from the container.

Medicine and Surgery in the Army and Navy

HYDROTHERAPEUTICS IN THE WAR.

By Guy Hinsdale, M. D.,
Hot Springs, Va.,
Secretary, American Climatological and Clinical Association; Fellow of the Royal Society of Medicine.

The British have recognized for some time that the physical treatment and training of disabled and discharged soldiers is a serious and urgent problem whose solution is most needed to prevent the formation of an army of cripples. They are now providing to a large extent with an adequate and well ordered system of hydrotherapy, electrotherapy, radiotherapy, mechanical treatment, and massage. A clinic for the physical treatment of disabled officers was opened a year ago in London and has provided treatment for the officers who are patients in the various hospitals of London. The equipment includes several new features such as the "whirlpool" and "sedative pool" baths. This clinic is financed by the British Red Cross Society and is known as the Red Cross Clinic for Physical Treatment of Disabled Officers, and is held at 126 Great Portland Street in the heart of London. It is under careful and constant medical supervision and is free to the officers of all the allied nations. Similar work is being done, we understand, at some of the command depots, convalescent camps, military hospitals, and Red Cross hospitals, especially the Military Orthopedic Hospital at Shepherd's Bush.

There is at present great need of competent medical men and attendants to carry out these forms of treatment in the British hospitals where suitable installations are being set up, but where a competent personnel is lacking owing to absence of so many medical men at the front. An appeal has lately been sent to the writer for several American physicians who are serious students of physical treatment and who would care to avail themselves of this opportunity to undertake physical treatment on a large scale. Special training and demonstrations in the methods now in use for disabled soldiers would be provided. Besides the need for qualified physicians there is also a great need for nonmedical unqualified attendants. This is an opening for bright men who have been accustomed to hydrotherapeutic treatment and who are able to keep records and measurements.

The problems which will confront the American surgeon will not differ greatly from those which have been met with by the British surgeons. It is a well recognized fact that in a great majority of cases physical treatment should be provided as an integral part of the reeducation of the wounded and that the degree of progress made ought to be checked up by accurate measurements and tests. There will, therefore, be a great need for the services of experts in physical treatment in all lines. One of the most important phases of physical treatment is hydrotherapy and I am convinced that every general military hospital should be provided with an adequate hydrotherapeutic equipment. As stated above, the English, the French, and the German general hospitals make free use of baths, douches, packs, and associated measures such as massage and general physical therapy.

I, therefore, propose the organization of a hydrotherapeutic unit to be attached to each general military hospital and, especially the reconstruction hospitals. In order to assure greater efficiency, it is desirable that this hydrotherapeutic unit should be standardized, both as to general plan and equipment. Such a unit with a complete equipment suitable for a five hundred bed hospital could be provided at a cost of approximately $10,000. This cost would include a suitable wooden building, conveniently arranged with rooms for the reception and treatment of the patients, with tubs providing ordinary baths and the so called continuous baths, the apparatus for baths *l'eau courant,* or whirling baths, most highly regarded by those who use them, and a simple form of apparatus for giving douches controlled as to time, temperature, and force of pressure. A plan for such a hospital with specifications for apparatus has been submitted to the surgeon general of the army.

Hydrotherapeutic apparatus has been going through an evolutionary progress during the last twenty years and it is well recognized that in America we have perfected bathing apparatus far beyond that in use in England and on the Continent, but while we have the best apparatus we have not always been so ready to use it as the French and Germans have been and we can learn some lessons from their practice in the present war.

In addition to the hydrotherapeutic measures which could be carried out in the units attached to the general hospitals, we should follow the example set by France, England, and Germany, in making use of the watering places which have facilities for the treatment of disease. Many cases of trench foot, rheumatism, arthritis, and joint affections resulting from wounds have been treated at the various bathing resorts in Europe. The United States Government owns one spa, the Hot Springs of Arkansas, and also owns rights in a considerable bathing establishment and hotel at Fort Monroe, Va. These could be made use of at once, and the private establishments could also be utilized should the number of patients make this necessary. The State of New York owns the Saratoga Springs, and would, no doubt, be glad to cooperate with the United States by placing the springs and equipment there under the control of the Government. Such private establishments as the Virginia Hot Springs, the Greenbrier White Sulphur Springs, the French Lick, the Glen Springs, Sharon and Richfield Springs of New York offer waters of high therapeutic value, trained attendants, physicians who have specialized in hydrotherapeutics and, in many cases, excellent equipment. All these could be made use of and no doubt will be made use of when occasion arises. The famous resorts of Buxton, Harrogate, and Bath in England, and Aix-les-Bains, and Vichy in France are full of soldiers who are taking a cure to fit them for renewed service at the front. Our own country is rich in mineral springs, and if a general plan of organization is adopted, all these may be brought into service as soon as the occasion arises. For the present, we must devote our attention to the perfection of a hydrotherapeutic unit, suitable for use in connection with the hospitals already established or to be established, and at the same time make careful and far seeing plans for the full utilization of all the hydrotherapeutic resources of the United States.

SHOCK.*

Observations at the Front.

By W. T. Porter, M. D.,
Cambridge, Mass.,
Professor of Comparative Physiology, Harvard University.

After a few humorous remarks on the mode of presenting scientific papers and the statement that his ideal would be so to boil them down as to leave nothing but the title, the lecturer proceeded to a discussion of certain of the hypotheses which had been brought forward to explain the mechanism and phenomena of shock. The most popular hypothesis was that of paralysis of the vasomotor centre. Surgeons believed that this was due to overstimulation of the centre, while medical men held that it might be due to the action of poisons such diphtheria toxin, the toxins of pneumonia, etc. It was remarkable how firmly this view had become rooted in the minds of clinical men for both suggestions had long ago been exploded by the author's own experiments. It had been shown that the stimulation of the depressor nerve in a normal, anesthetized animal caused an average fall of blood pressure of about forty-five per cent. and that after such an animal had lain for eight hours with its abdomen opened and the intestines painted with nitric acid subsequent stimulation of the depressor nerve still caused an equal fall in the blood pressure. Precisely similar results were obtained in an animal just dead from diphtheria toxin and in others moribund from pneumonia. Finally, prolonged, excessive stimulation of the sensory nerves failed to cause any consistent permanent lowering of the blood pressure in experimental animals. All of these experiments proved conclusively that the vasomotor centre was not paralyzed by such stimulations or by bacterial toxins.

It was true that in shock a marked fall in blood pressure was constantly observed but the focussing of attention of this feature alone had led to the failure to appreciate several factors which were sources of confusion in its interpretation. The first of these was the occurrence of a sensitization of the heart so that it responded by depression or temporary failure to stimuli which in normal animals had little or no effect upon it. Closely associated with this sensitization was a similar condition of bloodvessels which caused their failure to contract in response to stimuli or led to actual dilatation. The causes and mechanism of these sensitizations were merely speculative and could not be discussed. Then there was the influence of the simple hydrostatic lowering of the blood pressure through accumulation of the blood in the splanchnic vessels. Other factors of great importance included the influence of vibration traumatism on the integrity of the central nervous system. Thus sudden severe blows were capable of disorganizing the cellular unity of the nervous system, including the vasomotor centre, and producing a marked degree of loss of function. Direct injuries to the great splanchnic nerves and endings by abdominal contusions or wounds might lead to depression or paralysis of their function with marked local dilatation and fall of systemic blood pressure. Last, the question of hemorrhage had been ever a source of confusion in arriving at a clear conception of the mechanism of shock.

Before considering the relations of hemorrhage to shock the lecturer called attention to the fact that the reading of the diastolic blood pressure was much more important than the systolic and gave more accurate indications of the danger. The systolic pressure was known to fall more than the diastolic and the changes in the latter were least subject to erroneous interpretation. A matter which had been largely overlooked was the question of the significance of the actual level of the diastolic blood pressure. A diastolic blood pressure of 35 to 40 millimetres Hg was actually very near zero, for in animals from which the entire spinal cord had been removed—that is without the central vasomotor system—the diastolic pressure remained at about twenty-five to thirty millimetres Hg. Diastolic pressure of thirty-five to forty millimetres Hg were, therefore, at or below the critical point.

The question of the rôle of hemorrhage in the mechanism of shock had to be considered in the light of the level of the diastolic blood pressure. If the diastolic blood pressure was well above the critical level the loss of hundreds of mils of blood could be borne without danger of inducing shock. If, however, the diastolic pressure was already near the critical level the occurrence of further hemorrhage might well reduce it to a point below that level and be a matter of profound danger. Then the loss of blood from arterial hemorrhage depleted the arterial side of the circulatory system and exerted a profound effect upon the nutrition of the vital organs, which was not the case when the bleeding was mainly of venous origin. Finally, the loss of a large amount of blood might be a detrimental influence through the secondary impairment of the nutrition of the heart and the nervous centres.

The lecturer at this point gave a graphic description of the conditions under which the men were living at the front, both in periods of quiet and in those of activity. Although the conditions might well seem to be most trying and nerve racking when one tried to picture them, they were, in fact, quite the contrary and the men lived under them without a thought of the dangers and regarded even the worst conditions as all being part of the usual day's routine. A very large number of blood pressure readings were made by Professor Porter on the men in the front line trenches under all manner of conditions, including the heaviest of barrage firing and in every case the systolic and diastolic pressures were found to be quite normal. The life of the men, therefore, could be ruled out of consideration as a factor predisposing to the development of shock. These blood pressure readings were extended to include large numbers of severely wounded men in the hospitals and in the front line dugouts and dressing stations during bombardment and barrage fire. Again the pressures were always found to be normal.

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*Summary of a lecture delivered before the Harvey Society at the New York Academy of Medicine, New York, October 27, 1917.

Studies were then undertaken to determine the types of wounds in which shock was found, in the hope of getting a clue as to its causation. It was soon seen that the mere loss of blood was not an important factor *per se,* and very few cases of shock could justly be attributed to the occurrence of severe hemorrhage. There were just three classes of wounds in which shock occurred commonly, and it practically never occurred in any other types. These three were severe abdominal injuries, fractures of the femur, and multiple severe wounds of the subcutaneous tissues. In over one thousand consecutive cases of shock no instance was encountered in the absence of one or another of these three types of wounds. In the case of abdominal injuries the mechanism was clearly that of direct injury of the great splanchnic nervous system. In the other two types the most probable cause seemed to be the occurrence of fat embolism. These were preeminently the forms of wounds which might lead to fat embolism. Following this lead animal experiments were made and it was found that artificial fat embolism produced all of the typical phenomena of shock. Further confirmation of this explanation was found in the fact that post mortem fat embolism was frequently observed in persons dying of shock. Additional support was also found in the fact that shock was very rarely of immediate occurrence, but usually developed only after several hours or days had elapsed from the time of the wound.

The most effective methods for the treatment of shock were found to be the intravenous injection of hot normal salt solution, with or without the addition of epinephrin: the application of external warmth; rest, and the elevation of the foot of the bed. To these there was added a new method of aiding the circulation through the respiration. It had been proved that the descent of the diaphragm acted as a powerful pump in drawing blood into the heart and thereby inducing an elevation of the diastolic blood pressure with the result that the circulation was improved and the nutrition of the heart and the vital nervous centres was raised to a higher level of efficiency. Experiments on animals showed that the intravenous injection of hot saline would raise the diastolic pressure fairly adequately, but only temporarily; the same was true of the addition of epinephrin, but the duration of the action was even briefer. The induction of forced respiration, however raised the diastolic blood pressure to a higher level and maintained it for much longer.

On the basis of these observations it was planned to invoke the aid of the respiratory pump in man. The respiration could easily be doubled in depth by the administration of the proper concentration of carbon dioxide, and this could be continued for long periods of time without harm so long as enough oxygen was also supplied. By means of a loosely constructed box, in which the patient's head was enclosed, the carbon dioxide was raised in the air he breathed to the level of about three per cent., which just doubled the respiration. The loose construction of the wooden box permitted the ingress of enough oxygen as well as prevented rebreathing. The method was tried on several shocked men with most gratifying results. One case, in particular, was mentioned. It was that of a man so severely shocked that the surgeons refused to operate. After a short period of the respiratory treatment he so far improved that one leg was amputated under local anesthesia and many severe wounds were cleaned up and dressed without anesthesia. He made an uneventful recovery. The method is now in use in some of the hospitals in France and the results obtained are excellent.

MEDICAL NOTES FROM THE FRONT.

A Swiss Bath Train.—Arteriovenous Aneurysms of Warfare.—Treatment of Gas Gangrene.

GENEVA, *September 20, 1917.*

The necessity of bodily cleanliness among the troops is of the utmost importance, but it is not always an easy matter to procure warm baths, especially in winter. The few improvised bathhouses installed here and there have been found wanting in many respects. In order to improve the conditions of bathing the sanitary division of the Swiss army conceived the idea of furnishing the troops with hot shower baths which can be transported according to requirements. The problem consisted in creating a railway train and organizing it for this particular purpose. The first "bath train" entered commission on August 29th. It is composed of a locomotive and a reservoir car containing 15,000 litres of water and, for the time being, of two third class passenger cars in which compartments for shower baths and dressing rooms are constructed. Each bath compartment contains twelve douches fixed in two rows on the ceiling of the car and each compartment will hold thirty-six men. This arrangement allows shower baths for about seventy men an hour in each car, so that with eight hours' work nearly 1,000 men can be disposed of. The water and the cars are heated by the steam from the locomotive. Water is pumped into the reservoir car and distributed to the bath cars by means of a pneumatic steam pump fixed on the locomotive. Proper mechanical devices and special pipes make it easy to regulate the heating of the water. It is also worthy of remark that everything has been arranged to transform the train into a disinfecting establishment. It is expected that this experiment will prove successful and that if so similar trains will be put in commission.

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An important pathological process peculiar to the surgery of warfare whose frequence has been relatively great during the present war, is arteriovenous aneurysms. The causative factor is some traumatizing agent, almost always a projectile, acting directly upon both artery and vein. A few exceptional instances of the lesion have been recorded where the causal factor was a bone spicula which had been detached and carried into the wound along with the missile. The cylindroconical bullet is the most important etiological factor in the great majority of cases of arteriovenous aneurysm. The force of penetration due to their velocity as well as their small cutting surface, causes them readily to reach the most hidden vessels. Shrapnel bullets are not so apt to produce vascular injuries on account of their rounded shape and lessened penetrating force. When they do injure a vessel, however, secondary hemorrhage due to infection is more likely to arise. On the other hand, fine, sharp bits of shell or pieces of exploding grenade with cutting edges are more prone to involve the arteries and veins, but such cases are unquestionably less commonly met with. I have not heard nor read of a single case of arteriovenous aneurysm from a bayonet thrust, although such an injury must have occurred in the last three years.

It should be remarked *à propos* of cylindroconical bullets that when they are fired from a considerable distance they penetrate by their point more easily, giving rise to a clean cut small track, while the resulting vascular lesions are more favorable for the ultimate development of arteriovenous aneurysms. When fired at a great distance the cylindroconical bullet does not become deformed during its course through the soft structures of the body. From its copper covering, the French bullet is rendered more resistant than the German bullet which is covered with an alloy of copper, zinc, and nickel and therefore tears more readily. However, I have seen a great many French and German wounded and I think I am justified in saying that both the French and German bullets are equally effective as far as vascular lesions are concerned.

Arteriovenous aneurysms of warfare occur most frequently in the limbs, because injuries to the large vessels of the trunk or abdomen result in instant death from hemorrhage. Injuries of the vessels of the limbs result in less serious immediate hemorrhage, or at all events the loss of blood can be controlled by suitable treatment, so that these patients can be sent to base hospitals for treatment. The lower limb is the most frequently involved. Out of a total of fifty-seven arteriovenous aneurysms at one hospital, thirty-six were in the lower limb, thirteen in the upper, and eight in the neck or head. Finally, among the vessels most exposed, the large trunks at the roots of the limbs are most frequently involved, particularly of the thigh, this being due to the large size of the artery and its satellite veins.

Arteriovenous aneurysms appear some days or months after receipt of the injury and are usually due to a direct communication between the two vessels which have to be divided on their respective sides by the missile. They also offer the same cardinal symptoms as those met with in civil practice, so that it is needless to refer to them. I would insist upon one point, however, and that is that in many cases the lesion does not give rise to an appreciable tumor, and in some cases that I have seen there was hardly any elevation in the area of the injury. Of course, the earlier an operation is done the less will be the extent of the morbid process.

The thrill which has been known since the writings of Hunter, with its accompanying murmur, is a capital diagnostic sign and can be heard at quite a distance from the patient. One patient was prevented from sleeping by the constant noise to which the aneurysm gave rise, as he expressed it. A collateral venous circulation may be observed under the skin, but it is never very marked. I think from what I have seen and heard that a systolic venous pulse must be very rarely found, but on the other hand, the tension of the arterial pulse is markedly low in the lower limb, and is apt to be accompanied by a perimalleolar edema and a bluish tint of the integuments. But what is the most common is that the patients complain of functional disturbances, and this in a very early phase of the process. They complain of a numbness throughout the entire limb and if the lower limb is the one involved, it becomes quickly tired by walking. Nocturnal cramps in the limbs may be troublesome. But in cases of arteriovenous aneurysm there is one symptom that is not generally known outside of warfare, and that is pain of rather troublesome nature due to neuritis and may be the result of injury to a nerve trunk in the neighborhood of the aneurysm due to the projectile which has injured the vessels at the same time. It is more probable, however, that these organic nervous disturbances are due to a traumatic lesion of the sympathetic plexuses accompanying the injured vessels and the causalgia which was first described by Weir Mitchell in 1864 is probably dependent upon a sympathetic neuritis. It would take too long to enter into further details of this highly interesting subject, but those who desire to have more information on the subject I would refer to Leriche's paper in *La Presse médicale,* April 20, 1916.

All things considered, the diagnosis of arteriovenous aneurysm is easy, but the true nature of the lesion has escaped attention. The thrill which is not marked at the beginning of the process is only discovered by chance. I want to insist on the fact that the diagnosis of the site of the lesion may be a most delicate matter or even quite impossible. I have seen cases where one was quite at a loss to decide whether the lesion was in the superficial or deep femoral artery. In the case of the posterior tibial arteries, seated, as they are, between two deep aponeurotic layers, a posterior, followed by an anterior, incision has had to be made in order to ligate the vessel in some cases.

The evolution of arteriovenous aneurysms is notoriously slow and they may remain stationary for a long time, and, although some instances of spontaneous recovery have been recorded, nevertheless surgical treatment should be resorted to at once after the diagnosis has been made. This consists of extirpation of the sac when possible. Suture or graft is, of course, the ideal method, but can be resorted to only exceptionally, if at all.

* * *

In closing this letter I would mention the treatment of gas gangrene by total excision of the focus, a treatment which has been essayed at a certain ambulance at the front, where it was resorted to in eighty-nine cases. The method was first recommended to the surgeons of the Fifth Army Corps by Doctor Lemâitre, who employed it from the very beginning of the war in the ambulance of which he was the chief. At Ambulance 14-1 Doctor Leroy adopted the treatment with good results. The logical cure of gas gangrene involves the following conditions: 1, the removal of the mechanically devitalized portions of muscle which have become secondarily infected and therefore have become gasogenous centres for the propaganda of the infection; 2, the reestablishment of the circulation by free incisions to relieve the tension; 3, oxygenization of the wound by opening up the entire track made by the projectile.

The radical cure of gas gangrene is realized by opening up the track and removing all foreign bodies. Next, the muscular tissue is excised until healthy muscle is reached. Healthy muscle is bright red and bleeds easily; muscle presenting a washed out appearance, which contracts and begins to bleed, in cases of very extensive gangrene, is susceptible of regeneration. The operation is completed by sterilization of the wound with tincture of iodine.

In order to be economical, the radical cure of a focus of gas gangrene must be resorted to as soon as possible, and to make an early diagnosis all the signs of alarm symptomatic of the process must be searched for in every wound of warfare. These early symptoms are: sonorousness detected at some distance from the entrance wound, pain, and thermic reaction. The treatment of gas gangrene should be, above all, a prophylactic one. Every wound should be freely opened up in its entire extent and down to the projectile just as soon as possible.

Charles Greene Cumston.

MEDICAL NEWS FROM WASHINGTON.

Problem of Health Regulation Among Troops in the Neighborhood of Stations and Cantonments.—Protest Against Secretary Baker's Policy to Make No More Appointments to Officers' Reserve Corps.—Instruction in Orthopedic Work in the Army.—Promotions in the Medical Officers' Reserve Corps.—Intensive Training in Oral and Plastic Surgery at Philadelphia and St. Louis.—Intestinal Disorders Eliminated from the Navy.—Statistical Information Branch of the Office of the Surgeon General of the Army.—Drafted Physicians and Dentists Still Eligible for Commissions.

Washington, *October 30, 1917.*

The medical officers of the army and navy engaged on the problem of regulating health conditions in the neighborhoods of military naval stations and cantonments in this country are finding them far from simple. In the case of the army, it is necessary, as the authorities view the situation, to establish sanitary zones embracing a prescribed radius at every military reservation, in order adequately to control conditions that, unchecked, would increase communicable disease. The cantonments for the most part are situated in sections of the country that are separated from large communities where local health authorities maintain a system of supervision and control. For this reason it is particularly necessary to exercise vigilance and enforce regulations among the civil population.

In the case of the naval station, the situation is quite different. Generally speaking, they are located within or near large cities, and the service personnel represents a much smaller proportion of the total population than at the army camps. It may be decided that the navy does not require the same amount of regulation of a neighborhood as does the army in its system of protection against the influences exerted by the civil population. In both instances, however, much must depend upon the state and municipal health authorities, and in that particular there has been a commendable cooperation that has proved a great aid to the army and navy medical authorities. Probably in the case of our troops that are now and will be in France, regulation in this respect will be easier to enforce than in this country, for abroad it is assumed that the military authorities will be unquestioned beyond anything that may be expected in the United States, with all the cooperation of the civil authorities and the appreciation by the public of the merits and necessities of a project that has been undertaken for the benefit of the men under arms.

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Considerable consternation has resulted in the army staff corps, including the Medical Department, from the policy recently adopted by Secretary of War Baker, at the instance of General Tasker H. Bliss, chief of staff, that no further appointments shall be made, for the present, to the Medical Officers' Reserve Corps. Protests against this action, which appears to be arbitrary, have been made by the heads of the staff corps. For the Medical Department, it has been pointed out that members of the reserve corps of that department, in many instances, are being put through special training and instruction, in order that they may be fitted for duty as röntgenologists, laboratory experts, orthopedic experts, nutrition experts, specialists in the various branches of surgery, psychological examiners, examiners for the aviation service, and for other special duties requiring special knowledge that is not ordinarily possessed by the usual run of physicians in general practice.

Of course, it would be an ideal condition if the army could go to the medical profession and find all the various specialists in the number it needs available for military duty, but that is not the case. Therefore, it is necessary to train men for special work, and manifestly it is necessary to give them military status while they are being trained. Appointments to the reserve corps furnish the only means by which this can be done, and, of course, it would be disastrous to await the actual need before taking men into the corps for the purpose of training. These reasons for amending the decision of the secretary of war have been submitted to the head of the War Department in behalf of the Medical Department, and similar ones for other staff departments.

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Arrangements have been made for the establishment at Philadelphia of a school for the intensive training of selected members of the army Medical Department in oral surgery and plastic reconstruction of the face and jaws of men that have been maimed in war. Some twenty-five or thirty recently appointed members of the Medical Reserve Corps will be detailed for didactic and laboratory study at the institution. Dr. Wilmer Krusen, director of public health and charities, has agreed to afford facilities in the dental wards of the Philadelphia General Hospital for clinical demonstrations, and he has offered his office in the City Hall, for meetings of the teaching board. Dr. Charles R. Turner, dean of the Evans Institute of Dental Surgery, will have charge of the organization of the teaching staff. He will be assisted by Dr. Hermann Prinz, of the institute, in selecting the staff. Lecturers and operators from other medical and dental schools of Philadelphia, who are specialists in oral surgery, will become members of the staff. The course will commence this month, and it will last about three weeks. Similar instruction also is being conducted for medical officers at the School of Plastic and Oral Surgery at Washington University, St. Louis.

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As might be expected, keen interest has been manifested by officers of the Medical Reserve Corps in the matter of promotions, which were understood as destined to occur after three months' service. It has been explained that this period originally was designated as one that could be considered "reasonable" as the time during which a medical reservist might be expected to serve to establish his fitness in a practical way for advancement. However, the announcement has appeared to create an impression that promotions were likely to be made at the end of three months. It was intended, as a matter of fact, that commanding officers should make recommendations for promotion, but many of them have not been inclined to do so, with the result that few promotions have occurred. It seems to be necessary for officers of the Medical Corps, who are desirous of promotion, to make formal application to the surgeon general's office, setting forth their claims to favorable action, accompanied by the endorsement of their senior officers.

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Typhoid fever and similar communicable intestinal diseases have been eliminated almost entirely from the naval service as a result of preventive methods, according to a report just made by the surgeon general to the secretary of the navy. The report states: "The health of the navy is excellent and the training of personnel is not interfered with at any of the training stations by the presence of communicable disease. Practically the only diseases which have given much concern during the present war have been those of the respiratory type, which are spread mainly by nose and throat secretions, principally mumps and measles, which are associated with a low mortality rate or no mortality at all. This is in marked contrast to the experience of 1898, during the Spanish-American War, when the communicable intestinal diseases caused widespread damage and carried with them a high mortality rate. The application of recent medical science has practically eliminated all such diseases from the forces afloat and ashore. Such modern methods for the prevention of intestinal diseases include preventive inoculation, the proper disposal of garbage and sewage, protection of food and water supplies from contamination, and the extermination of flies and their breeding places." Records of the navy bureau of medicine and surgery show that fewer than ten cases of typhoid have been reported since the war began.

* * * * *

The statistical and information branch of the office of the surgeon general of the army, now in working order and in charge of Major Albert G. Love, Medical Corps, is expected to be one of the most important divisions of the office. It has been established at Washington in new quarters at 718 Eighteenth Street, and it is hoped that it may be transferred later to the Army Medical Museum building, where the necessary space may become available by removal of that part of the adjutant general's office now in the building. It is intended to maintain a complete record of all sick and wounded, a project of considerable dimensions, when it is considered that the military force in the next year probably will aggregate 2,000,000 men. Tabulating and statistical mechanisms will be installed as an aid to the work of compilation and in order that the information may be readily accessible. It will be possible from the information thus taken care of to make an accurate medical history of the war. The work will be conducted with the cooperation of the adjutant general's office, which will have its own special individual records.

At any time it will be a comparatively easy matter to ascertain exactly the state of the army health by all sorts of classifications. This is being done already to some extent, and weekly bulletins are issued for the information of division surgeons and their subordinates, showing the admission rates for every organization, where the records may be significant in cases of undue prevalence of disease. By means of this comparison, medical officers may learn the relative health conditions and take steps to adopt remedial measures when necessary. For example, just now there is a disproportionate number of cases of measles, which is not considered very serious of itself and which is to be expected under the living conditions at the cantonments. About the only menace that the army medical authorities apprehend at present is the overcrowding of living quarters and the difficulty of properly ventilating the buildings, particularly in cold weather.

* * * * *

While the surgeon general of the army has discontinued for the present examination of applicants for the Dental Reserve Corps, two exceptions are made, as follows: First, since the medical department will have need of certain dental specialists in various locations in this country and abroad, applications will be considered of such men as are especially well qualified in such branches as the needs of the army may demand. The dental specialists needed at this time are to be found among those who have had experience in the management of fractures of the jaws, and minor and major oral surgery. Second, when a dentist is drafted and has been physically accepted by those in charge of the camp where he has been sent as a private, he then may make application for appointment to the Dental Reserve Corps. The surgeon general has sent the following to camp surgeons: "You probably will find in your camp a certain number of graduate physicians and dentists who have been called under the selective service law and now are on duty as enlisted men. The fact that these professional men have been called to duty under the draft law does not impair their eligibility for commissions. You are authorized to examine such of them as wish to apply for appointment to the Medical Reserve Corps or the Dental Reserve Corps, as the case may be, and, if found qualified, to recommend them for appointment."

Editorial Notes and Comments

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EDITORS
CHARLES E. DE M. SAJOUS, M.D., LL.D., Sc.D.,
Philadelphia,
SMITH ELY JELLIFFE, A.M., M.D., Ph.D.,
New York.

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MORE CAREFUL TESTING OF THYROID PREPARATIONS.

Frequent practical testing is essentially necessary to efficiency. The therapeutic value of the thyroid was an important physiological discovery. Then progress, looking to its practical applicability, sought the reason for its efficacy and found it in the iodine content. This in turn had to be established upon the basis of amount, but more important still upon the form in which it is present. Such an iodine standardization is now in force with all leading manufacturers and is recognized in the United States Pharmacopœia.

Attention is called [J. M. Rogoff: A Method for the Standardization of Thyroid Preparations, *Journal of Pharmacology and Experimental Therapeutics*, vol. x, No. 3, September, 1917] to the danger that still exists of finding in the market worthless specimens of thyroid, and a method is outlined by which the activity of any given preparation may be submitted to a simple and effective test. It is an easy matter to add iodine in any form to a hyperplastic thyroid either *in vivo* or *in vitro*. Moreover even in the living animal a certain time must elapse after the hyperplastic gland has absorbed the iodine before the latter is physiologically active upon metabolism, as is the content of the normal gland. This activity depends not upon the mere presence of the iodine but upon the "iodine containing hormone" of the thyroid. Even the iodine of the normal colloid gland, the writer goes on to say, has been found to be contained in three products, only one of which "represents the essential activity of the gland." Therefore he suggests supplementing the present standard test of thyroid preparation by a physiological assay of direct practical value. To effect such an assay he submitted by way of experiment seven specimens of thyroid obtainable in the market to a stock of tadpoles. A standard of comparison was furnished by a specimen of desiccated cattle thyroid carefully prepared by Doctor Marine and the author, having a known iodine content of 0.215 per cent. The value of this thyroid preparation is designated as 100 for a basis of comparison of the other preparations. The rough summary of the results obtained, which are carefully and accurately tabulated, is as follows: "Of seven products purchased in retail drug stores, two indicated about twenty per cent. more activity than a standard preparation, two were equal in value to the standard, one somewhat more than fifty per cent. of the standard, one less than fifty per cent., and one was a practically worthless preparation, being only about ten to twenty per cent. of the value of the standard."

Surely the vital problems of the internist as those of every other sphere of activity demand a constant watchfulness and an alertness toward fresh discovery leading into deeper understanding of the actually essential working factors, and to the obtaining of these by every means possible for the use of professional service.

THE MILITARY HOSPITALS OF CANADA.

In June, 1915, the Canadian Military Hospitals Commission was organized under an Order in Council. Prior to that date when invalided soldiers began to return to Canada, the Department of Militia and Defence formed a committee to provide for the care and treatment of those soldiers, but it soon became apparent that that committee could not give the extraordinary matter the important attention it demanded. The principal object for which the Military Hospitals Commission was called into existence was for the provision of convalescent hospitals and homes and medical treatment for the returned wounded or sick soldier, but its activities broadened and expanded with the work and came in time to look after vocational study and work, as well as return the soldier to civilian life. While it is not contended that the Military Hospitals Commission has in any measure failed, there has been a considerable amount of friction, specially manifested in the care and medical treatment of the sick and wounded, militia authorities and physicians holding that all this work should come under the surveillance of the Director-General of Medical Services. Perhaps, now that a Union Government has been formed in Canada, fuller powers will be given to the director general, and the business side of the commission be managed and provided for by that commission.

The Medical Service of the Commission is divided into the following branches, including specialties: general practice, tuberculosis, orthopedics, mental diseases; eye, ear, and throat diseases; dental, massage, electrical treatment, physical drill, and rheumatic treatment. In all convalescent hospitals and homes the following subjects are taught: general subjects; free hand and mechanical drawing; carpentry; motor mechanics; automobile engineering; stenography and typewriting; accountancy; agriculture; market gardening; bee keeping, and such other subjects as local requirements suggest. The Hospitals Commission Command created units with headquarters at Halifax, Quebec, Montreal, Toronto, London, Winnipeg, Regina, Calgary, and Victoria, B. C. There are under its control sixteen hospital cars for transportation of men from hospital ships to their inland destinations. These cars are equipped with the most modern appliances, specially constructed, and are operated by existing railways under special arrangements. At Quebec, St. John, N. B., and Halifax there are discharge depots, each providing accommodation and commissariat equipment for several hundred men, the principal one being at Quebec, which is in use all the year. Men arriving from overseas, accompanied with documents showing their physical condition, pay, reason for return, etc., are met by representatives of the commission. Those for western Canada are delegated to Quebec, and all men are usually warned that they should go to some locality where they may expect to obtain work at their trade.

Apart from the usual run of cases, the tuberculosis situation, cases of mental disability, blinded soldiers, rheumatic cases, and the provision of artificial limbs, of course, command special attention. During the summer of 1916 the tuberculosis cases under canvas could be divided into two classes, those who had been overseas and those who had not yet crossed the Atlantic. It does not appear to have been to the diagnostic credit of medical examiners that fully fifty per cent. of those cases had never crossed the ocean at all. While that problem is a very pressing one, it may be said to the credit of the commission that it has been handled in a satisfactory manner as accommodation has been rapidly provided in the different provinces of Canada, and still further accommodation is being arranged. The cases of mental disability have been divided into two classes, viz., the insane, and the shell shock cases. The insane are sent to the provincial hospitals for the insane in the provinces to which they belong; the shell shock cases are being provided for in two special institutions, one at Newmarket, Ontario; the other, the Hospital for the Insane at Whitby, Ontario. It is gratifying to know that up to the present those cases have not been over numerous. The blind have been very much fewer than originally feared. Up to the present time of publication there have been about twenty. The Oakhill Military Hospital at St. Catharines, Ontario, has been specially adapted for the treatment of the rheumatic cases. As to artificial limbs, there has been one original factory in Toronto which has done excellent work, and the great difficulty has been to secure men competent as limb makers. It is well known that the United States has been combed for that class of mechanics for service in England and France. Other factories will be opened in Canada, for the purpose of both manufacture and repair. The number of returned soldiers now under the care of the Canadian Hospitals Commission approximates 25,000.

THE EVOLUTION OF SHELL SHOCK.

Three years ago, if a physician on either side of the Atlantic had been confronted with the expression "shell shock" his own expression would probably have been entirely blank. Now the term is a commonplace, not only in the R. A. M. C., but among the fighting men themselves, and from them it has passed into the everyday speech of the multitude. The music halls allude to it as a bit of "sure fire" humor, the humorous papers reek with it, and it is given as an excuse, half in earnest, half in jest, for all irregularities of conduct. A cashier departs with concrete evidences of the firm's trust in him—he had shell shock; a minister is seen at a boxing match—doubtless under the influence of shell shock; and the slant browed husky who faces the judge on the complaint of his black and blue spouse complains that since he was shell shocked there are times when he doesn't know what he is doing, doesn't even know he has a wife.

What is this shell shock, then, that it has grown so great? It was, first of all, a term given to mysterious cases which, when the war was well under way, were found during and after every heavy bombardment suffering from various nervous symptoms, amnesia, mutism, paralysis, tremor, and so on. These were at first thought to be due to the sudden atmospheric changes caused by the explosion of huge projectiles and many ingenious explanations were given of vacuums, change in pressure, decompression, etc. These patients were sent to the general hospitals in large numbers, but failed to improve there. Other cases, on account of the weird features presented and the apparent lack of cause, were sent to insane hospitals, but the fallacy of this soon became evident. Many of these patients were bandied about from pillar to post and finally discharged from the army in disgust, with the sneaking suspicion that they were malingerers. Others, less fortunate, were openly called malingerers and finally faced firing squads, retaining their symptoms to the end.

The term shell shock seemed a happy one, perhaps on account of its apt alliteration. Some attempt was made at one time to classify these cases as functional nervous disorders, but the soldiers concerned protested bitterly against this, maintaining stoutly that there was no funk in them, funk being an extremely invidious term in England. The inappropriateness of the name shell shock later became evident as many cases developed without exposure to shell fire, and the general feeling now is that "war neurosis" would be a fit designation. But it is difficult to get rid of a name which is so euphonious and so firmly entrenched in the popular mind and probably shell shock has come to stay.

THE SYMPTOMATOLOGY OF ANEURYSM OF THE THORACIC AORTA.

The clinical types of thoracic aneurysm are varied. At times the symptomatology is complete in every detail; at others it is attenuated to such an extent that the aortic lesion may be overlooked during life and is only discovered at autopsy. Its detection depends upon the size of the sac and above all its site. If the aneurysm is superficial and produces an arching of the thorax it is impossible to mistake it, but if it is deeply seated its presence is revealed only by phenomena of compression produced on the neighboring structures and sometimes it may even remain in a latent state without causing any marked disturbance, the subject suddenly dying without warning.

The most important symptoms are frequent persistent and very painful intercostal neuralgia and the symptoms furnished by the respiratory apparatus. If the trachea or a large bronchus is compressed by the tumor, the resulting stricture gives rise to a peculiar sound, the so called inferior stridulation of Stokes, particularly marked after an effort or deep inspiration. There may also be a substernal inspiratory effort and a decrease in the respiratory murmur in an otherwise healthy lung. Another sign of value is distention of the left jugular vein, but this only occurs when the tumor develops in the first part of the descending aorta. At the same time the superficial veins of the chest and neck become varicose and cases have been met with in which the entire neck formed a characteristic tumefaction which is not observed in the edema of cardiac origin. The esophagus is more prone to compression when the sac is on the descending aorta and gives rise to symptoms simulating stricture of the gullet. The patient complains of pain and difficulty in swallowing at the middle of the sternum when food passes, particularly solids, which may result in vomiting.

Compression of the nerve trunks results in irritation or neuralgia of the corresponding nerve. Intercostal neuralgia is a common symptom of aneurysm of the thoracic aorta, which occurs with a violence that is only equaled by its tenacity. No treatment has any influence upon it and consequently when the cause of the neuralgia cannot be explained it is logical to suspect the presence of an aneurysm. When the aneurysm is situated in the descending portion of the aorta it is evident that the delay of the blood in the sac will result in a slowing of the current in the subjacent portion and a delay in the crural pulse beyond that of the radial and cardiac pulsation. The crural pulse is not only tardy but is also weak.

Another symptom is the retraction of the left costal wall which is due to pulmonary atelectasis with the formation of pleural adhesions. Unfortunately, this symptom is not very valuable, and it easily leads to the erroneous diagnosis of some pulmonary lesion. The phenomena offered by compression of the left bronchus are the most frequent and at the same time the most characteristic. By auscultation, most commonly on the left, a more or less rough interscapulovertebral breathing will be detected. If hemoptysis should occur a common mistake is to suspect tuberculosis. When the aneurysmal tumor projects, it is usually on the left of the spine between the seventh and tenth rib. Sometimes it may progress forward, forming a projection at the level of the sternum on the left side. The surest diagnostic means at our disposal is certainly radioscopy, which is unquestionably far better than radiography, because one may see the expansion of the sac and the mobility of the thoracic viscera.

WOOD ALCOHOL POISONING.

The death last week of a number of persons in this city who drank imitation whiskey made with wood alcohol should serve as a warning to health authorities everywhere to be on the lookout for this dangerous form of adulteration. With the very considerable publicity which has been given to cases of wood alcohol poisoning in the past few years there is really no excuse whatever for ignorance of the poisonous properties of methyl alcohol. The Health Department of the City of New York has been commendably active not only in educational publicity in this particular field, but also in ferreting out instances of the illegal sale of wood alcohol for human consumption, and prosecuting the offenders in court. During the past two years over $1,200 in fines were imposed on persons thus convicted through the efforts of the Department of Health.

Believing that the recent rise in the cost of distilled liquors might tempt some unscrupulous dealers to imitate the example set by the Bleecker Street dealer, Commissioner Emerson has given instruction to collect and analyze samples, especially of the cheaper liquors, from all parts of the city. Out of a small lot of samples collected last week in two stores, two thirds of the samples showed the presence of wood alcohol. Some of these purported to be whiskies of various well known brands; others were labelled French brandy. We do not entirely agree with Commissioner Emerson's stand on the alcohol question, and therefore are all the more ready to commend his prompt action in safeguarding the purity of alcoholic liquors.

SUPPLY OF BRITISH SURGEONS EXHAUSTED.

The Central Medical War Committee of Great Britain, which has acted for the Government in supplying surgeons for the British Army has announced that it will no longer be able to satisfy the large claims of the army medical department under the present conditions. This committee has kept close track of the relation of the medical practitioners to the civilian population and has not called up doctors where doing so would deprive a community of the necessary medical attendants. Practitioners above military age are not subject to the authority of the Central Medical War Committee nor of the British War Office itself, and it has been proposed that the military age for doctors be raised to forty-five years, though even this would probably not furnish as many physicians as will be required for the army. In the face of this condition it becomes all the more important that the physicians of America should volunteer in large numbers. Indeed, the British mission, when it first reached these shores, stated that the need of surgeons was most urgent, and it was for this reason that the American Red Cross base hospitals were at once mobilized.

News Items.

Evening Clinic for Genitourinary Diseases.—A dispensary service for the treatment of genitourinary diseases has been established at the Polyclinic Hospital, in West Fiftieth Street, New York. These clinics, which are for men only, are held Tuesday and Saturday evenings.

Academy of Medicine Anniversary Address.—Henry Fairfield Osborn, LL. D., president of the American Museum of Natural History, will deliver the annual anniversary address of the New York Academy of Medicine, Thursday evening, November 15th, his subject being The Origin and Nature of Life.

New Officers of the Poughkeepsie Academy of Medicine.—At the annual business meeting of the Poughkeepsie Academy of Medicine, held Monday evening, October 29th, the following officers were elected:

President, Dr. Howard P. Carpenter; vice-president, Dr. Chester T. Cadwell; secretary, Dr Clifford A. Crispell; treasurer, Dr. William J. Cavanaugh; trustee, Dr. Aaron Sobel.

A Cuban Hospital Unit for Service in France.—The Cuban Red Cross Society is equipping a 100 bed hospital unit, manned by Cuban physicians and nurses, for service on the western front in France. Cuban women prominent in Havana society have set out to raise a fund of $1,000,000 to finance the unit. It is hoped that the enterprise will reach completion at an early date. Upward of $100,000 is already in hand.

Clinical Conference of Surgeons of North America.—The seventh congress was held in Chicago during the week of October 22d, under the presidency of Dr. Frederick B. Lund, of Boston. Officers to serve for the ensuing year were elected as follows: President elect, Dr. William J. Mayo, Rochester, Minn.; president, Dr. John G. Clark, Philadelphia; first vice-president, Dr. James B. Eagelson, Seattle, Wash.; second vice-president, Dr. F. N. G. Starr, Toronto; secretary general, Dr. Franklin H. Martin, Chicago; treasurer, Dr. Allen B. Kanavel, Chicago; manager, Dr. A. D. Ballou, Chicago. At the final business session it was decided to merge the clinical congress of surgeons with the American College of Surgeons.

Indiana State Medical Society.—Dr. Joseph Rilus Eastman, of Indianapolis, was elected president of this society at the annual meeting held in Evansville, September 26th, 27th, and 28th, succeeding Dr. Charles N. Combs, of Terre Haute. Other officers were elected as follows: First vice-president, Dr. V. V. Cameron, of Marion; second vice-president, Dr. H. H. Martin, of Laporte; third vice-president, Dr. E. A. Sturm, of Jasper; secretary-treasurer, Charles N. Combs, of Terre Haute (re-elected); executive secretary, Frederick E. Schortemeir, of Indianapolis (reelected). It was voted unanimously to hold the 1918 convention in Indianapolis.

Colonel Sir Berkeley Moynihan in America.—Colonel Sir Berkeley Moynihan, senior consulting surgeon of the medical corps of the British Army, was one of the most prominent figures at the recent Clinical Congress of Surgeons of North America, held in Chicago. On Wednesday evening, November 7th, he was entertained by the physicians of Philadelphia at the Bellevue Stratford Hotel, when both he and Major George W. Crile, of the Lakeside Base Hospital, who has only recently returned from France, made addresses on different phases of war surgery. Both these surgeons were also entertained at a dinner at the Metropolitan Club, New York, on Thursday evening, November 8th, and made addresses before a meeting held at the Waldorf-Astoria under the auspices of the New York State Committee of the Council of National Defense. Among the guests on the latter occasion were Surgeon General Gorgas, Surgeon General Rupert Blue, Lieutenant Colonel William H. Moncrief, Colonel E. R. Schreiner, of the Columbia War Hospital, Dr. Franklin Martin, Dr. George David Stewart, Dr. Samuel W. Lambert, Dr. Charles B. Penrose, and the following surgeons who are majors in the Medical Reserve Corps: Charles H. Mayo, Raymond P. Sullivan, and Edward Martin. Dr. J. Bentley Squier was chairman of the committee on arrangements, and associated with him were Dr. George D. Stewart, Dr. W. B. James, Dr. Frederick E. Sondern, and Captain Frederick E. Van Buren, M. R. C.

American Ambulances for Russia.—As a part of its program for rendering effective assistance to Russia the American Red Cross will ship at once to the Red Cross Commission in Russia, headed by Dr. Frank Billings, of Chicago, 125 motor ambulances and automobiles. This is the third Red Cross shipment to be dispatched to Russia since the arrival of the commission there, less than two months ago. Drugs, medical supplies, and surgical apparatus, with a total value of nearly $400,000, have already been sent. Ambulances are needed with the Russian armies more than almost any other form of relief. On the Eastern front there are now only 6,000 vehicles for the transportation of the wounded, while on the French front, only a third in length, there are 75,000 ambulances. The automobiles now being shipped by the Red Cross will equip one Russian army corps with five complete ambulance sections.

Chicago Doctors Receive Commissions.—The following physicians of Chicago were commissioned in the Medical Officers' Reserve Corps on November 3d and will be assigned to duty in the national army cantonments in the central department: Captains, Dr. Harry H. Emerson, Dr. Alexander R. Craig, and Dr. John S. Sweeney; first lieutenants, Dr. James Henry Bloomfield, Dr. Edward A. Corcoran, Dr. Linell L. Rodgers, Dr. Harry A. Dimon, Dr. Lamont W. Rosenbaum, Dr. Lester L. Long, Dr. Israel Sherry, Dr. Joseph L. Hagan, Dr. Cyril James Larkin, Dr. S. H. Kraft, Dr. Clarence A. Jacobson. Dr. George W. Cusick, Dr. Andy M. Carr, Dr. Thomas Oliver Greig, Dr. Sydney S. Schochet, Dr. James E. McNeel, Dr. K. P. Frost, Dr. Vincent F. Keller, Dr. Hart E. Fisher, Dr. Walter W. Hamburger, Dr. Edwin F. Hirsch, Dr. Charles A. Burkholder, Dr. Herbert V. Mellinger, and Dr. John O. Gaston.

Harvard Faculty Changes.—At the last meeting of the president and fellows of Harvard University twelve resignations were accepted, eleven leaves of absence granted, and seventy-six appointments made. Among those who were granted leave of absence for one year were Dr. Harvey Cushing, who is in charge of Base Hospital No. 5 in France; Dr. Hugh Cabot, and Dr. H. V. Hubbard. Among the resignations were Dr. Beth Vincent and Dr. Mark H. Wentworth, as assistants in surgery; Dr. Richard H. Miller, as assistant in surgery and anatomy; Dr. Walter B. Lancaster, as associate in ophthalmology; Dr. Karlton G. Percy, as assistant in pediatrics; Dr. Goodwin L. Foster, as assistant in biological chemistry; Dr. Arthur B. Emmons, as director for appointments for medical alumni. Among the twenty-seven assistants appointed were Dr. Somers Fraser and Dr. Conrad Jacobson, in surgery; Dr. Warren R. Sisson, in pediatrics; Dr. Martin J. English, in medicine; Dr. Robert J. Cook and Dr. Lloyd T. Brown, in orthopedic surgery; Dr. Frederick L. Good, in gynecology; Dr. Delos J. Bristol, Jr., in obstetrics; Dr. William E. Ladd, Dr. Torr W. Harmer, Dr. Andre W. Reggio, Dr. James M. Gallison, and Dr. Edward H. Risley, in surgery; Dr. Horace K. Sowles, alumni assistant in surgery; Dr. George G. Smith, Dr. Edward L. Young, and Dr. Otto J. Hermann, in genitourinary surgery. Other appointments were made as follows: Dr. William C. Quinby, as director of the laboratory of surgical research; Dr. Alfred W. Bosworth, as research fellow in pediatrics; Dr. Andrew W. Sellards, as associate in tropical medicine; Dr. Arthur F. Whitten, as acting director of the summer school; Dr. Benjamin H. Ragle, as research fellow in tropical medicine.

Status of Enrolment of First Year Medical Students in American Medical Schools.—Figures furnished by the Committee on Hospital and Medical Facilities of the Mayor's Committee on National Defense show the following status of enrolment of first year students in medical schools: There is an increase of from three to 300 per cent. in twenty-nine schools, a decrease of from four to fifty-nine per cent. in thirty-two colleges, and thirteen colleges report their figures to be "about the same." Of those showing an increase, eight schools give no figures, but report the situation in a general way, and of those showing a decrease six give no exact figures. Those which state their exact enrolment as compared with the two preceding years show a total of 284 increase and 467 decrease. In general, the percentages of increase are lower than the percentages of decrease. It may be mentioned that the upper limit of increase, represented by the 300 per cent. quoted above, was the figure returned by a school whose enrolment in 1916 was one, and in 1917, four. No general conclusions can be drawn as to the sections of the country showing constant changes one way or the other.

Examination for Medical Inspector.—The Municipal Civil Service Commission announces an examination for medical inspector, Group 1, male and female, for which applications will be received at Room 1400, Municipal Building, Manhattan, until November 20th, at 4 p. m. Candidates must not be less than 21 years of age, citizens of the United States, and residents of New York State. Incumbents of these positions in the department of health may be assigned to the examination of infants, to the examination of school children for physical defects, to make diagnoses of communicable diseases, to engage in the diagnosis of tuberculosis, syphilis, and the various occupational diseases, or to investigate, recognize, report, prevent, or correct disease or conditions unfavorable to the health of individuals or communities. Medical inspectors on field duty are subject to call at any time during the day or night and are required to devote an average of three hours to their duty every working day.

Examinations for Hospital Superintendents.—The Municipal Civil Service Commission announces examinations for lay and medical hospital superintendents at Sea View Hospital and Farms, Staten Island. Applications for the examination for a lay superintendent will be received up to November 15th, 4 p. m.; for the medical superintendent, up to November 13th, 4 p. m. The medical superintendent of Sea View Hospital is responsible for the medical administration of the institution, including the nursing, dietetic, psychopathic, and social services. The hospital is devoted to the care of tuberculosis patients and at present has a capacity of 750 beds. Applicants must be graduates from a medical school of recognized standing, must have served one year as intern in a general hospital, and have had one year's experience as an officer in an institution for the treatment of tuberculosis. For further particulars apply to the Municipal Civil Service Commission, Room 1410, Municipal Building, New York, N. Y.

Surgeons Urge Adoption of Universal Military Training.—At the eighth annual meeting of the Clinical Congress of Surgeons of North America, held in Chicago during the week of October 22d, the following resolutions were adopted regarding physical and military training for young men:

WHEREAS, The experiences of the nation convince us of the necessity for universal military training, to furnish qualified men for defense, to strengthen manhood and mental poise, and to make for a more efficient citizenship, and

WHEREAS, We believe it will democratize youth and furnish discipline, while developing physical force and endurance, and will produce better fathers and workers for the ranks of peace; therefore be it

Resolved, That the Clinical Congress of Surgeons at its eighth annual session urges upon Congress at its coming session the passage of a measure along the general lines of the Chamberlain bill for universal military training, and that the cantonments now used by the national army be utilized, if possible, for such work.

At a meeting of the State Committees of the Medical Section of the Council of National Defense, of all States except Maine and Delaware, held in Chicago on October 23d, the following resolutions were adopted urging immediate action providing for at least six months of intensive military training of all young men in their nineteeth year, to become operative as soon as the army cantonments were available:

WHEREAS, The experience through which the United States is now passing should convince every thoughtful person of the necessity for the universal training of young men, not only for the national defense in case of need, but also to develop the nation's greatest asset—its young manhood—in physical strength, in mental alertness, and in respect for the obligations of citizenship essential in a democracy; therefore, be it

Resolved by the state committees of the medical section of the council of national defense that they strongly urge the adoption by our government at this time of a comprehensive plan of intensive universal military training of young men for a period of at least six months, upon arriving at the age of nineteen years; and that this body also support the movement to secure the introduction into public schools of adequate physical training and instruction;

Resolved, That the members of each state committee immediately take active steps to insure public support for the subject of these resolutions through the newspapers, through public meetings and through the appointment of committees in each county; also that copies of these resolutions be forwarded to the senators and members of Congress in their respective states, with a personal request that favorable action be taken at the coming session of Congress upon a measure following the principle of the Chamberlain bill and to become operative as soon as the army cantonments are no longer required for the training of the forces in the present war;

Resolved, That each state committee from time to time report to the medical section of the council of national defense as to action taken and progress secured in their several states.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

THE TREATMENT OF BOILS.

By Louis T. de M. Sajous, B. S., M. D.,
Philadelphia.

(*Continued from page 857.*)

In the external treatment of the developed boil, measures likely to result in extension of the infection to previously uninvolved tissues are obviously to be avoided. According to some, e. g., Willard Bartlett, 1917, a dressing in any form will produce what amounts to a pus poultice, whereby surrounding infection will be actively promoted. The question thus arises, whether it is actually worth while to apply antiseptic dressings over a boil with the intention of hindering the infective process.

In the first place it is to be remembered that dressing the part with a sterile ointment or paste is free from the objection referred to, the preparation tending to remain *in situ* by virtue of its unctuous consistency and manifestly not offering a favorable medium for bacterial pullulation, penetration, and displacement as would an aqueous solution. Again, if an aqueous preparation is used, spread of infection can be hindered by sufficiently frequent redressings and disinfection of the surrounding skin at each redressing with one of the agents mentioned in the preceding installment. That at least some antiseptics, when merely applied to the unbroken skin surface in aqueous solution, are of actual service for the inhibition of bacterial processes in underlying tissues is indicated by recently reported observations of E. H. Ochsner, 1916, who points out that in relation to a solution of boric acid, applied as a wet dressing, the skin acts as an osmotic membrane, through which the acid is drawn because of the affinity for it of the circulating blood and lymph beneath. Systematic uranalysis after application to the skin of a dressing wet with saturated boric acid solution showed constantly a considerable elimination of the drug in the urine, beginning within an hour and continuing until a number of hours after removal of the dressing. At the time of maximum elimination the amount found in the urine was from 0.05 to 0.2 per cent. In cases in which only a two per cent. solution of boric acid, instead of the four per cent. saturated solution, was applied, no trace of the drug was, as a rule, found in the urine at any time, thus demonstrating the necessity of using the stronger solution if the best results are to be obtained. That the boric acid absorbed assists in overcoming the infection is deemed proved by Ochsner on the basis of intraperitoneal injections in guineapigs and mice of pus before and after treatment of septic lesions with boric acid dressings, a small amount of the early pus invariably killing the test animal while much larger amounts of the later pus failed to kill or even to cause illness. While admitting that boric acid does not seem capable of inhibiting the growth of pathogenic bacteria, Ochsner is convinced that it greatly reduces their virulence, especially in the case of the Staphylococcus albus and citreus and the streptococcus and much less so with the Staphylococcus aureus. That he is disposed to believe in extension of the favorable influence of the acid even to relatively deep tissue layers is shown by his reference to its use in cellulitis.

Likewise a convinced advocate of the employment of saturated boric acid solution against pyogenic skin cocci is J. T. Bowen, 1917, who after washing the skin with soap and hot water and drying it, applies the boric solution and allows it to dry on, and finally dresses the boil with an ointment spread on cotton or linen, as follows:

℞ Acidi borici, ... }
Sulphuris præcipitati, } ......ana ʒi (4 grams);
Petrolati carbolati, ...℥i (32 grams).
Fiat unguentum.

Among other external agents employed in the treatment of boils is ichthyol, containing about ten per cent. of sulphur in the form of sulphones, mercaptans, and sulphides. Ullmann pointed out in 1900 the efficacy of painting over the affected region, two or three times a day, a mixture in equal parts of this product with ether and diluted alcohol. After several paintings the resulting adherent layer of ichthyol is cleaned off with ether and the mixture reapplied. Rapid reduction of the inflammation and a shortening of the course of the boil are claimed for this procedure, though ichthyol *per se* is generally admitted to be only feebly antiseptic. Berger, 1913, strongly recommends combined use of ichthyol and tincture of iodine. The latter is applied first, then a coating of pure ichthyol in the case of a furuncle not yet softened, or a gauze pad with ten per cent. of ichthyol in petrolatum in the case of a neglected boil already softened. The reduction of inflammation by the ichthyol is thus effectually supplemented by the strongly antiseptic action of the iodine, which moreover hinders infection of the adjoining surfaces.

Salicylic acid is an older remedy which has been used both in a weak solution or ointment, such as two per cent., for disinfection of the surrounding skin (Rishl) and in stronger preparations, e. g., a fifty per cent. plaster, to hasten softening and permit of early evacuation of the boil (Philippson). Though this substance is decidedly an irritant, and through the rapid softening the local condition may be caused to outstrip the development of immunity in the system at large, Fried even recently, 1914, deemed the application of a salicylic soap plaster, extending to the healthy tissues, the best local measure for a furuncle. The plaster is changed every twelve to thirty-six hours, and the part cleansed with benzine and alcohol. Fried combines vaccine treatment with it.

Phenol in concentrated alcoholic solution was recommended by Voerner, 1905, who touched the boil with it and then applied a bland ointment.

Other local measures advised include a wet gauze dressing of absolute alcohol (Sembritzki), a mixture in equal parts of spirit of turpentine and castor oil (Neff), and camphorated salol (Elsenberg). The last mentioned preparation is made by moistening one part of camphor with alcohol and rubbing up with 1.4 parts of phenyl salicylate until a clear fluid results. According to its sponsor this combination rapidly reduces pain and peripheral inflammation and tends to obviate supuration. Ochsner, laying stress on the fact that prolonged severe pain greatly interferes with the development of immunity, recommends as a local analgesic measure in superficial septic processes the combination of from fifteen to thirty per cent. of alcohol to the boric acid solution used as a wet dressing.

(*To be concluded.*)

Radium Treatment of Bladder and Prostatic Carcinoma.—B. S. Barringer (*Boston Medical and Surgical Journal,* September 27, 1917) reports the results obtained in twenty-five cases of carcinoma of the bladder and thirty cases of carcinoma of the prostate. Two of the twenty-five cases of carcinoma of the bladder would have been considered good operative risks; the other twenty-three were inoperative. The growth was locally removed by radium in four of the twenty-five. One has been cystoscopically cured for ten and one half months; one for five months; one for a short time; and in one there has appeared what is probably a slight local recurrence, although pathological examination of a piece removed does not confirm this view. Of the remaining twenty-one, eight patients have died, two are improving, four have not been heard from and the rest are recent cases. The technic of the application of radium to bladder carcinomata is: Two capsules of screened radium, 0.6 millimetre of silver and 1.5 millimetre of rubber, from fifty to 100 m. c. are placed in the bladder through the sheath of the cystoscope and allowed to remain there six or eight hours. As ninety per cent. of bladder tumors are on the bladder base the radium so inserted is in close contact with the tumor. If the carcinoma is on the vault or lateral walls, the patient lies on his abdomen or on one side. After the treatment the radium is removed through the urethra by a linen thread attached to the capsules. The initial pain is only that of the cystoscopy. The after burn varies from no pain to more or less severe pain, beginning a few days after treatment and lasting from one day to several weeks. In extensive carcinoma involving the bladder sphincter, irradiation may very much increase both the pain and the urinary frequency, and is to be used with caution. He believes that radium should be tried in all cases in which we have reason to think the carcinoma is confined to the bladder to see what it will do, and that it should be used to check hemorrhage from a bladder carcinoma.

Regarding the thirty cases of carcinoma of the prostate he says that radium treatment has caused with surprising regularity the reduction or disappearance of carcinomatous nodules in both early and advanced cases. The reduction has lasted fifteen months in one case, and eight months in two, but the others have been observed only a month or two. Symptomatic improvement accompanied this reduction as shown by increased weight and strength, decrease in frequency of urination, and return of, or improvement in, erections. The technic of the application is as follows: The emanations are placed in the end of a gold or steel needle, extending from the tip an inch and a half along the sheath. These needles are four to six inches long, and are inserted through the perineum into the prostate, or further into the vesicles, under local anesthesia with 0.5 per cent. novocaine and epinephrin. The needle is left in one lobe for six hours, and then changed to the other lobe. Little or no pain is felt during the twelve hours of application, and the patient can urinate or be catheterized. Fifty m. c. of radium are used in the needle, practically unscreened. The patient usually has pain in the prostate and urinary frequency beginning about three days after irradiation and lasting a number of days or weeks. Sometimes the reaction is severe. Great care needs to be used about second or subsequent irradiations, as the tissue seems to be much more sensitive to radium after the initial dose. No second treatment is given until the effect of the first has entirely passed over. Only time will tell whether any of the patients have been cured. Nineteen of the thirty were advanced cases, having either very large prostates, marked perivesicular involvement, or both. Eleven were early; six of these are better; one is dead; and four have been treated recently.

Treatment of Rheumatoid Arthritis of the Hypertrophic Type.—John L. Porter (*International Journal of Surgery,* September, 1917) puts the patient to rest in bed and the joint is swathed in flat strips of gauze saturated with the following lotion:

Tr. opii,	30.0;
Liq. plumbi subacetati dil.,	40.0;
Tr. arnica,	50.0;
Ext. hamamelis aqu.,	60.0

The affected part is then enveloped in a large fomentation of flannel wrung out of hot water around which a rubber sheet is wrapped and outside of the rubber sheeting several hot water bottles are placed. The fomentations and hot water bottles are renewed every two or three hours; the gauze strips are saturated three times daily. If any part of the spine is involved, or the sacroiliac joint, hip, knee, shoulder, or elbow, traction is put on with a weight and pulley. This brings about a relaxation of the muscles around the joint. After the above treatment has been carried on from two to seven days the muscles are relaxed and motion without pain has increased. A plaster of Paris cast is then employed. The cast is worn from one to eight weeks and if the joint is still sensitive when it is removed another is put on. If the lotion, heat, and traction do not relieve the pain at the onset, local injections are given into the joints. They are of three per cent. solution of formalin in olive oil and are preceded by a hypodermic of 0.25 grain morphine with atropine. When the above treatment has been instituted a thorough search for the cause of the infection is begun, and when the focus has been discovered it is eradicated wherever possible.

Heat Stroke.—H. Gauss and K. A. Meyer (*American Journal of the Medical Sciences,* October, 1917) after an analysis of these cases of heat stroke give the following as the routine treatment they are accustomed to follow: All patients with a temperature of 103° F., or over are immediately placed in a tub of tap water, the level of which is just high enough to cover the body except the head, which is supported in a hammock packed with ice. Vigorous friction is applied to the entire body by four or more persons; ice is added freely to the water, the friction maintained constantly, and the temperature is taken rectally every minute. Generally the temperature is reduced to 102° in from ten to thirty minutes, and then the patient is removed from the bath, wrapped in sheets or blankets, and put to bed. The temperature usually continues to fall, frequently becoming subnormal, 95° to 97°. Cardiac stimulants, strychnine, sodium caffeine benzoate, digitalis, or strophanthus, are given freely, an ice bag is placed at the head, and chipped ice is given by mouth. External heat is applied for subnormal temperatures. For recurrences of temperatures up to 103° cold packs and alcohol sponges are given; for those above 103° recourse is had again to the cold water friction bath. Recurrent temperatures cannot be reduced as easily as the initial high temperature, and sometimes the temperature continues to rise in spite of prolonged friction in cold water. Morphine, chloral hydrate, scopolamine, bromides, and mechanical restraints are used to control restlessness and convulsions.

Treatment of Heart Disease by Drugs.—William Dewey Alsever (*New York State Journal of Medicine,* September, 1917) prefaces his remarks on the drug treatment of heart disease by the statement that this is only a minor factor in its management. Specific drug treatment is very limited in heart disease. Syphilitic heart lesions can be checked and made to recede to a certain extent by the proper use of salvarsan and mercury, but the lesions almost invariably leave scars which permanently damage the integrity of the heart. Much can be done in this disease by prevention, which consists in the thorough specific treatment of all cases of syphilis at the earliest possible moment. The acute heart failure of diphtheria is amenable to specific treatment by the administration of antitoxin, early and in sufficient doses. When heart failure is threatened in a case of diphtheria it calls for an increase in the dose of antitoxin at once. While there is no truly specific treatment for rheumatism, much can be accomplished in a preventive way with reference to the heart lesions by the early and efficient use of the salicylates. In the symptomatic or palliative treatment of heart disease, which is the field in which most treatment is attempted, the members of the digitalis group are the most valuable and most important. There is no better, and at the same time no cheaper, preparation of digitalis that those of the Pharmamacopœia—the tincture, the infusion, and the powdered drug. These should be used in standardized form, for which purpose the most satisfactory method is that of Hatcher and Brody. There is no advantage in using foreign grown digitalis as the domestic product is of equal potency. While auricular fibrillation constitutes the one disorder of the heart most favorably and strikingly influenced by digitalis, there is reason to believe that other forms of cardiac failure can be favorably influenced by its administration, and the only contraindication of importance is the presence of a heart rate below sixty a minute. A sufficient quantity of the drug should always be given to secure the beneficial effect or to produce some demonstrable effect. High blood pressure is no contraindication to its use. The other members of the group are of far less value, except strophanthin for intravenous or intramuscular injection to secure immediate effects. Cactus grandiflorus is practically devoid of all digitalis action. Strychnine is of value only in so far as it improves the general tone of the body muscles and nervous system, for it has no action upon the heart directly. The caffeine group of drugs are of no value as cardiac stimulants, but in the presence of edema may be of much help in stimulating the flow of urine. Alcohol is purely depressant, except in respect of a slight local irritant action which reflexly stimulates the heart. Camphor and ammonia have similar fleeting actions. Epinephrin is too fleeting to be of any material value. The nitrites are of little value even for the reduction of a high blood pressure as their effects are of very brief duration Aconite may be of some use in slowing the heart where that organ is overacting against a sustained high blood pressure.

Hydrotherapy of Heart Disease. — Hubert Schoonmaker (*New York State Journal of Medicine,* September, 1917) states that a neutral tub bath between 93° and 98° F. without the addition of salts is sedative and depressant to the heart if prolonged and is of value only in palpitation and Graves's disease. Hot immersion baths are stimulating and secondarily depressing and are contraindicated in weak hearts. The beneficial baths in heart weakness are the cold ones below 93° F. producing stimulation of the sensory nerves, contraction of the muscles of the skin and capillaries, secondary relaxation of these with stimulation of the vasomotor nerves, contraction of the arterioles, and elevation of the blood pressure. Respiration is also stimulated, relieving the congestion of the right heart. The addition of calcium and sodium chlorides encourages capillary dilatation and the introduction of carbon dioxide relieves the sensation of cold by providing an insulation of minute bubbles all over the body. The bath treatment of heart conditions should begin with the bath at a temperature of 94° F. of seven minutes' duration. The temperature should be reduced one degree and the time lengthened one minute every second or third bath until the baths last for sixteen minutes at 86° F. A course usually includes eighteen to twenty baths. The saline and gas contents of the baths should be gradually increased, just as the time and temperature are. The patient should be relaxed during the bath and following it he should be dried in a hot sheet and made to rest on a couch for at least an hour. The contraindications for this treatment are cases with lost myocardial reserve, acute dilatation, advanced myocarditis, or fatty degeneration of the heart; the terminal stages of cardiorenal disease; cases with failure of response on the part of the skin capillaries; and heart failure secondary to nephritis and arteriosclerosis.

Method of Flapless Amputation.—W. Sampson Handley (*British Medical Journal,* August 25, 1917) offers the following as having all of the advantages of the guillotine method with none of its disadvantages, and as being applicable equally to primary and secondary amputations. The essential feature of the method consists in the cutting of the bone, which is done subcutaneously through two punctures. Through one of the punctures a metal tube or pair of curved forceps is passed, until it is made to encircle the bone as far as the second puncture. Through the latter a Gigli saw is passed and drawn out through the first opening. The bone is then cut by the saw, the sawing being done in a direction away from the large vessels, and the end is removed by heavy forceps and blunt dissection with the aid of a periosteal elevator. The operation may be performed in two stages if the patient is in bad condition; the first is the severance of the bone, the second its removal and the closure of the wound.

Reamputation.—W. A. Chapple (*British Medical Journal,* August 25, 1917) recommends a method of reamputation which is applicable equally to infected and suppurating amputation stumps and to those which are clean, and which has given uniformly successful results in his hands. The reamputation of the femur will illustrate the method. A long anterior and short posterior flap is dissected up, the muscular tissues being retained, but cut at a level slightly higher than that of the skin. These flaps are retracted by a cloth retractor to prevent bone dust becoming lodged in them. The periosteum is incised circularly well distal to the point where the bone is to be cut and it is carefully reflected in the form of a cuff, splitting and buttonholing being avoided. The bone is then sawed off, its edges rounded by a rasp or cutting forceps, the vessels are picked up and clamped, and the nerves are cut off after reflecting a short portion of their sheaths which is then drawn down over the cut ends. The periosteum is then drawn down over the end of the bone and closed by a pursestring suture, thus covering the bone and preventing its infection if the wound is not clean. The soft parts are then washed with bichloride of mercury solution before the retractor is removed, to get rid of the bone dust and prevent the occurrence of bone grafts. The flaps are then brought together and united by button sutures, using either vulcanite buttons or rubber tubing. These sutures are of silkworm gut and the anterior ones are inserted about one and one half inches from the skin margin, staple fashion with the tube or button parallel to the skin edge. The sutures are passed through the posterior flap to emerge about two to two and one half inches from its edge, where they pass through a tube or a button. The flaps are pressed into position and the sutures tied. Then the line of the skin incision is sutured in the ordinary manner and a small drain is inserted. By this plan all of the tension is borne by the button sutures and there is no cutting out of the skin sutures, even in the presence of suppuration. In every case the wound heals by primary union or a modified secondary union. The use of button sutures also maintains the muscles of the flaps in close apposition and permits a firm union of them over the end of the bone, either directly to it or to a firm fibrous mass, either of which gives a perfectly mobile stump well under muscular control.

Combined Röntgen and Arc Light Therapy.—G. D. Bond (*American Journal of Electrotherapeutics and Radiology,* August, 1917) first noticed benefit from the arc lamp in an attempt to relieve pain in a case of epithelioma of the lower lip. He has since used it in all cases of epithelioma in which pain continues regardless of the usual amount of Röntgen treatment. It is also valuable in the healing of many painless skin cancers, especially those about the face and neck. The ordinary tissue paper scar left after Röntgen treatment is rendered much less noticeable by the arc lamp, and in some cases the skin function is entirely preserved. It is of still greater value cosmetically in other skin diseases under Röntgen treatment, especially eczema, acne, and celoids. The lamp used is a thirty ampere arc with a parabolic mirror so adjustable as to permit of any desired degree of light concentration. The adjustment should be such as to permit of applying the greatest amount of heat, just short of causing discomfort. There is no appreciable effect, however, from the heat, the results being entirely ascribed to the penetrating rays of white light. The best results were obtained by applying the light for fifteen minutes every other day, in alternation with the Röntgen exposures.

Modern Treatment of Acute Infectious Diarrhea.—A. J. Waring (*Southern Medical Journal,* September, 1917) says that serums and vaccines are valueless in the best hands, and therefore at the present writing their use is merely an expense to the patient. He divides the offending organisms into two groups, the dysentery and the gas bacillus. In the dysentery group he considers the wisest diet to be a dilute and dextrinized food, barley, rice, arrowroot, or cream of wheat gruel, given at regular intervals, one to four hours, in quantities of from one to six ounces, according to the child's condition and gastric control. This diet may be wisely preceded by a twelve to twenty-four hour starvation interval, when only weak tea sweetened with saccharin is given. In this early stage a dilute solution of condensed milk, malted milk, or lactose five to seven per cent. is justifiable. The lactose solution recommended by Morse supplies a certain amount of energy, saves some tissue destruction, and possibly in its slow absorption produces a certain amount of lactic acid unfavorable to the growth of the dysentery bacillus. As the disease progresses favorably the cereal and carbohydrate diet can be strengthened. After convalescence is nearly established boiled skimmed milk may be added to the gruels. Panapepton, liquid peptonoids, egg albumen, and broths are all ideal culture mediums and are not to be used. When the diarrhea is due to the gas bacillus the diet should be protein, with a certain small amount of carbohydrate to favor the growth of the lactic acid bacillus. A prepared, fat free, lactic acid milk, buttermilk, or casein milk forms a suitable diet. Sometimes it is hard to tell to which group the case belongs, and then, sometimes, a dietary of ten or twelve hours will tell which diet is the better.

Treatment of Syphilitic Brain Conditions.—G. H. Williams (*Ohio State Medical Journal,* October, 1917) points out that while in only two per cent. of syphilitics paresis develops, every case may be potentially one of paresis, tabes, or cerebral syphilis. One or two examinations of the blood and spinal fluid should be made of every syphilitic yearly. A series of seventy-five cases of paresis were treated with deep mercury injections once weekly for two years. The results were fairly satisfactory. Cases of cerebral syphilis or syphilitic meningitis of the base of the brain show more lasting benefit from treatment than cases of paresis.

Mesothorium and Combination Methods in the Treatment of Cancer.—F. D. Donoghue (*Boston Medical and Surgical Journal,* September 13, 1917) holds that all superficial ulcerations and precancerous conditions yield readily to local ray therapy. Moderate doses should be used at first; if there is no response choline injections are given intramuscularly as a preliminary to a second dose. Large ray doses are indicated for deep cancers, which should be made accessible to the surface, and means should be provided for the draining of decomposition products. It is desirable to cause the cancer cells to disappear rapidly enough to overcome its growth, and so slowly that too much cancer toxin is not set free into the system. There is not enough radioactivity in the world to treat properly malignancy by the massive dose alone. Where there are metastases no treatment is other than palliative.

Chronic Heart Block.—John M. Blackford and Fred A. Willius (*American Journal of the Medical Sciences,* October, 1917) say that alpha iodine quickens the idioventricular rate in complete heart block, and that this is followed by marked subjective relief to the patient. The drugs must be pushed to the tolerance of the patient and the dose then reduced to the largest amount that can be taken without discomfort. The auricular rate increases much earlier and to a much higher figure proportionately than the ventricular rate. At present we do not know the effects of long continued administration of large doses of alpha iodine in patients not suffering from thyroid insufficiency, so it is recommended that this remedy should be used only to relieve the Stokes-Adams syndrome in chronic heart block. Digitalis should be used in all cases of chronic heart block in which there is evidence of myocardial insufficiency.

Treatment of Nephritis.—Richard C. Cabot (*Long Island Medical Journal,* August, 1917) says that he regards the presence of nausea in cases of acute nephritis as Nature's attempt to get rid of poisons and prevent extra burdens being thrown on the kidneys through food. Therefore in the presence of nausea no attempt is made to give the patient any food whatever, although water is given by rectum in the form of normal salt solution, of which eight ounces are given every four hours by the drop method. If much edema is present in acute nephritis purgation by magnesium sulphate and hot air baths are given, but these measures are never prescribed in the absence of edema as they may then be dangerous or even fatal. The hot air bath is, next to bleeding, the best method of reducing an elevated blood pressure. When these patients cease to be nauseated the diet is ordered excluding proteins, especially meats, and salt. The diet at this stage is made up mainly of milk. Later carbohydrates are added, along with fats, but the proteins are still kept very low. In cases of chronic nephritis it is useless to try to spare the kidneys and much harm may be done by attempting to do so, since a low diet leads to exhaustion if kept up for any considerable time. The diet should be full with the great reduction of the purin containing foods. Meat may be allowed once daily in a small amount, and there is no choice between the red and white meats. Meat soups should not be allowed and salt should be excluded, except as it must be used in the course of cooking. An arid climate is helpful, but not if the patient is made unhappy by having to leave his home. The various medicated waters so widely advocated for use in nephritis are utterly useless. The heart must be aided by prescribing moderate daily exercise. Drugs to reduce blood pressure when high, as well as the high frequency current, are both useless and irrational. None of them is capable of lowering the pressure for more than a few minutes and it is fortunate for the patient that such is the case.

Treatment of Later Stages of Trench Nephritis.—J. Michell Clarke (*British Medical Journal,* August 25, 1917) says that the disease seems to be a diffuse nephritis of the convoluted tubules and is distributed focally in the kidneys. The symptoms are those which might be expected from such a lesion and the course of the condition varies with the extent of the involvement and the rapidity with which different foci clear up. The treatment has been fairly uniform and has given very gratifying results. At first all patients are kept in bed until albumin and casts have disappeared from the urine and there is a fair salt and nitrogen balance; or until there seems to be no prospect of the albumin and casts disappearing. The diet is limited to milk in the very severe cases and in the others it is fixed at two and one half pints of milk, six ounces of bread, one ounce of rice, four ounces, each, of potatoes and greens, half an ounce of butter and one ounce of jam, with fruit occasionally. The food is prepared without the addition of salt, except in the green vegetables. As improvement progresses bread is increased, egg yolk is added, and later small amounts of fish or chicken are permitted. The diet must always be given by weight. Water is allowed freely. Simple diaphoretics, saline or other purgatives, and hot air baths are used when necessary. Nitroglycerin is given when the blood pressure is elevated. Iron follows in the later stages if there is anemia. Where there is deficient secretion of urine Fischer's sodium carbonate treatment is employed, beginning with hourly doses of 0.6 to one gram of pure crystalline sodium carbonate in 250 mils of water and increasing the interval between doses when there is free diuresis. Digitalis and caffeine are also employed, alone, together, or combined with the alkaline treatment when it fails to promote an adequate diuresis. Sensations of great prostration can be much relieved by the administration every four hours of epinephrin in doses of 0.2 to 0.3 mil.

Miscellany from Home and Foreign Journals

Do Moving Pictures Injure the Eyes?—C. A. Bahn (*Annals of Ophthalmology* July, 1917) arrives at the following conclusions: Moving pictures, under favorable conditions, do not cause as much fatigue as the same period of concentrated reading. Most persons who complain that moving pictures cause ocular discomfort have some ocular defect. Moving pictures, under favorable conditions, act as a slight test of distance eye endurance. A person with no defect of the sight mechanism should be able to enjoy at least four sittings of one and a half hours each a week with no discomfort. Under unfavorable conditions moving pictures cause increased fatigue which, if continued, produces symptoms that are unpleasant and may be harmful. By staring fixedly at one object on the picture for a prolonged time, fatigue is greatly increased and unpleasant symptoms are produced. A person should not stare at any one object, but should try to look at different parts of the screen, and should either close the eyes or look about the theatre for a few seconds about every five minutes. Every person has an individual standard of eye endurance. When your eyes become fatigued in a picture theatre, leave. Within bounds either your eyes or the pictures are at fault. If the pictures, go where they are presented under more favorable conditions; if your eyes, see an oculist that he may study and eliminate the cause. A review of the literature to date records no permanent harm to the eyes from moving pictures. The fact that ten million persons enjoy moving pictures daily with no definite reports of specific harm or injurious effect, and with but few complaints of slight inconvenience, proves that the moving picture can have no injurious effect upon the eyes.

Alopecia and Dental Abnormalities.—R. Sabouraud (*Presse médicale,* August 23, 1917) calls attention to the embryological similarity of the hair, teeth, and nails, and to the fact that in subjects with extensive alopecia dental abnormalities are almost regularly to be found. The tendency to alopecia often seems to date back as far as the period of formation of the teeth, the alopecia, when not apparent at any given time, nevertheless existing in a latent, potential form, just as the tendency to psoriasis may persist throughout life in spite of periods of apparent recovery. Four types of dental deformity were noted by the author in the presence of alopecia: 1. Presence of the tubercle of Carabelli, a rudimentary additional cusp on the internal aspect of the first two upper molars on each side. 2. Cup shaped erosions or flutings near the cutting margins of the incisors on their anterior surfaces. 3. Fournier's "screwdriver incisors," with the distal third of each tooth narrower and thinner than the basal two thirds. The distal third of the molars is also unduly small, the premolars are conical, and before the teeth have become worn down, their grinding surfaces are covered with small elevations like millet seeds. Malocclusion due to faulty alignment of the teeth is also frequent. 4. Microdontia, all the incisors but the upper median ones being too small and abnormally spaced, while the molars do not project sufficiently from the gums. In all the cases of which illustrative dental casts are presented by the author, alopecia coexisting, congenital syphilis was still shown by the Wassermann reaction. While not maintaining that all extensive alopecia is due to syphilis, Sabouraud asserts that among cases of extensive alopecia many exhibit both the dental abnormalities referred to and a positive serum test. Evidences of syphilis should therefore henceforth be carefully sought in all instances of extensive alopecia, and if found, the appropriate treatment instituted.

Production of Acute and Chronic Kidney Lesions with Bacillus Mucosus Capsulatus.—Ralph H. Major (*Journal of Medical Research,* September, 1917) describes experiments made with this organism on a series of carefully controlled rabbits. To establish an approximate standard of dosage, a twenty-four hour agar slant was washed off with five c. c. of sterile salt solution. Intravenous injections of this emulsion were given in varying amounts. It appears that definite kidney lesions can be produced in rabbits by this method, as acute, subacute, and chronic nephritis were caused by these injections. The changes correspond closely to those in human nephritis.

Coincident Pregnancy and Tabes.—Edgar M. Allen (*Journal A. M. A.,* September 22, 1917) points out that pregnancy rarely occurs in a tabetic woman because tabes is relatively uncommon in women, because sexual desire and power is decreased early in the disease, and because most of the cases of tabes occur late in the sexual life of the woman. The literature of the occurrence of tabes and pregnancy is very scant and the number of cases reported is very small. The record of another case is therefore of interest and value. The author's patient was thirty-seven years old and had had one child and two spontaneous miscarriages before the last pregnancy. Both of the miscarriages were painless and her first delivery was not as painful as usual. The first child had a rash shortly after birth. When seven months pregnant for the fourth time she was first seen, complaining of difficulty in walking, descending stairs, and getting about in the dark, which had been troublesome for three months. Shooting pains in her thighs had troubled her frequently for the two years previously. Physical examination revealed Argyll-Robertson pupils, absent knee jerks, Romberg sign, and ataxic gait. Both blood and spinal fluid gave positive Wassermann reactions. When she went into labor she had no pains whatever and labor was indolent and prolonged. When there was complete cervical dilatation a small dose of pituitary was given and delivery of a normal seven pound boy was completed in one hour, during which she had pain of about half of the usual severity. No anesthetic was required. No syphilitic lesions were found in the placenta, which was only slightly smaller than normal and rather dense in consistency. The puerperium and future progress of both mother and child were normal.

Carrel Treatment of Wounds Applied to Civil Practice.—Joseph S. Lawrence (*Johns Hopkins Hospital Bulletin,* September, 1917) describes a simplified method for using the Carrel-Dakin method in hospitals, dispensaries, or in the office on ambulant patients. He emphasizes the importance of the bacteriological phase of the question. To get satisfactory results, Dakin's solution must be prepared strictly in accordance with Daufresne's formula; it must be remembered that the system is not one of drainage, but of irrigation or laking, and bacteriological examinations must be frequently made to test the efficacy of the treatment. The technic is carefully described, and stress is laid upon the need for the most accurate aseptic precautions, as reinfection may occur at any time, either with the same or different organisms. Counts of the bacterial content should be made every second day, and the method for doing this is reported. The Carrel treatment of wounds is advantageous because it checks spreading of the infection, lowers the patient's temperature quickly, eliminates pus, and simplifies dressings. Scar tissue production is minimized, surgical repair, sets in early, and after recovery, interference with the function of the part is less.

A Case of Claustrophobia.—W. H. B. Rivers (*Lancet,* August 18, 1917) records the case of a medical man thirty-one years old who was of a very nervous temperament and who suffered from some stammering and a very pronounced form of claustrophobia. The latter condition took the form of being afraid of closed spaces chiefly on account of the possibility of not being able to get out of them should anything happen. This phobia seemed to date from the time when he was six years old and was forced to sleep on the inside of a "box bed." Various attempts to cure the condition by psychanalysis, in which he was told that his trouble was connected with some sexual experience, failed to disclose the true cause of the condition and did not relieve him. Finally by means of a plan of psychanalysis carried out by the author and the patient, in which he was told to remember and study his dreams and recall any events which they suggested, and which did not even mention the possibility of a sexual element, the cause was brought out and much relief resulted. The cause was found to have dated from the time the patient was three or four years old when he was accidentally locked in a dark hallway with a growling dog at its further end. This was followed by several severe illnesses which probably gave occasion for the relegation of the memory to his subconscious. The absolutely free association practised in the analysis carried out mainly by the patient himself was what was required to recall the memory. It is emphasized by the author that much harm can be done and many failures recorded when psychanalysis is practised with the obsession that there must be some suppressed sexual element at the basis of the patient's trouble. The only scientific way to proceed is to encourage absolutely free association of ideas without suggestion as to the probable ultimate revelations which will emerge. The associations should be analyzed as they occur and the patient's thoughts then directed somewhat along the lines which seem the most promising.

Observations on Surgical Shock.—Yandell Henderson, A. L. Prince, and H. W. Haggard (*Journal A. M. A.,* September 22, 1917) present a preliminary report of their work on the causation of shock. The stimulation of sensory nerves is known to liberate epinephrin and it is possible that the prolonged secretion of an excess of epinephrin into the blood may be a factor in the production of shock. This is shown not to be the case, however, by the results of animal experments in which measured amounts of epinephrin were injected continuously over long periods of time. The earlier observation that there was a diminished blood content of carbon dioxide in animals under shock, combined with the more recent advances in our knowledge of the subject of acidosis, led to the belief that this condition might be closely related to the cause of surgical shock. Animal experiments confirmed the view of a close relationship, for the induction of shock was always accompanied by a marked grade of acidosis. The reduction of the carbon dioxide content of the blood in shock seems to be due largely to the excessive pulmonary ventilation due to the administration of open ether or to the stimulation of painful manipulations. This results, either in a loss of alkali or a formation and retention of acids. If the loss of carbon dioxide be prevented by rebreathing through a long tube or by the administration of a mixture of oxygen and carbon dioxide, the latter in the proportion in which it is normally present in the alveolar air, the development of shock may be prevented.

Quinine Anaphylaxis in a Malarial Subject.—J. Hèran and F. Saint-Girons (*Paris Médical,* August 25, 1917) report the case of a man of twenty-five years, infected with malaria five months before, in whom the necessary quinine treatment could not be carried out, every attempt to administer the drug bringing on vomiting, bilious and even blood stained; facial congestion; abdominal pain; violent urticaria of the lower limbs and trunk; dyspnea; hoarseness; and a tendency to edema of the glottis. The phenomena closely resembling those of the anaphylactic shock, Besredka's method of antianaphylactic protection was applied. A preliminary cachet containing five mgm. of quinine sulphate and 0.5 gram of sodium bicarbonate was given and followed in an hour and a half by a cachet with 0.1 gram of quinine. The patient felt only a trace of itching. Later the dose was increased to 0.2, 0.4, 0.8 and finally one gram, each dose being preceded an hour or an hour and a half by the small protective dose. The malarial attacks were rapidly overcome and the patient soon left the hospital in a satisfactory condition. Objections to considering this patient's reaction to quinine as an instance of anaphylaxis on the grounds that nonalbuminoid substances do not cause anaphylaxis and that in this case there had been no sensitizing dose of quinine are held invalid by the authors. Anaphylaxis has been stated to occur with lipoids, sodium chloride and bicarbonate, and salvarsan, and Richet recognizes a general type of anaphylaxis, in which the system can be sensitized by substances quite different from that inducing the anaphylactic shock. In this patient, moreover, even the drop in blood pressure and that in the number of leucocytes, characteristic of anaphylaxis, were observed.

The Immune Response in Renal Tuberculosis. Ellis Bonime (*American Journal of the Medical Sciences,* October, 1917) regards the prognosis in renal tuberculosis to be unfavorable under the present day method of treatment. Nephrectomy as an operation for the relief of the patient suffering from tuberculosis of the kidney is a failure, for it fails to remove the focus of infection outside of the kidney, leaving the patient liable to extension of the infection to the remaining kidney from the same focus. The tuberculin treatment of renal tuberculosis has not been as satisfactory as the tuberculin treatment of other forms of tuberculosis, because of the inability to make an early diagnosis, and the production of early damage before the tuberculin treatment was instituted, and as a result of the failure to recognize the important rôle that mixed infection plays in the production of symptoms and pathological processes. It is almost certain that if tuberculin treatment of renal tuberculosis were instituted early in the disease, prior to the production of permanent damage, the prognosis would be better. Early diagnosis of renal tuberculosis can be accomplished through the tuberculin test alone, and the more frequent use of this test when early symptoms are referable to an indefinite lesion anywhere in the urinary tract is absolutely essential to the more hopeful treatment of renal tuberculosis.

Abdominocardiac Reflex and Visceroptosis.—L. Pron (*Paris médical,* August 4, 1917) lays stress on a high pulse rate in the standing posture in subjects with faulty abdominal statics. In fifteen out of thirty-two cases of this type the pulse rate exceeded 100 in the standing posture; in eleven it exceeded eighty; in only six was it below eighty. The difference between the pulse rates in the standing and recumbent positions is deemed the best index of the intensity of the abdominocardiac reflex. In only seven of the thirty-two cases was this difference less than ten beats; in twelve it was between ten and twenty beats; in eleven, between twenty and thirty, and in the remaining two cases, thirty-two and forty-eight beats, respectively. Among eighteen subjects with normal static conditions of the abdomen, on the other hand, only three showed a difference exceeding ten beats, and in none did it exceed twenty; in four, moreover, the pulse rate was higher in the recumbent than in the standing position. Pron agrees with Prédel that the abnormal acceleration in the standing position in visceroptosis is due to dragging of the intestines and especially the stomach, on the gastric fibres of the vagus nerve. Undue irritability of this nerve may also, however, be a factor. The author advises, in general, that the pulse be counted only with the patient recumbent. In subjects with faulty abdominal equilibrium he recommends the use of a supporting belt, preferably twelve centimetres broad, resting posteriorly on the hips, and pulled rather tight. If the stomach is greatly ptosed, the belt may have to be somewhat narrower to fit in between the stomach and pelvis. In patients whose flat abdomen affords no purchase below the stomach, a pad of flannel or cotton two or three centimetres thick should be attached within the belt. Dyspeptics should have plenty of rest in recumbency, especially after meals, to obviate the harmful effects of intraabdominal repletion.

Intermittent Closing of Cerebral Bloodvessels.—Alfred Gordon (*Virginia Medical Semi-Monthly,* September 7, 1917) reports a series of fourteen cases—eight with autopsy—which leads him to believe that intermittent paralytic conditions sometimes occur due to an irritable state of the walls of a cerebral vessel, this condition resulting in repeated sudden occlusion of the vessel and suspension of function in the tissues supplied by it. Such attacks of paralysis may or may not be accompanied by transient aphasia. Instead of complete motor hemiparalysis there may be only hemiparesis or a very slight weakness. At times there occur repeated attacks of paresthesia on one side, each attack usually leaving slight feebleness on that side. After a certain number of brief attacks, the subsequent ones show a tendency to greater duration, with the motor phenomena becoming more conspicuous. Among the causes of these transient contractions of the vessels the most important is the vascular degeneration due to syphilis, alcoholism, and lead intoxication. With years, an actual diseased condition of the vessel walls is established, with thrombosis as final result. The intermittent apoplectiform attacks could thus be considered as premonitory warnings of eventual complete occlusion. In the treatment, due attention should be given to metabolic changes, accumulation of toxic products, hygiene and diet, and the elimination of excesses, physical and mental.

An Electrocardiographic Study of a Heart Showing Ectopic Auricular Contractions.—Drew Luten (*American Journal of the Medical Sciences,* October, 1917) describes a case of cardiac arrhythmia caused by almost constantly occurring ectopic auricular contractions, which he studied especially to determine what influence the vagus nerves might have on the ectopic focus of stimulus production. It has been found that stimulus formation in the ectopic focus is under the control of the vagi as well as in the normal pacemaker of the heart. The ectopic beat is inhibited when the vagus activity is increased, and occurs frequently and regularly when the vagus activity is lessened or removed. There is no conclusive evidence that the ectopic focus is under the control of one nerve more than the other. The time relationship of the ectopic beat to the preceding ventricular contraction may be an important factor in determining whether or not the ectopic beat of the auricle will stimulate the ventricle to contract, and whether this contraction of the ventricle caused by the ectopic auricular beat will yield a normal or aberrant complex in the electrocardiogram. Other factors than conduction changes may be important in this relationship, and the shorter time occupied by ventricular systole as the heart rate increases, causing the refractory period to end sooner than it does when the rate is slow, is suggested as a factor in allowing the ectopic beats to stimulate contraction of the ventricles when the rate is fast and not to cause ventricular responses when the rate is slow. The case described shows a splitting of the P wave of the electrocardiogram during periods of increased vagus activity, which may be interpreted as due to a change in the location of the pacemaker. A record of auricular activity arising synchronously in two separate foci is shown.

Proceedings of National and Local Societies

THE AMERICAN LARYNGOLOGICAL ASSOCIATION.

Thirty-ninth Annual Meeting, Held at Atlantic City, N. J., May 28, 29, 30, 1917.

The President, Dr. JOSEPH L. GOODALE, in the Chair.

Laryngology and the War.—The president, Dr. JOSEPH L. GOODALE, of Boston, after expressing his appreciation of the honor conferred on him, proceeded with the opening address.

Aside from the fact that lesions of the upper air passages were especially frequent in the present war, both from the character of the missiles and from the use of asphyxiating gases, observers had noted a great increase in inflammations of the nose and throat spread by contagion among the masses of men in modern trenches. The contributory causes were prolonged stay in the trenches, the dampness and want of ventilation in the dugouts, together with the defective light, in which the virulence of microorganisms was increased, or at least the bactericidal influence of sunlight and fresh air was absent. These conditions appeared to favor not only the spread of acute catarrhal infections, but also of cerebrospinal meningitis. The importance of stamping cut foci of this latter disease had suggested the desirability of examining recruits with reference to the possibility of their being carriers through lodgment of the meningococcus on the mucous membranes of their nasopharynx. Disinfection of the mucous membranes of carriers had been successfully accomplished by placing the individual in a chamber containing a certain percentage of chloramine vapor for a few minutes. The procedure was said to cause but slight irritation to the mucous membranes, but seemed to have almost a selective action on the microorganisms in question.

Some sections of the line appeared to be especially unhygienic, and numerous cases occurred of infection which in ordinary life were rare, such as perichondritis of the larynx and primary laryngeal tuberculosis. Latent systemic disease was prone to light up, such as tuberculosis and syphilis. Bleeding from the nose, trachea, and bronchi, at times of an alarming extent, often occurred. In albuminuria, fatigue and cold were apt to bring on glomerulonephritis, a not infrequent symptom of which was edema of the glottis. The unfavorable influences were increased by the difficulty of changing clothing, transportation in open vehicles, and by rapid changes of temperature. Direct laryngoscopy had proved its value in locating traumatic lesions.

Another matter which he presented was the slackening up of scientific work in the allied countries in the early part of the war. We should differentiate between educators and investigators whose position permitted deflection of their activities into channels capable of rendering a direct national service, and those who, by reason of their age, lack of physical qualifications, or from the nature of their work regretfully felt that they must stand aside without a definite service to offer. These latter were capable of making a very real contribution to the nation. It was for them to uphold the traditions of their past, to maintain without faltering their customary work of teaching and investigating, and to present to their comrades whose good fortune it might have been to participate more directly in military service, on the return of peace, a definite record of having kept undimmed each in his own chosen field the light of education and of research.

Further Observations Upon the Use of Radium in Diseases of the Upper Air Passages.—Dr. D. BRYSON DELAVAN, of New York, presented a summary of 184 cases of cancer of the upper air passages out of a total of 422 cases from a report by Doctor Ewing and Doctor Janeway, of the Memorial Hospital, New York. The successful cases given in the report of cancer of the mucous membranes were illustrative of the best service that radium could perform. In the majority of them the lesion was small and probably operable, but for some reason operation was deemed inadvisable or was refused. While all showed complete clinical retrogression, this—from the point of view of those who consider as cured only those patients who were well after three to five years—might be an absolute cure. The proof must be left to time. His conclusions were: Knowledge of the use of radium was making steady progress; the work of but one year in a single institution showed a marked advance; as with surgery as applied to carcinoma, the best results with radium were gained by the prompt treatment of early cases; how long before the use of radium would be proved worthy to supplant surgery was a question.

Dr. CHARLES W. RICHARDSON, of Washington, D. C., said he had had unfortunate results after the use of radium in five cases, four of cancer of the tonsil, and one of cancer of the cheek. His patients all died. The cancer of the cheek was discovered very early. One point in favor of radium in the treatment of these cases was the wonderful relief from disagreeable symptoms. With radium treatment his cases did not look like extensive malignant disease of the tonsils. There was very little odor and the lives of the patients were fairly comfortable. One died from hemorrhage, and the other three from toxemia. They were apparently in good health except for the local condition.

Dr. ROBERT CLYDE LYNCH, of New Orleans, said he had four patients, one of whom he believed was definitely well—at least the patient had no recurrence for eighteen months. In another case operated upon with a third recurrence the application of radium to this area caused perfect and complete subsidence of every evidence of the recurrence now for six months. In this instance, as in the first, he was able to apply the radium actually to the site involved. He believed inability to secure results in the laryngeal areas was due to the fact that the cartilage acted as an interceptor to some of the rays, or influenced the action of the radium within the laryngeal box.

Dr. E. FLETCHER INGALS, of Chicago, said that the effect of radium in one of his cases was marvelous. At the end of about eight days a large tumor in the pharynx had completely disappeared, and the ulcerated surface, representing the base of the growth, completely healed. The patient still could not swallow, and cancer of the esophagus lower down was found. Application opened up the stricture decidedly, and a later application opened it up so that the patient could swallow very well. In one of the earlier applications the throat was burned and there was considerable sloughing. The patient had a great deal of discomfort for ten or twelve days, but the burn finally healed.

Dr. J. PAYSON CLARK, of Boston, said that he was very much impressed with the relief afforded by radium treatment.

Dr. LEWIS A. COFFIN, of New York City, said that he had a little experience in the last year with radium and was thoroughly discouraged in its use and the effects from it. However, he was glad to get anything that added a ray of hope to forlorn cases. In one of his cases all the symptoms were very much relieved, but the patient began to lose ground and soon died. In another patient a growth in the epiglottis grew more rapidly than if we had not used radium.

Dr. BURT R. SHURLY, of Detroit, believed firmly that this method of treatment should be used in all cases of malignancy where surgical methods are not sufficient to accomplish results. There was a great deal in the scientific application of it, and in the dosage and method by which it was applied. It was a field in itself, and we should have expert direction in that branch of the work.

Dr. EMIL MAYER, of New York, asked Doctor Delavan in which class of cases this treatment was most successful. Was it not possible that the removal of a specimen of the growth for microscopical examination stimulated the recurrence of the disease?

Dr. HARMON SMITH, of New York, believed that variations in the results of the application of radium were due to the fact that practically all tumor growths varied in virulency, and that those cases which are benefited by radium were less virulent than cases which went on in their natural process of malignancy to a fatal termination.

Dr. NORVAL H. PIERCE, of Chicago, believed that while a growth might show the characteristics of carcinoma under the microscope, it might vary greatly in malignancy. We had not arrived at any well defined opinion regarding the beneficial effects of radium, even at the present time. His experience with radium had been in a broad sense disappointing. Pain had been diminished and the odor had decreased, but the disease had swept on as though nothing had been done. If we depended upon radium for a cure in the early stages of laryngeal carcinoma, we would have about as much effect beneficially or otherwise, in the large majority of cases, as we would have if we depended upon faith. We only wasted time. The only chance for cases of carcinoma of the larynx was thorough removal by external means at a very early date. Whether we applied radium or not was immaterial.

Dr. JOSEPH BECK, of Chicago, stated that his results were absolutely negative in deep seated growths, not of far advanced cases, but of those which he ordinarily classed as operable. When radium was employed in such cases the ultimate result was either laryngectomy in time to save the patient, or a fatality.

If Doctor Mayer would have us treat cases without touching the growth, we would not know what we were treating. Without microscopic examinations of the growths, it seemed to Doctor Beck, the subject would not advance very far.

DOCTOR DELAVAN, in closing the discussion, said that the work at the Memorial Hospital was far in advance of anything that he knew of that had been done anywhere else. Their attitude was purely experimental; time would give more definite results, or at least more conclusive results. Of all the cases treated, twenty-two, or twelve per cent., were believed to have fairly retrogressed. Seventy-nine cases, or forty-three per cent., were improved; seventy-nine cases unimproved. That made a total of fifty-five per cent. supposed to be improved, as against forty-three per cent. unimproved. In cancer of the esophagus, stomach, etc., the statistics are just about the same. The method must be adapted to the case, and the ingenuity of the one managing the case must play an important part in the selection of the means of application.

Dr. Robert Abbe's device for the application of radium to the more remote recesses of the body was especially useful in the larynx and pharynx. It could also be introduced in any part of the upper nasal cavity, which was extremely difficult to reach by any other method. An instrument which had come to be used in the treatment with radium, was an obturator like a plate for artificial teeth, extending backward to the site of the growth and furnished with grooves in which the radium could be placed to the location desired. Cancer of the throat was almost hopeless. We did not get the true statistics of surgery of the larynx. Perhaps it might, therefore, be just as well to exercise a little patience toward radium until we found out what it could do, and look forward with hope meanwhile to cheer the men who were working to perfect it.

Removal of a Large Lymphoangioma from the Larynx.—Dr. CHARLES W. RICHARDSON, of Washington, D. C., reported the following case: This growth presented grossly a large bluish, mottled mass in the supracordal portion of the larynx, attached on the right side from the false cord, the aryepiglottidean extending over to and covering the false cord on the opposite side. This was removed by endolaryngeal method, the writer having first determined that it was not a hemorrhagic growth. On removal by puncture, it had a soft pultaceous feel and exuded a syrupy bloody fluid. It was five centimetres in length, three and a half centimetres in breadth, and two and a half centimetres in depth. The pathological investigation demonstrated it to be a true lymph angioma.

Carcinoma of the Larynx Treated with Radium.—Dr. ARTHUR W. WATSON, of Philadelphia, said that his patient was a physician, about seventy-three years of age. There had been increasing hoarseness for a year, without inflammatory symptoms, pain or cough; the general health was good, the general history was negative. Examination of the larynx showed a smooth, red, sessile growth or swelling on the left side beneath the vocal cord, extending from the anterior commissure backward about one half the length of the cord, and downward from the cord about one half inch. It seemed to involve the under surface of the cord. Movement of the anterior half of the cord was restricted, which caused bowing in phonation. The growth was sharply defined and the other parts of the larynx appeared to be healthy. A clinical diagnosis of carcinomatous epithelioma was made. A microscopic examination was not made. When first seen the growth was one that could, undoubtedly, have been removed by laryngofissure, but in consideration of the age of the patient and the fact that he was in favor of trying the effect of x ray or radium, it was decided not to operate. The radium was applied to the outside of the larynx; eleven mgm. radium, filtration one millimetre of lead and one and one half inches of gauze, for three hours. This was repeated in February, 1915—six treatments, 198 mgm. hours. March 1st the radium was increased to twenty mgm., filtration one millimetre lead, one half inch gauze, applied for three hours. This was repeated six times, 360 mgm. hours. March 17th forty mgms. radium was applied, filtration same as before, for three hours. Repeated six times, 720 mgm. hours. Various applications were made, none of them satisfactory, and it had to be abandoned. The external application of the radium was again instituted in the following dosage: Forty mgm. radium, filtration one millimetre lead and one half inch gauze, applied five hours July and August, in all nineteen applications, 4,200 mgm. hours. September 23rd, about one month after discontinuing the radium, it was noted that the growth was apparently gone, the left vocal cord was a little slower in movement than the right, and the skin over the larynx was inflamed. On April 2, 1917, the patient returned with hoarseness, which he had noticed for a month or more. Examination showed a small nodule beneath the edge of the left vocal cord near the anterior commissure, the site of the old trouble. Radium was again used a few days later, forty mgm. for twelve hours. The larynx was examined two weeks later. The growth was found to be smaller, the neck inflamed. April 25th, only a slight thickening remained. The voice was again almost normal. The same condition was present when last examined. With a better knowledge of the dosage, better results may be expected, especially if the radium could be applied from within the larynx, which would be made easier by a tracheotomy.

Dr. ROBERT C. MYLES, of New York, said that it was a question whether in the early stages of incipient cancer it was better immediately to remove the cancerous mass with the adjacent tissues and if it recurred to use radium, or to use radium without microscopic examination. As far as the secondary or tertiary conditions of cancer are concerned, he believed it was unwise not to use radium for the hope it offered in the relief of pain and odor.

Dr. HENRY L. SWAIN, of New Haven, said that Doctor Watson's paper was a model in the way it presented the dosage, method of treatment, length of treatment, etc. It left us with a spirit of hopefulness. In exchanging experiences now, we ought to come to some conclusions. He believed one thing was clear: we should not putter around with other means if we were going to use radium, and we should get at it early. Inadequate dosage was worse than nothing. On the other hand, we must not use such a tremendous dosage that we kill either the surrounding tissues or the patient.

Dr. E. FLETCHER INGALS, of Chicago,, was under the impression that the dosage here was quite as important as in giving strychnine; that is, if too large a dose was given it would do more harm than if nothing had been given. Some patients could tolerate larger doses than others. He tested each individual patient—a small dose at first, repeated, according to its effects.

Doctor WATSON, closing the discussion, pointed out that he wished to emphasize the question of dosage. He believed that if the dose was so heavy that the normal tissues around the growth were destroyed, cicatricial tissue was produced in which the malignant disease might more readily be reproduced. This might be the reason for failure to cure the disease in some cases.

Tuberculoma of the Tongue.—Dr. CARL E. MUNGER, of Waterbury, Conn., reported the case of a man thirty years of age. The patient's tongue presented a craterlike cavity situated on the dorsum, at the junction of the middle and posterior thirds, in the median line, the prebase of the tongue. At the bottom of the crater was a marked ulceration covered with a yellowish slimy secretion, and from the central ulceration were narrow, sharply marked ulcerations radiating to the circumference of the thickened and indurated mass. The surface of the swollen mass was yellowish in color, and there was marked and exquisite tenderness upon the slightest pressure, with much pain at every movement of the tongue. This pain was localized and not radiating when the tongue was at rest. There was present also the condition known as nigrities. While the tubercular ulcer may be primary or secondary, a primary tubercular lesion of the tongue was extremely rare, although a few cases of tuberculous infection of the tongue following traumatism have been reported. Speaking generally, the tongue was more often inoculated from the lungs than the lungs or larynx from the tongue.

The case reported presented a marked deviation from the usually reported situation of tubercular lesions on the tongue, which have almost invariably been stated to occur either on the tip or sides, this one being on the dorsum, a site on which we usually found a gumma. The prognosis was not dependent upon the lesion itself, but was influenced alone by the fact as to whether the patient was suffering from concurrent lesions in other parts of the body which were not susceptible to improvement, or from pulmonary tuberculosis, where there was a tendency to fibrosis. If the latter was the case, there was a fair degree of certainty that the tongue lesion might heal without local therapy, but if the pulmonary process was acute, with caseation and necrosis active, there was little chance of the tongue healing.

Dr. THOMAS H. HALSTED, of Syracuse, stated that seventeen years ago he removed tuberculous tonsils from a girl twelve years of age. A year or two afterwards a surgeon removed the cervical glands of the neck, which were tuberculous. Two or three days later a mastoid developed, and in the course of that, a localized pachymeningitis. They thought it was tuberculous meningitis and expected her to die, but she recovered. In the course of two or three years tuberculosis of the phalanges developed, and a thumb and a finger were operated upon. She then acquired tuberculosis of the nasal mucous membrane, which Doctor Halsted curetted and applied lactic acid for a number of months. Then a tuberculous ulceration of the alveolus developed four or five years ago. Within the past two years she acquired tuberculosis of the nasal septum, and the tuberculous process extended so that now it involved the tip of the nose; it looked as though she would lose the tip of her nose. This girl, during this whole period, has been a seamstress, and was of course living a fearful life, with a great deal of pain in the mouth and tongue, but she was very hopeful for some new cure. In spite of all the disease processes, they had never been able to discover anything in the lungs. Diagnosis was made through scrapings and the findings of the bacilli.

Dr. HARMON SMITH, of New York, did not think that Doctor Halsted's case was a tuberculous ulcer. It was in the median raphe, away from the border of the tongue, where irritation of a tooth would make an ulceration. It was a fertile field where tubercle bacilli would grow. We should not confuse tuberculous fissures of the tongue and tuberculous ulcerations of the tongue with tuberculoma.

(*To be continued.*)

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Letters to the Editors.

MISLEADING POPULAR HYGIENE.

425 Porter Avenue,
BUFFALO, N. Y., *September 20, 1917.*

To the Editors:

In an article, An Examination of How to Live, which was published in the August issue of the *Medical Times,* I took occasion to direct attention to many inaccuracies of statement and discrepancies in that book. *How to Live,* by Professor Irving Fisher and Dr. Eugene Lyman Fisk, is a manual authorized by the Hygiene Reference Board of the Life Extension Institute. Published under such auspices, the book has a power to mislead and confuse, and its fallibility is all the more impressive. Since I am not a physician, though having been a student of hygiene and vital statistics for many years, I avoided comment on strictly medical matters, but even so, the material open to question was extensive. Reference to my article, in which I have given page references to *How to Live* and definite citations of authorities for correction, will show that the book is as vulnerable in its general, sweeping statements of the basis of healthful living as it is in its presentation of particular "facts." While the book purports to state the conclusions of the members of the Hygiene Reference Board and to "constitute the most authoritative epitome . . . in the great . . . realm of individual hygiene," two of the members of the Board disagree with statements in the book, and one went so far as to state in a letter to me that he did not regard himself responsible in a detailed way for the charts or statistical data in the book. Dogmatism, loose reasoning, logical fallacy, and superficial deduction vie with statements in which there are glaring differences of opinion among authorities and statements which have been known to be inaccurate for some time since by scientists. I am not impugning the motives of Doctor Fisher and Doctor Fisk. I have no doubt that their sole object in writing their manual was to benefit the people of the United States, but the results of their errors are exactly the same as if they had wilfully misled their readers. Misstatements in a book of this sort, published for circulation among the laity, should be given wide publicity.

Yours very truly,
LAWRENCE A. IRWELL, M. A., B. C. L.

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Book Reviews.

[*We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.*]

The Conversion of Hamilton Wheeler. A Novelette of Religion and Love. Introducing Studies in Religious Psychology and Pathology. By PRESCOTT LOCKE. A Voluntary Contribution to the National Mental Hygiene Movement. Bloomington: The Pandect Publishing Company, 1917. Pp. 285. (Price $1.25.)

Great strides forward have been made in recent years in the elucidation of the etiology and mechanisms of psychopathological states, but the results of the profound researches in this domain have remained, in great part, concealed from the average physician and even more completely from the layman, who is most vitally concerned. The inherent complexity of the problems and the enormous difficulty of presenting the facts and arguments in a readily comprehensible form have been deterrent factors in the spread of the knowledge. Prescott Locke, whoever he may really be—and we would sincerely like to know, that we might congratulate him in person—has undertaken this task of presentation of causes and mechanisms in one important field, that of religious psychopathology. He has endeavored to present his arguments in the course of a novel so as to reach both layman and physician. It has taken profound courage to present this work, even under a pseudonym, for it is bound to call down upon the author a veritable torrent of invective and vituperation from a large proportion of the clergy and from hosts of men and women who are themselves the unconscious victims of unfounded beliefs which have been enduringly impressed in their subconscious minds at times and under conditions when they were least able to resist them through mature reason. The particular evils at which the book is aimed are those of evangelism as manifest by the present wave now rolling over this country. The fundamental contention is that evangelical methods are cleverly, even diabolically, elaborated to undermine the reason of men and women, and more especially of youths and maidens between the critical ages of beginning puberty and blossoming maturity. Having artfully undermined the reasoning faculties, "conversion" of large numbers becomes simple. Each convert, however, is started on the road to a more complete mental derangement as is borne out by the large proportion who promptly commit immoral acts or even crimes and yet others who become insane. The mechanism by which all this mental unbalance is brought about is the subject of a series of detailed explanations, and if we cannot quite agree with every one of these the fault is probably our own. Certainly we can agree fully with the general conclusions reached. The book does not point the way to atheism, though it certainly does, with logical reason, point out the evils of dogmatic theology, superstition, and sectarianism. Were space available we would like to go further into the arguments of the book, but it is perhaps better that we should not, for the volume should be read by all who are interested in mental hygiene. In fairness to the author, however, we must ask those who read to weigh the arguments and not to give vent to passing emotions or resentment, but to reserve criticism until they are finished. The two great defects in this endeavor are the disproportionate length of didactic monologues and the failure to tell an active and appealing story.

After Office Hours.

Neither Sidis or Manaceine nor any of the other investigators have ever solved the problem of sleep. It is best, perhaps, to mingle our gratitude with Sancho Panza and be content to sleep without worrying about the why. But how if one cannot sleep? In the *American* for November, Dr. James J. Walsh discusses the question of imaginary insomnia, whatever that is. In the same issue Jack Lait tells of an honest laborer who slept peacefully through a night which his roommates spent in trying to find a roll of money they knew he must have secreted about the room.

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Meetings of Local Medical Societies.

Monday, *November 12th.*—New York Ophthalmological Society; Society of Medical Jurisprudence; Roswell Park Medical Club of Buffalo; Williamsburg Medical Society, Brooklyn; New Rochelle, N. Y., Medical Society; Yorkville Medical Society (annual).

Tuesday, *November 13.*—New York Academy of Medicine (Section in Neurology and Psychiatry); Medical Society of the County of Schenectady; Medical Society of the County of Rensselaer; Buffalo Academy of Medicine (Section in Medicine); Newburgh Bay Medical Society; New York Obstetrical Society; Medical Society of the County of Chautauqua.

Wednesday, *November 14th.*—New York Pathological Society; New York Surgical Society; Alumni Association of Norwegian Hospital, Brooklyn; Schenectady Academy of Medicine; Medical Society of the Borough of the Bronx; Richmond County, N. Y., Medical Society; Rochester Academy of Medicine; Brooklyn Medical Association.

Thursday, *November 15th.*—New York Academy of Medicine (stated meeting); Auburn City Medical Society; Geneva Medical Society; German Medical Society, Brooklyn; Æsculapian Club of Buffalo; New York Celtic Medical Society.

Friday, *November 16th.*—New York Academy of Medicine (Section in Orthopedic Surgery); Mount Vernon Medical Society; Clinical Society of the New York Post-Graduate Medical School and Hospital; New York Microscopical Society; Alumni Association of Roosevelt Hospital; Saratoga Springs Medical Society.

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Official News.

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending October 31, 1917:

Beebe, Lela J., Acting Assistant Surgeon. Directed to proceed to Newport News, Va., on special temporary duty.

Clark, T., Surgeon. Directed to proceed to Newport News, Va., for conference in regard to medical inspection of school children.

Glennan, K. R., Scientific Assistant. Directed to proceed to Macon, Ga., on special temporary duty.

McBurney, J. W., Sanitary Bacteriologist. Relieved from duty in the investigation of creamery waste disposal, Grove City, Pa.; assigned to duty at Hygienic Laboratory, Washington, D. C.

Pierce, C. C., Senior Surgeon. Directed to deliver an address on service work in extra cantonment zones at Fort Smith, Ark., October 30, 1917.

Prather, D. J., Assistant Surgeon. Directed to proceed to Greenville, S. C., on special temporary duty.

Ritenour, W. S., Acting Assistant Surgeon. Directed to proceed to Anniston, Ala., on special temporary duty.

Scott, E. W., Passed Assistant Surgeon. Relieved from duty at Baltimore, Md.; directed to proceed to Newport News, Va., for duty in extra cantonment sanitation.

Treadway, W. L., Passed Assistant Surgeon. Directed to proceed to Little Rock, Ark., for conference relative to medical supervision of school children in Pulaski County.

Tuck, D. H., Assistant Physicist. Directed to proceed to Washington, D. C., for special temporary duty in the investigation of lighting conditions.

Wilson, J. G., Assistant Surgeon. Directed to deliver an address at the meeting of the Jackson County Medical Society, Kansas City, Mo., November 7, 1917.

Casualty.

Acting Assistant Surgeon W. R. P. Thompson died at Gulfport, Miss., October 28, 1917.

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Births, Marriages, and Deaths.

Born.

Cartland.—In Lewiston, Me., on Wednesday, October 24th, to Dr. John E. Cartland and Mrs. Cartland, a son.

Dunbar.—In Pawtucket, R. I., on Sunday, October 21st, to Dr. Edgar J. Dunbar and Mrs. Dunbar, a son.

Married.

Bigelow-Doyle.—In Springfield, Mass., on Thursday, October 18th, Dr. James B. Bigelow and Miss Katherine Doyle.

Emery-Sponsler.—In Columbus, Ohio, on Friday, October 26th, Dr. W. C. Emery, of Canton, Ohio, and Miss Margaret Sponsler.

Falsey-Ridinger.—In New Haven, Conn., on Wednesday, October 17th, Dr. Edward T. Falsey and Miss Emma M. Ridinger.

Markus-Freedman.—In Cleveland, on Tuesday, October 16th, Dr. William Markus and Miss Leona Freedman.

McCain-McBrayer.—In Sanatorium, N. C., on Wednesday, October 17th, Dr. Paul Pressley McCain, of Due West, S. C., and Miss Saide Lou McBrayer.

McPherson-Bockus.—In Manchester, Mass., on Wednesday, October 24th, Dr. Sidney H. McPherson, of Hartford, Conn., and Miss Clarice Bockus.

Richardson-Platt.—In Chattanooga, Tenn., on Saturday, October 20th, Dr. Ralph A. Richardson, of Fort Oglethorpe, Ga., and Miss Estelle M. Platt, of Bristol, Me.

Weishaar-Roche.—In Burlington, Vt., on Thursday, October, 18th, Dr. Leo G. Weishaar, of Fort Ethan Allen, Vt., and Miss Anna E. Roche.

Died.

Allers.—In New York, N. Y., on Monday, October 29th, Dr. Henry Allers, of Harrison, N. J., aged fifty-one years.

Burns.—In North Reading, Pa., on Monday, October 29th, Dr. Newell B. Burns, aged thirty-five years.

Kolmer.—In Indianapolis, Ind., on Sunday, October 21st, Dr. John Kolmer, aged fifty-one years.

Lewandowski.—In Boston, Mass., on Thursday, October 25th, Dr. Joseph Lewandowski, aged fifty-three years.

McCallie.—In Knoxville, Tenn., on Thursday, October 18th, Dr. William A. McCallie, aged sixty-six years.

Miller.—In Chicago, Ill., on Friday, October 19th, Dr. A. Baxter Miller, aged forty-five years.

Nathan.—In Boston, Mass., on Monday, October 22d, Dr. Albert Nathan, of Charlotte, N. C., aged thirty-one years.

Presbrey.—In Taunton, Mass., on Tuesday, October 23d, Dr. Silas D. Presbrey, aged seventy-nine years.

Schoolcraft.—In Schenectady, N. Y., on Tuesday, October 23d, Dr. John L. Schoolcraft, aged sixty-four years.

Shay.—In St. Louis, Mo., on Saturday, October 20th, Dr. Elbridge A. Shay, aged sixty-eight years.

Tallman.—In Chicago, Ill., on Saturday, October 27th, Dr. W. Lewis Tallman, aged fifty-nine years.

Thomson.—In Philadelphia, Pa., on Sunday, October 21st, Dr. Archibald Graham Thomson, aged forty-eight years.

Trafton.—In Boston, Mass., on Tuesday, October 30th, Dr. Alonzo G. Trafton.

Ward.—In Troy, N. Y., on Sunday, October 28th, Dr. Richard H. Ward, aged eighty-one years.

Woolley.—In Atlanta, Ga., on Sunday, October 28th, Dr. Basil M. Woolley, aged eighty-three years.

New York Medical Journal

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Original Communications

THE ROENTGEN RAY IN THE DIAGNOSIS OF PNEUMONIA, PLEURAL DISEASES, AND PULMONARY TUMORS.*

By Morris Manges, M. D.,
New York,
Professor of Clinical Medicine, University and Bellevue Hospital Medical College; Visiting Physician, Mount Sinai Hospital.

In the bronchopneumonia of adults the x rays are of little value unless the areas of infiltration are so large and numerous that they have coalesced into large patches. The small scattered foci of the ordinary bronchopneumonia are often too small to produce distinct shadows. It has been said that it may be difficult to differentiate these from the shadows observed in some cases of tuberculosis. Such statements are purely academic, since the history and course of the two diseases are usually too unlike to cause any such confusion.

In the cases of acute lobar pneumonia observed in hospital practice the x rays are of relatively little value except at the beginning or in the later stages of the disease. In the fully developed disease the patients are as a rule too sick to lend themselves to much investigation, and this is limited to the use of plates only. Still, the x ray examination by means of plates can be carried out in quite a number of patients; but the results will be unsatisfactory unless the observer is skilled and has a good apparatus, because of the rapid breathing of the pneumonia patient and his inability to hold his breath.

The indication for the use of the x ray in the early stages before the diagnosis can be made by the physical signs exists in patients with unexplained fevers; or it may arise in the later stages when one suspects complications such as pleural effusion, empyema, interlobar abscess, and abscess or gangrene of the lung. Serous or purulent effusions may often be recognized by exploration with the needle, and many may think that the x rays are superfluous in these cases. This is by no means true and will be referred to later on. The x rays are absolutely indispensable in the other complications which yield so few and misleading signs to the ordinary method of physical examination. Nowhere is this better shown than in interlobar abscess in which the hanging shadow makes a striking x ray picture. Abscesses and gangrene do not give such clear shadows in the majority of cases. But in all of these three complications of pneumonia the x ray examination may be lifesaving to the patient in two ways: first, by making the diagnosis; second, by saving the patient the discomforts and dangers of the exploring needle. I know no field where more harm is done than in the repeated blind explorations in these very sick patients. I will say nothing of the physical suffering; I would rather emphasize the great harm done to them by the infection of the pleura and by the spreading of the infection in the lung by these repeated blind punctures. I would go even further and say that no aspiration for suspected empyema should be made if it is possible to have a preliminary x ray examination. Few physicians realize that the mortality of empyema is twenty-eight per cent.: some part of this mortality may be laid to the needless trauma and infection of the exploring needle.

The topical diagnosis of these postpneumonic complications which the x ray has made possible has also given us the new surgery of the lung in which such splendid work is now being done. In acute lobar pneumonia the shadow is usually wedge shaped with the apex at the hilus and the base toward the pleura. As it extends, the shadow is not homogeneous, as if there were various degrees in the development of the infiltration. The shadow is not so dense as it is in fluid or in pulmonary tumors; it does not stand out so prominently from the tissue of the lung. Red and gray hepatization cannot be differentiated. These are Rieder's views. Steyrer, on the other hand, asserts that there is no peculiarity by means of which a pneumonia can be differentiated from other pulmonary lesions except the rapidity of the change in size and form of the infiltrated areas. Hence the history must be compared with the findings. He also emphasizes the fact that pneumonia may occur in a tuberculous lung.

The x ray studies of acute lobar pneumonia have yielded some very interesting results. They have demonstrated that the old idea of a central pneumonia which has been subjected to so much ridicule is correct, in spite of the presence of the crepitant râles which so many clinicians believe arise in the pleura. No pneumonia begins at the periphery. It always begins at the hilus and extends toward the periphery. A few cases have been reported by Tendeloo in which the whole lobe was involved at once.

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*Read before the American Climatological and Clinical Association, Lakewood, May 31, 1917, in the symposium on the Röntgen Diagnosis of Thoracic Diseases.

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The focus of infiltration may be localized by the x ray a few hours after the initial chill, i. e., long before there are any physical signs to indicate the process. This is a very important observation which may of great practical value, for the x ray findings may often precede the definite physical signs by thirty-six hours or even more. Kraus and Rieder have even stated that they have been able to demonstrate definite shadows at the hilus in the so called one day pneumonia in which the patients are practically over the pneumonia when the patch is discovered by the physical signs. These observations have been strikingly confirmed by Whipple and his associates in the intensive studies which they have been conducting at the Presbyterian Hospital. The cases which were studied were those of patients with unexplained rises of temperature after operation. These usually occurred forty-eight hours after the operation with little or no cough. There may be some pleural pain; but if it is present, it is insignificant. There is no great increase in the respiration rate; in fact there is very little to call one's attention to the lung at all. Definite physical signs of pneumonia as a rule do not appear until twenty-four hours or more have elapsed; or they may not be found until the temperature has dropped, which is often in twenty-four hours. The x ray examination shows a wedge shaped shadow which begins at the hilus and extends toward the pleura. This shadow can be detected very soon after the initial chill or rise of temperature. These x ray findings are not found in all cases, but are present often enough to make it worth while to x ray the chest in all unexplained rises of temperature after operations.

Resolution usually proceeds from the hilus or it may advance from the periphery. There is no definite rule as to the length of time the shadow may persist after the patient has defervesced. In most cases it disappears promptly. In other cases it may persist for a long time showing that the infiltrated area has not returned to the normal. On the other hand, there are the cases in which the x ray is normal even when bronchial breathing and râles persist. It has also been noted that it is difficult to follow the lobar distribution of the pneumonic process. This is not to be wondered at when we recognize the technical difficulties and the fact that these sick patients make poor x ray subjects.

Interlobar exudates will be referred to later on.

In the recognition of abscesses of the lungs the difficulties are often great. They may be detected by the irregular round or oval shadows which are somewhat darker than the surrounding infiltrated tissues; the centres are sometimes lighter owing to the contained air; sometimes a fluid level may be seen. The shadow is more diffuse and is less definitely contoured when the process is gangrenous rather than an abscess. In abscess there is a tendency to the formation of cavities, whereas in gangrene the process is that of a dying off of larger or smaller masses. In abscess the contours are much sharper; in gangrene they are vague and the areas are larger. As already stated abscess shadows often have air or fluid in their centres. But all these details belong to the röntgenologist rather than to the internist.

Much will depend on the character and density of the pneumonia shadow in which the breaking down into abscess or gangrene takes place and this will explain why recognition of this process is easy in some cases and very difficult or even impossible in others. In most of these patients frequent and repeated examinations may be required before any definite diagnosis can be made. These x ray findings must always be studied in connection with the patient's condition, the kind of fever, and the amount and character of the sputum. These are the decisive factors and not the physical signs. It cannot be repated too often that the physical signs of abscess and gangrene of the lung are most misleading since in most patients they are surprisingly few and ill defined. The reason why so many physicians fail to make a correct diagnosis in these patients is that they do not realize this fact. The topical diagnosis on which so much depends for the radical surgical treatment can only be made by the x ray.

The development of adhesions and involvement of the diaphragm can only be determined by x rays. The same is true in the differentiation of pneumonia from subdiaphragmatic lesions. Kraus has shown that the development of diaphragmatic pleurisy is more frequent than is generally assumed. All of the cases which he observed except one occurred on the left side. The diaphragm was unusually high and had no respiratory movement. This could be verified by inspection of the left chest where no respiratory changes could be observed. This was to be expected from the fact that the patient avoids taking deep breaths on account of the severity of the pain. There was often a high tympanic note on percussion which may conceal the pneumonic process, this note being due to the high position of the diaphragm with its associated high position of the stomach and colon. There may be local pain and tenderness in the lower left chest. The differential diagnosis from encapsulated pneumothorax, subphrenic abscess, or acute dilatation of the stomach may be very difficult with the ordinary physical method of examination. With the x ray, however, the diagnosis is easily and promptly made.

From the somewhat academic value of x rays in the diagnosis of acute lobar pneumonia except in the early and late stages, we come to the much more important relation of the diagnosis of pleural conditions. As regards pleural effusions more definite and absolute information has probably been afforded us than in any other pathological conditions. We have had to unlearn many of our former views as to diagnosis and others have been verified. Of the latter the most striking is the correctness of Garland's S shaped curve of the upper level of the effusion. The fluid level is not a straight line. It is curved, being highest in the axilla, and slopes toward the vertebral column and the sternum. It is level only under two conditions: first, when fluid is secreted very rapidly, and second, when there is air, even in the smallest quantity, in the pleural cavity. It is surprising how small a quantity of air may change the curved line of the ordinary effusion into the horizontal line of a hydropneumothorax. Fibrinous adhesions play a very important part in the contour of the upper level and cause it to assume the most varied shapes. They may also cause the fluid to be encapsulated in various parts of the pleural cavity. That percussion flatness does not always coincide with the upper level is shown by the x ray because some of the flatness may be due to thick fibrin or compressed or solidified lung. Another misconception exists as to the rapidity of the change in the fluid level with change in the position of the patient. This takes place much more slowly than is generally assumed, unless air is present in the pleural cavity. In the latter condition the change takes place very rapidly. So, too, no diagnostic information can be gained from the density of the shadow as to the character of the fluid, for clear serum and thick pus give the same kind of shadow.

Kraus has called attention to the fact that the compressed lung above the fluid is not necessarily darker than the normal lung on the other side. On the contrary, it may even be less dense. Small exudates may at times be very difficult to discover on account of the shadow of the dome of the diaphragm. As a rule they collect in the pleural sinuses if there are no adhesions. Holzknecht has advised the distention of the stomach if the suspected small effusions are on the left side. When the quantity of the effusion is 500 c. c. or more the shadow is usually typical. Any deviation from this indicates either that the exudate is of long standing or that there are adhesions. The position of the diaphragm is usually low except when its movement is restricted by the presence of a diaphragmatic pleurisy. It is lowest in very large effusions or where the effusion is one of long standing. The exudates which I have found most difficult to determine by x ray examination are those which are associated with pneumonia. Here the combination of solid lung and fluid makes shadows which are often very difficult to interpret, so that faulty diagnoses are by no means uncommon. The physical signs would indicate fluid quite clearly, yet the x ray plates would be equivocal. In not a few of these cases the aspirating needle has proved the presence of fluid.

Interlobar exudates produce "hanging shadows" which extend along the fissure line from the hilus toward the lateral thoracic wall. The size of the shadow does not always agree with the area of dullness since much depends upon the distance of the exudate from the chest wall. So, too, the needle will not always find pus in all parts of the area indicated by the x ray because the dullness may have been partly due to compressed lung. Kraus emphasizes the fact that the upper border of the shadow is sharp, but that the lower is not so well defined on account of the presence of compressed lung. He also states that at times it may be difficult to differentiate the shadow of the interlobar exudate from that due to the infiltration of tuberculous glands in the hilus with an extension of the infiltration into the middle lobe.

The best results in the interpretation of fluids and exudates in the chest are to be obtained when the fluoroscopy is combined with the use of plates. If one depends upon either of these alone errors will frequently arise, and yet even when these are carefully combined mistakes may nevertheless occur. A striking instance of this occurred recently in a patient of mine where the x ray examination and the exploring needle both agreed in making the diagnosis of a localized empyema. At the operation, however, no pus was found in the pleural cavity. On the contrary, the lesions proved to be a small lung abscess. Similar instances must have occurred in the experience of everyone.

I must be pardoned if I again emphasize the fact that wherever it is possible to employ the x ray in pleural effusions, especially when an empyema is suspected, an aspiration should not be made before the x ray examination is made. Many needless aspirations may be avoided if this precaution is taken. Instead of going in blindly we can be guided as to where the needle is to be introduced, even if we are most skilled in auscultation and percussion. The very best results in empyema are obtained if we make a tentative diagnosis from the history of the case, the physical signs and the x ray findings; then turn the case over to the surgeon and let him aspirate with the patient on the operating table, prepared to be operated on immediately if pus is found. The failure of the old method of treating empyema is shown by its high mortality of twenty-eight per cent. and the marked deformities, repeated operations, and the extensive thoracoplasty in many of the survivors. As to what can be done to reduce this mortality and to prevent these deformities and extensive thoracoplasty I would refer to the excellent results which Lilienthal has obtained by his new methods in the early radical treatment by means of major thoracotomy. In this work the indications are largely guided by the information obtained by repeated x ray examinations.

Concerning pneumothorax much need not be said because the findings of the x ray and the old methods of examination usually agree. One point, however, deserves notice, and that is that small pneumothoraces are not infrequently found on x ray examination where one has little or no reason to expect them. In the past few years I have observed this eight times. These small localized air shadows are usually found near the mediastinum and were not associated with any displacement of the thoracic viscera. It is difficult to explain these cases. The simplest view is to assume the rupture of air vesicles in a part of the pleura which has been shut off by adhesions. This would explain the air remaining localized and would also explain the absence of any visceral displacement. All of these patients had severe coughing spells and it would be easy to assume that these paroxysms caused the rupture of air vesicles. In none of them had any aspiration of the chest been performed.

The thoracic tumors of interest in this symposium are those in the pleura and lung hilus and those associated with involvement of the mediastinum. The pleural tumors may be dismissed at once from consideration since in nearly every instance they have massive effusions which constitute the only x ray finding. The tumors of the lung which are most frequently encountered are those due to syphilis, sarcoma, carcinoma, hypernephroma, and Hodgkin's disease. Of these the Hodgkin's tumors give the most clearly defined shadows which are sharply contoured round areas: they are either single or multiple and may occur in any part of the lungs. These Hodgkin's tumors are usually disclosed only by the x ray; they are found by accident as a rule for they usually give rise to no physical signs and are discovered in patients with unexplained fevers who are submitted to x ray examination with the vague idea of being able to find something in the chest to establish a diagnosis. This of course does not apply to cases with an established diagnosis of Hodgkin's disease where the presence of respiratory symptoms indicates x ray examinations of the chest to discover infiltrations in the lung.

Syphilitic tumors usually show massive homogeneous shadows and are most commonly at the base, less frequently at the hilus. It is erroneous, however, to assume, as is usually done, that gummata are always at the base since they may occasionally occur in the upper lobe. The nature of the shadow will depend upon the changes which take place in the lung. Breaking down or cavities will give the characteristic pictures. If a gummatous process is associated with tuberculosis the pictures may be very bizarre and difficult of interpretation. Sarcomata vary, being sometimes sharply rounded in contour and at other times they have irregular, ill defined shadows. They may occur in any part of the lung and they may or may not have hilus infiltration. In carcinomata the infiltrations are extremely variable in their distribution, contour, and density. They are much more banded in contour with ill defined borders. They always radiate from the hilus and are always associated with extensive infiltration in the mediastinum.

The proper interpretation of x ray findings in pulmonary carcinoma is often extremely difficult and may baffle even the most expert reader of the screen and plates. This was recently well shown in two patients on my service in Mount Sinai Hospital. Both patients were elderly men who had suffered from hemoptysis and were admitted to the hospital for this symptom.

Case I.—A man, fifty-seven years old, had a bloody expectoration for four months which was at first mucoid and blood streaked; later it was pure blood. The physical signs were indefinite. Anteriorly on the right side of the chest there was impaired resonance to the third rib. There was moderate dullness in the interscapular space and some tympany was present at both apices. In the second right interspace there was a small area of bronchovesicular breathing and whispered breath voice. Apparently there was no diminution of the amount of air entering the right upper lobe. There were no râles except at both bases. No tubercle bacilli were found on repeated examinations, and the Wassermann test was also negative. The x ray examination showed coarse infiltration of the entire right upper lobe with broad, coarse strands which radiated in all directions from the hilus. From the fluoroscopic plates Doctor Wessler stated that he could not determine the nature of the infiltration. The diagnosis was cleared up by the bronchoscopy which was performed by Doctor Yankauer. He found a blood clot in the trachea which came from the right upper lobe and extended into the upper right bronchus. In this bronchus at a distance of two centimetres from the trachea he found a bulging of the bronchial wall reducing the lumen to one centimetre. The upper half of this bulging was contoured like the bronchus; the lower half was smooth and softened. The stenosis looked like one which was extrabronchial. A piece of tissue which was removed was found to be carcinomatous.

Case II.—A man, sixty-three years of age, had suffered from a cough and bloody expectoration for nine months. At the onset he raised a cup of blood, but later the sputum had been mucoid and bloody, six to eight ounces being raised in twenty-four hours, mostly during the night. In the right lung dullness extended from the apex to the second rib; posteriorly the right apex was dulled. The breathing over the right apex was harsh. The physical signs over the rest of the lung were normal. A moderate number of râles were scattered over both sides of the chest. The only change which could be noted was that the right side did not move as freely as the left. The examinations for tubercle bacilli were negative, as was also the Wassermann test. No diagnosis was possible from these few vague signs. Doctor Wessler reported the following: There was a dense homogeneous shadow with sharply curved outlines which extended from the right apex down to the level of the second space anteriorly. This shadow merged mesially with the shadow of the aorta, from which it could be distinguished. On fluoroscopic examination there was little if any pulsation in the shadow which seemed to occupy the entire right apex. The aorta was generally dilated. The heart was normal in size and on the right side showed pleuropericardiac adhesions extending from the right diaphragm from the border of the heart. It was not possible from the radioscopic examination to distinguish between a new growth and an aneurysm of the aorta. He was, however, inclined to favor a diagnosis of sacculated aneurysm of the ascending aorta. This diagnosis of aneurysm was not justifiable from the clinical picture, as this pointed more toward a pulmonary neoplasm. A bronchoscopy was therefore performed by Doctor Yankauer. He found a stenosis of the right upper bronchus which was due to the bulging in of the anterior wall one half centimetre below the bifurcation. Two centimetres below this the walls almost met, leaving only a small chink for the lumen. The lower part of the trachea was ulcerated. A piece of tissue which was removed was found to be a squamous celled carcinoma.

These two cases of bronchial stenosis due to carcinoma of the lung are most unsual and should not be used as a criterion. They are simply reported as showing the great difficulties which sometimes may be encountered in trying to establish a diagnosis of pulmonary carcinoma by means of the x ray.

The x ray diagnosis of malignant disease of the lung has an important practical significance to which Lilienthal has called attention, for these deposits in the lung may be metastases from malignant growths in distant parts of the body. "No limb should be amputated for sarcoma, no hypernephromatous kidney should be excised without röntgenological information about the condition of the lungs. If the characteristic discs of opacity are present it indicates a state in which palliation alone is justifiable. It is unfortunate that too few surgeons avail themselves of this valuable and informing aid to prognosis."

It is a matter of regret that the time at my disposal will not permit me to discuss the tumors of the mediastinum as this is a field the proper discussion of which would require more time than is available to me. I feel that I can devote this time to a better purpose if I close by referring to a subject of a more general nature.

Much will be said in this symposium about the good which is being done through the introduction and general use of the x ray in diagnosis. While agreeing with all this I should nevertheless like to refer to the harm which is being done by them. I refer to the neglect of the careful physical examinations which were the rule before the x rays were introduced into medicine. Then we had no such easy recourse and the diagnosis had to be made by repeated careful physical examinations, a careful weighing of the history in all its features and a search for signs even of the most apparently insignificant nature. By a correlation of all these a correct diagnosis was often made. Now only too often a superficial examination is made and only casual attention is paid to the history because so many, and I am sorry to say that I myself have been guilty of this, have preferred a resort to the alluringly easy x ray examination of the chest rather than to the painstaking working out of the details by the older methods. This neglect of the physical signs would not be any loss to us if the x ray afforded infallible diagnoses; but until it does so it is the duty of all of us who are entrusted with the teaching of students to encourage the use of the old methods of physical examination, the searching for every feature of the diagnosis, the careful correlation of the histories with the symptoms and to make the x ray examination play the rôle of being only a part of the physical examination and not the absolute and decisive one which is now so prevalent everywhere.

72 East Seventy-ninth Street.

LABYRINTHINE VERTIGO AND PAST-POINTING.*

By Walter A. Wells, M. D.,
Washington, D. C.

While the acoustic function of the labyrinth has been long known and studied, knowledge of its static function belongs entirely to modern history. It may be said to have definitely had its beginning in 1828 when Flourens experimenting upon pigeons found that he was able, by making lesions in their semicircular canals, to cause marked disturbances of equilibrium. Shortly afterward these observations were confirmed by De Cyon, who definitely proved that the vestibular branch of the acoustic nerve had really nothing to do with hearing, but was in fact the special nerve of static perception. Then came the classical experiments of Ewald which marked a great advance in the physiology and constituted in fact the foundation of our modern labyrinthine tests. Ewald, also experimenting upon pigeons, drilled small holes into their semicircular canals and inserted plugs of lead in the outer ends in the direction away from the ampulla. He then introduced into the canal, between the plug and the ampulla, a small tube connected with a rubber bulb. The effect of this arrangement was that compression of the bulb must cause the endolymph in the canal to flow always in one direction, viz., toward the ampulla, and suction always away from it. Testing the different canals Ewald made the important discovery that when the endolymph was driven in a certain direction there was a movement of the head and eyes of the animal in the direction of the current of fluid and furthermore that this movement was constantly in the plane of the particular canal influenced.

The next important era in the progress of our knowledge of the static labyrinth was in 1826 when the subject became suddenly transferred from the domain of experimental physiology to that of clinical medicine by the report by Menière of a classical case presenting sudden concurrent disturbance of static and acoustic functions in which post mortem there was found an exudation involving the semicircular canals. The authority of Menière made an enormous impression upon the medical world and his unfounded deductions dominate the literature of this subject even to this day. Recently a renewed impetus for the scientific study of the labyrinth was given by the work of Hogyes, a Hungarian, and von Stein, of Moscow, the latter emphasizing the portance of disturbances of the equilibrium in connection with diseases of the ear. It is, however, Robert Bárány, of Vienna, to whom the medical world is indebted for having brought a system out of the chaos and placed labyrinthine pathology on a firm scientific basis. His great work, *Physiologie und Pathologie des Bogengang Apparates beim Menschen,* appeared in 1907. This keen observer has perfected a series of elaborate tests, which enable us with a fair degree of positiveness to ascertain the functional activity of the static labyrinth.

In this country the labyrinthine studies have been taken up with enthusiasm by a number of otologists. To Shambaugh, of Chicago, we are indebted for valuable contributions to the anatomy of the labyrinth and to Eugene Lewis, of Dubuque, for working out some of the complex problems connected with its physiology. We associate the name of Kerrison especially with the symptomatology, and the name of Friesner with its surgical aspects. It is, however, to Philadelphia that we must turn for the last word on the labyrinth. Here Randall, Jones, and Fisher, working jointly, made distinct contributions to our knowledge of the subject. They have not only corrected some of the misconceptions of the Vienna school, but by the discovery of important facts have greatly widened the clinical application of the Bárány tests. They have furthermore standardized them and given them new significance.

The labyrinth is a small organ not over three fourths of an inch in length situated deep within the petrous portion of the temporal bone. It consists of a bony capsule, enclosing within it a membranous counterpart. The latter, the membranous labyrinth, contains a fluid known as the endolymph and is surrounded by another fluid known as the perilymph. Although anatomically one organ, there is a sharp division of the labyrinth on physiological grounds. The anterior part or cochlea is concerned exclusively with the perception of sonorous vibrations; the middle and posterior have nothing whatever to do with hearing, but have a special function to perform which has to do with the consciousness of our position in space and the maintaining of equilibrium. This functional differentiation of the divisions of the labyrinth is clearly emphasized in the division of the eighth nerve as it enters the organ into an anterior acoustic branch, which goes to the cochlea and terminates in the organ of Corti; and a posterior or vestibular branch, which is distributed to the saccule, utricle, and the semicircular canals.

Calling attention to the semicircular canals, one horizontal and two vertical, note that each one is at right angles to the other two and that they are so arranged as to correspond to the three cardinal dimensions of space. Is this not perhaps the reason that the human mind has had such difficulty in grasping the thought of a fourth dimension? Perhaps the lamprey, could it think about the matter, would likewise be perplexed about the existence of a third dimension, because nature has provided the petromyzon with one less canal than man and it perceives motion, therefore, in two directions only. The Japanese mouse with a single canal has apparently no notion of movement except that which occurs in the transverse plane. To it, then, the thought of even a second dimension must be a mysterious problem. Another thought suggested by the contemplation of the human mechanism of orientation is that it is clear man was never intended by the Great Architect to be a proud supercilious creature. Exact measurement shows that the horizontal canal is really only in the horizontal plane and thus able to appreciate best the motion for which it is intended when the head is inclined forward to an angle of 30°. We are bound to conclude, therefore, that the natural attitude of man is one that expresses a truly humble, penitent, and submissive spirit.

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The canals are for the perception especially of turning movements. For the appreciation of linear motion we have the saccule and utricle, the former for linear motion from side to side, the latter for linear motion of the body backward and forward. The perceptive end organ of the static labyrinth presents striking analogies with that of the acoustic labyrinth. In each case the delicate nerve elements suspended in a fluid medium, take the form of a small mound, covered with fine hairlike processes, and in each case overlying the hair cells we have a more or less gelatinous substance which, it is thought, by contact and interaction with the former, creates nerve impulses. The nerve endings of each semicircular canal lies in the bulbous expansion at one end of the canal and is misnamed the crista acustica. The terminal nerve elements of the saccule and utricle are known as the maculæ acusticæ and therefore similarly misnamed under the former erroneous impression that they were concerned with the function of hearing. Overlying the hair cells in the ampullæ of the semicircular canals, we find a gelatinous mass known as the cupula; in the saccule and utricle, we encounter a similar substance occupying a similar position known as otoliths and again in Corti's organ the cupula and otoliths have their exact analogy in the so called membrana tectoria.

No one can contemplate the interesting mechanism of the labyrinth without an impelling curiosity to understand nature's purpose in associating intimately in this one organ two functions of apparently so dissimilar a character. Is equilibrium in any way dependent upon the function of hearing? Is hearing in any way influenced by the sense of orientation? So far as we know no relationship exists between these two functions. To find an explanation we must turn, I think, to biology. The sense of orientation and equilibrium was naturally one of the earliest needs of the living moving organism and is undoubtedly much older phylogenetically than the hearing functions. The primitive static organ probably depended entirely for its impulses upon shocks and concussion which transpired in its environment, and was therefore attuned and adapted only, or at least chiefly, to the perception of impulses coming from without. There are animals, we know, which possess a delicacy of sense for the perception of vibrations in air or earth or water far above that of man, which might be likened to the delicacy of the seismograph. They possess what has been termed the seisesthesic sense. The sense of hearing was the outgrowth of this function. The organ was there for the reception of waves, and nature had but to add an annex with a specialized nerve mechanism adapted to the perception of vibrations of a certain periodicity which, becoming fused into a tonal sensation, are appreciated as sounds.

The static sense was at the same time undergoing evolution and new ways of orientation being developed. As the motions of the body in space can affect the fluid within the static organ, this movement of endolymph in the semicircular canals in different directions is utilized to give us knowledge of the various movements of the head. Instead, therefore, of having to depend upon impulses coming from without—exteroceptive impulses—the organism has found a new and better means of orientation by impulses arising within—proprioceptive. As the proprioceptive function increases in importance, the dependence upon impulse from without lessens, but the pathway remains, for it is still needed for the vibrations destined for the organ of Corti. Thus it is that the static and acoustic functions are still found in such intimate juxtaposition. While, as we have said, normally these functions are distinct and have nothing to do with one another, occasionally we have evidence of a connection in the occurrence of a phenomenon known as paracoustic vertigo, which I think only bears out the theory just outlined. The subject of this anomaly will have attacks of dizziness as a result of certain sounds. Several instances have been reported of persons being thrown completely from their balance by particular musical notes of even feeble intensity.

While the static labyrinth is essentially the organ of static function, it is not the sole means upon which the body depends for its knowledge of position in space and for equilibrium. Orientation is maintained as the result of impulses coming from three separate sources: sight, the kinesthetic sense or sixth sense, and static function of the labyrinth or seventh sense. Of these only sight is exteroceptive, the other two originating in impulse derived from the interior, are properly to be regarded as proprioceptive. The kinesthetic or sixth sense, or as it is sometimes called the sense of deep sensibility, is that which is derived from muscles, joints, and perhaps also viscera: from the joints the information being of passive states of the body, from the muscle that of active motion. We are told by physiologists that fully one third of the fibres of muscle nerves are afferent and do not degenerate on section of the anterior root. It is evident, therefore, that this is an important source of impulse useful in the maintenance of equilibrium. A disturbance or loss of this sense, as we find it in the tabetic, does not give rise to vertigo, but instead to incoordination and a disturbance of the equilibrium. While orientation is derived, therefore, from three sources, one of these may often be cut off without being greatly missed, but when two fail at the same time the handicap is very serious. Nature, however, is remarkable in the readiness with which compensation occurs on the part of the remaining functions in case of defect in one of the others. Vertigo, as we said, does not arise from a disturbance in the kinesthetic sense, but only from visual or labyrinthine disorder. That vision is to be regarded as one of the legs of the tripod is sufficiently evidenced in the ataxic, who may make out quite well with eyes open but is practically helpless when they are closed. How common vertigo of visual origin is and how serious it may be, I leave to the ophthalmologist to say. Also no attempt will be made to describe it except what can be inferred in a negative way from the description of labyrinthine vertigo which is characteristic.

It must be remembered that as an organ of static function the labyrinth is a part of a mechanism which, for want of a better name, we call the vestibular apparatus and which comprehends three parts: the end organ or labyrinth, the cerebral centres where the sensation is appreciated and interpreted, and the connecting pathways along which the impulses are carried. Vertigo may occur as a result of a lesion in any division of this apparatus or it may occur as a result of disease outside which in some way affected some part of this apparatus secondarily. It is within the province of the otologist not only to say whether or not vertigo has originated within or without the vestibular apparatus, but if within, to be able to indicate with some degree of precision the exact location of the lesion. For the purpose of this differentiation a study of the peculiarities of vertigo in its spontaneous manifestation is of value, but of far greater value are the so called Bárány tests by which one may experimentally produce a vertigo which in itself and in its associated phenomena is quite characteristic.

As regards spontaneous vertigo, that which is of labyrinthine origin will have the following peculiarities: 1. It is characterized by a sensation of turning; that is, objects whirl about the patient in a definite plane or if the patient closes his eyes, he has the sensation of himself turning in a definite plane. 2. As regards the patient's tendency to fall, the especially characteristic thing about it is that the direction of the falling can be changed by changing the position of the patient; this, according to Bárány, is pathognomonic of labyrinthine vertigo. By means of the Bárány tests, we are enabled experimentally to stimulate the end organ of the various semicircular canals and if the static labyrinth is functionally active produce a vertigo which manifests itself in definite forms that may be carefully observed and studied. These tests depend upon the fact that we may by certain physical forces, viz., heat, cold, and rotation of the body, produce in selected canals a movement in the endolymph which, as we know from Ewald's experiment, gives rise to the sensation of vertigo in certain definite planes. For the caloric test, we use an irrigator with cold water, which when head is upright, causes a downward current in the anterior vertical canal, and which can be made to influence the horizontal canal with the head bent forward or backward. For the rotation test the patient is turned a certain number of times in a smoothly revolving chair. This of course will influence only canals whose planes are parallel with the floor, that is, with the patient upright only the horizontal canals. To influence the verticals the head must be bent forward or backward or to one side.

Stimulation of the static labyrinth by either caloric or rotation methods gives rise to four orders of phenomena: vertigo, nystagmus, pastpointing, and falling. If no effect whatever is produced, we may be certain that either the labyrinth itself is functionally dead or that there is a lesion so located in the neuroaxial pathway as to block the stimulus completely on its way to the centres. If the reactions occur but in a subnormal degree we may argue a depressed functional activity in the vestibular apparatus, and *per contra* an overreaction after the use of the standard test allows us to conclude hyperexcitability of the mechanism. If, as sometimes happens, certain of the reactions appear as they should normally, while others fail altogether, we are justified in inferring that the trouble is not in the labyrinth itself, but situated somewhere centralward and in the particular branch of the pathway which has to do with conducting the kind of stimulus which has been cut off. Especially valuable for diagnostic purposes, was the discovery made by the Philadelphia school of neurootologists that the fibres from the horizontal semicircular canals have entirely different tracts from the fibres of the vertical canals. In a number of instances they have had the clinical experience of finding a perfect response from horizontal canals and not from vertical, and vice versa, and on the strength of this alone were able to give a valuable clue to the seat of an intracranial lesion.

We cannot here go into detailed account of the various reactions of the Bárány tests and their interpretations. We wish only to call brief attention to the so called pastpointing which will develop as a result of labyrinthine stimulation. Normally an individual, even though blindfolded, having fixed a spot in space with the index finger of one hand, can move this finger off to a considerable distance above or below or to one side and return the finger immediately to the spot with almost unerring accuracy. When, however, the semicircular canals have been stimulated by either of the methods mentioned—caloric or rotatory—the individual tested, instead of bringing his finger back to the original spot, will always deviate from it, and in a certain definite way according to the canal affected and the kind of stimulation. For example, turning the patient in the revolving chair, with the head forward at an angle of 30°, we cause a circulation of the endolymph in the horizontal canals. If we turn to the right say ten times and suddenly come to a stop, it is chiefly the left canal which has been stimulated. Give this individual the task of touching your finger after having located it and raised his arm vertically, and you will find that the arm will regularly swerve off to the right a distance of three or four inches. This phenomenon was termed by Bárány pastpointing, *Vorbeizeigen*, and it became the basis of his doctrine of cerebellar localization. Bárány believed that from certain centres in the cerebellum impulses arise which exert a tonus on groups of muscles, tending to cause them to pull as it were a certain way. For each joint he postulates separate centres, which maintain a tonus in different directions, upward, downward, outward, and inward. These centres balance one another normally but by reason of their connection with the labyrinth, they come under the influences of impulses originated here. Pastpointing, according to this author, like nystagmus, is therefore a sort of reflex or automatic phenomenon.

The teaching of the Philadelphia school differs radically from that of Bárány in this matter and it seems to me that their position is impregnable. The patient pastpoints to the right because of his sensation of dizziness. He points for example to the right only when and because he has a feeling that he is turning to the left. Let us suppose an individual, head upright in a revolving chair, has been turned ten times to the right. At the beginning of his rotation he feels himself turning to the right, because from inertia the endolymph in the horizontal canal lags behind and experience has taught him to conceive himself as turning to the right when the endolymph is pressing in the opposite direction. In a little while the endolymph has caught up with the movement of the body and if you now ask your subject which way he is turning, he answers that he is not turning in either direction, he has stopped turning. Now suddenly cease the rotation. The fluid continues to go to the right. The individual taught to believe that he is going in the opposite direction from the fluid, will now have a distinct sensation of rotatory dizziness in the opposite direction from which he is turned, viz., a vertigo in the horizontal plane to the left. Now have him with closed eyes touch your finger, and raise his arm from the shoulder and try again to bring it in contact with your finger. Feeling that he is turning to the left and therefore leaving the finger of the examiner behind him, he very naturally pastpoints to the right where he conceives the finger to be. That this is the true explanation and that it is not a mere automatic labyrinthocerebellar reflex, as maintained by Bárány, is well proved from the fact that if the individual, instead of being told to touch a fixed spot in space apart from the body, is told merely to raise and lower the finger from the knee for instance, the pastpointing fails and he will make the touch accurately. There is, therefore, no automatic pulling to one side, but the arm is brought directly upward and downward in the plane of the body because of the sensation that this plane is revolving with his seeming revolving body.

How, you may ask, is one to explain as a clinical fact the phenomenon of induced pastpointing failing in cerebellar lesion? Is this not a proof that it is in reality a cerebellar reflex, and has failed because of the injury to one of Bárány's hypothetical cerebellar centres? Not at all, because it can be equally as well explained as being due to an interruption on the part of a lesion of the tract of fibres passing through the cerebellum on their way to the cerebrum. It was Cajal who first demonstrated histologically that certain fibres of the nerve pass from Deiter's nucleus through the cerebellar peduncle to the cerebellum. On the basis of clinical data Isaac Jones and his colleagues have proved that while the fibres from the horizontal canal go by way of the inferior peduncle, those from the vertical ascend into the pons and pass over by way of the middle peduncle; after entering the cerebellar nuclei these fibres pass by way of the superior peduncle on upward to subcortical cerebral centres. This may be said to constitute the subjunctive circuit, and when it is interrupted, as it may be by a lesion in the cerebellum, pastpointing fails and it fails because, as we will observe in our tests, vertigo also is lacking. Induced pastpointing therefore according to this conception of its origin, must not be looked upon as distinct and independent reaction, but rather as the objective demonstration of the sensation of vertigo. It occurs only when there is vertigo and lasts only as long as the vertigo lasts and may therefore be looked upon as a valuable objective sign and measure of the subjective sensation.

We believe that not the least of the value to be attached to the Bárány tests is that of enabling us to get to the objective evidence of functional disorders of the labyrinth. In the past the only information we had was that derived from a functional examination of the acoustic division, which, being of a purely subjective order, was notably uncertain and unreliable. It is true of any examination which requires, as in the testing of hearing, that the final answer shall be dependent upon the patient's interpretation of his own sensations, that the result is necessarily untrustworthy. Nystagmus and pastpointing are therefore valuable in that they are independent of the patient's will or intelligence but following known invariable laws afford us data which are exact, definite, and dependable.

815 CONNECTICUT AVENUE.

A NEW CONCEPTION OF ARTERIOSCLEROSIS.

By IGNATZ L. NASCHER, M. D.,
New York,
Chief of Clinic, Department of Internal Medicine, Mount Sinai Hospital Dispensary.

So much has been written about arteriosclerosis and so varied are the views of writers as to the etiology, pathology, symptoms, and treatment of this condition that the more one reads the more confused one becomes. Failure to differentiate between different forms of arterial degeneration, multiplicity of terms used indiscriminately, ignorance of the normal changes in the vessels in the process of ageing and of the relationship between blood pressure and arteriosclerosis, are responsible for the general misconceptions concerning the conditions to which the term is applied. The conflicting views are so at variance that it is impossible to harmonize them. I wish to offer another conception of arteriosclesis, that I believe is clear and true to the literal meaning of the term, and gives a distinct impression of a definite entity.

Arteriosclerosis is literally a hardening of an artery. It may be a fibrosis, a calcification, a muscular hypertrophy, or an inflammatory thickening. It may be a relative hardening while in a state of contraction or an actual hardening without histological change. It may be physiological or pathological, primary or secondary, temporary or permanent, local or general. The essential feature in every case is a hardening of the arterial wall, whether local, as compared with the walls of arteries elsewhere, or general, as compared with the healthy arteries of a person of the same age. As arteries harden normally from birth to old age and harden more rapidly in advanced life, it is impossible to fix a standard of hardness. The term hardness is here purely relative. The term arteriosclerosis is applied to a number of pathological arterial degenerations as well as to the normal physiological degeneration occurring in old age, and as the only test of hardness aside from the tactile sense is the blood pressure which is dependent upon a number of other factors than the hardness of the vessel, the term is frequently applied to conditions in which the arteries are normal. Indeed, the term is often applied to any condition presenting high blood pressure without albuminuria.

Arteriosclerosis is in most cases the physical manifestation of some form of arterial degeneration and not a disease in itself. The disease is arterial degeneration to which a qualifying term should be added as senile, syphilitic, nephritic, plumbic, etc. Since the term arteriosclerosis has, however, become so firmly fixed in our nomenclature as synonymous with arterial degeneration a qualifying term should be applied to it if we prefer to retain it. It is only at a very late stage that the various degenerations assume a common type, usually a fibrosis, sometimes with lime deposits. Some degenerations cause softening of tissue instead of hardening and if fibrosis occurs at all it is a very late process. Yet we sometimes speak of these as arteriosclerosis or use the term atheroma indiscriminately with it. Atheroma is not arteriosclerosis. Atheroma is a fatty degeneration; it is always localized. Fibrosis and calcification occur late and until they do occur the vessel is softer at the site of the degeneration. In syphilitic degeneration of the arteries minute gummata occur in the walls and the vessel feels soft. The syphilitic aneurysm is due to softening, not to hardening of the vessel, yet we generally speak of syphilitic degeneration of the arteries as arteriosclerosis. Fibrosis and calcification do occur occasionally in syphilitic degeneration but the usual change is a gummatous softening.

The old terms, arteritis deformans, endarteritis deformans, arteriocapillary fibrosis, and similar terms which were formerly employed interchangeably, are seldom heard now. The term cardiovascular disease, now frequently applied to arteriosclerosis, is irrational as it does not represent a disease entity, and the term means no more than the term gastrointestinal disease, cerebrospinal disease or any other similar compound term. It is a sorry addition to our nomenclature. There are several forms of arterial degeneration but these have not been studied sufficiently to differentiate between them clinically except in a general way, but pathologically some of these forms can be differentiated. The ordinary senile degeneration is a mechanical form beginning in the media with waste of muscular fibre, the waste being repaired by fibrous tissue. The inflammatory or irritative form, the usual histological form of arteriosclerosis, begins in the intima as an endarteritis. A nutritional form begins in the vasa vasorum, these fine vessels becoming thickened and their lumen diminished, the nutrition to the main vessels being thereby partly cut off. There is a pure sclerotic form in which the texture of the wall is altered without apparent histological change; also a hypertrophic form in which the wall is thickened through thickening of the muscular fibres; a vasomotor form in which vasomotor disturbance causes contraction of the vessel with consequent hardening; an embolic form in which a minute embolus partly blocks a fine vessel; and a perverted nutritional form in which the quality of the pabulum is impaired.

The mechanical form of arteriosclerosis occurs in the normal process of senile involution, and it may occur earlier as a result of excessive activity. Excessive activity causes rapid loss of tonicity of muscle, and long continued but not excessive activity causes a slow change. When a muscle loses its tone a change occurs in the character of the muscle and it wastes. In the young, in whom repair is active, this waste is rapidly eliminated and is replaced by new muscle tissue. In the aged waste is not rapidly repaired and where atony occurs it is soon followed by atrophy of the muscle fibres. In this way we get atony of the stomach, intestines, bladder, and even of the heart in the rare cases of brown atrophy. These are all normal senile conditions. Atony and waste of the muscular fibres of the artery permit a dilatation of the vessel with consequent slowing of the current and diminished blood supply to the parts beyond. The blood supply of the wasted fibres is diverted to the connective tissue which now receives an excess of blood and there is an active proliferation of connective tissue fibres, whereby a fibrosis is produced and the vessel becomes stiff and hard. In this form of arteriosclerosis there is no change in the endothelium, the calibre of the vessel diminishes slowly through contraction of the fibrous connective tissue, the vessel becomes tortuous but not beady, and calcification is a very late incident. The condition is general and the early symptoms refer to the organs which receive an insufficient blood supply. This is the pure senile degeneration but in many cases there is a coexisting pathological degeneration.

The inflammatory or irritative form of arteriosclerosis is always pathological and always secondary. In this form the blood carries deleterious matter which irritates and inflames the lining membrane of the vessel, producing an endarteritis. The urea excess in nephritis, the uric acid excess in gout, the sugar excess in diabetes, purins and other products of intestinal decomposition, chemical poisons, emboli, clumps of bacteria, etc., act this way. Substances which are carried in solution throughout the circulation will act upon the entire vascular system, causing a general arteriosclerosis. In chronic diseases where there is a constant elaboration of deleterious substances the hardening is progressive and through the diminution of the calibre of the vessels, to be explained presently, malnutrition and degeneration of the organs occur. Isolated substances as fibrinous emboli, or clumps of bacteria, are carried in the bloodstream until the substance impinges upon the arterial wall, and it remains there. The spot where it lodges is a matter of chance. If it remains in the middle of the stream it will be carried along until it strikes the bifurcation of a vessel or lodges in a terminal vessel which it may block partially or completely. In this way the embolic form of arteriosclerosis is produced. Some motion of the body may cause the substance to swerve from the middle of the stream and it reaches the slower flowing portion of the stream near the periphery and soon strikes a wall. Having attached itself to the wall it causes an irritation followed by inflammation, and the endothelial cells swell and multiply, causing diminution in the calibre of the vessel. Patches of the thickened endothelium break down into fatty and granular masses; soluble calcium salts from the blood combine with the fats forming calcium soaps, and these later combine with the phosphoric and carbonic acid radicles to produce insoluble phosphate and carbonate of lime which form the calcareous plaques. While these changes are going on in the intima the endothelial inflammation stimulates subendothelial connective tissue growth into the media displacing the muscular and elastic fibres and thus a fibrosis is produced. When the deleterious substances are in solution the irritation extends throughout the whole vascular system causing endothelial swelling with diminution of the calibre of the vessels, but the process is slow and calcification is rare. On the other hand the heart must act with greater force to send the blood through the contracted vessels in the whole body than if there were only circumscribed areas of sclerosis. We find therefore that the blood pressure is higher in general arteriosclerosis. The close interrelation between the causes of arteriosclerosis can be shown by the action of an excess of cholestrin in the blood. Arteriosclerosis has been produced experimentally by introducing cholestrin into the blood. The cholestrin content of the blood can be increased naturally by an excess of meat, increased physical activity, adrenal hyperactivity, each of these causes for cholestrin excess being also a cause for arteriosclerosis. Arteriosclerosis has been produced experimentally by adrenal injections the action being local through irritation and systemic through vasomotor stimulation. If there is increased peripheral resistance heart action must be increased to overcome this resistance. This causes increased friction and consequent increased irritation of the lining membrane of the bloodvessels and increased activity of the vessels, thereby hastening their degeneration. Whatever causes increased heart action, whether disease, excessive activity in early life with consequent hypertrophy, or compensatory hypertrophy to overcome peripheral resistance later, causes or hastens arterial degeneration, partly through muscular hyperactivity, with consequent atony and atrophy of the muscular fibres, and partly through endothelial irritation.

The nutritional form of arteriosclerosis is really an irritative form of the disease beginning in the vasa vasorum. The constant friction of the blood against the lining of these fine vessels and perhaps too the presence of irritating substances in the blood cause a swelling of the cells of the lining membrane with diminution of the calibre of the vessels and the blood supply to the main vessel is lessened. The muscular fibres waste, minute cavities are formed and these become filled with granular and fatty matter and later with lime salts. A proliferation of connective tissue takes place but the growth is uneven and the walls are thickened in some places and thin in others. This form of arterial degeneration is found frequently in the aged.

A pure sclerotic form of arteriosclerosis in which the texture of the vessel becomes firmer but there is no apparent histological change occurs in early plumbism and alcoholism and perhaps in mercurialism before endarteritis is produced. The hypertrophic form of arteriosclerosis is not a degenerative change but occurs in hyperactivity of the vessels, the muscular fibres becoming hypertrophied and the walls of the vessel thickened. When excessive activity is prolonged the vessels lose their tonicity and the mechanical form of arterial degeneration is produced. The vasomotor form of arteriosclerosis is due to vasomotor disturbance. While little is known of the vasomotor centres we know that prolonged vasomotor stimulation, whether dilatation or constriction, will cause arterial degeneration. Vasoconstrictors diminish the calibre of the vessels, lessening the blood supply and causing hyperactivity of the heart to overcome the increased resistance. The further process by which the degeneration of the vessel is brought about has been explained. Vasodilators permit the dilatation of the vessel with slowing of the current and later loss of tonicity of the muscle fibres through overstretching. Nervous, mental, and emotional stress will cause vasoconstriction as well as drugs. The adrenals and the thyroid have an antagonistic effect upon the vasomotor centres, thyroid insufficiency permitting adrenal hyperactivity with consequent vasoconstriction, while thyroid hyperactivity will cause low blood pressure notwithstanding a sclerotic degeneration of the vessels. We therefore get a high blood pressure in thyroid degeneration and low blood pressure under thyroid medication.

The embolic form of arteriosclerosis is a variation of the irritative form, the embolus being carried to a terminal vessel nearly blocking it. If it blocks the vessel completely infarction, gangrene, or necrosis results. Endarteritis obliterans may be due to such embolus or it may be due to such swelling of the endothelial cells as to completely fill up the lumen of the vessel. In partial closure there is deficient nutrition to the parts beyond and there is increased peripheral resistance and localized inflammatory arteriosclerosis. This form occurs most frequently in infectious diseases. In the perverted nutritional form the pabulum is impaired and there is a more pronounced tissue starvation than in the simple nutritional form of arteriosclerosis. In the latter case the blood supply is insufficient for the nutrition of muscle fibre but sufficient for connective tissue growth. In the perverted nutritional form the pabulum is not suited for muscle repair and it may not be suitable for connective tissue growth. In such case there may be fatty degeneration and calcification.

We thus find eight distinct forms of arteriosclerosis. In three forms, the pure sclerotic, the vasomotor, and the hypertrophic, there are no histological changes, but these forms may become degenerative. There are probably several varieties of the irritative or inflammatory form, depending upon the character of the irritant. The gummatous formation occurring in syphilis does not occur in any other form of arterial degeneration. Other pathological degenerations may give other distinctive characteristics by which they may be distinguished. The mechanical form always begins in the media, while in the perverted nutritional form the whole vessel is involved. The nutritional form begins in the vasa vasorum, where an endarteritis can be demonstrated long before the endothelium of the main vessel is affected. In the perverted nutritional form there is no vasa vasorum endarteritis. The embolic form presents the characteristics of the irritative form and the nutritional changes of the nutritional form without the histological changes in the nutrient vessels.

General causes, as ageing, adrenal hyperactivity, thyroid inactivity, and constitutional diseases in which soluble toxins are elaborated, affect the entire vascular system. Local factors will influence the site, rapidity, and extent of local degenerations even where there are general causes. In parts doing excessive work the vessels degenerate early and hence we find usually earlier and more pronounced arteriosclerosis in the right arm than in the left. The aorta receiving the entire amount of blood from the heart and being subjected to the greatest strain is most frequently and most extensively involved. Brain workers present symptoms of cerebral arteriosclerosis much more frequently than manual laborers, although the latter show more marked mental impairment in old age. It is rarely possible to determine clinically the form of arteriosclerosis. In many cases the etiology gives the clue, occasionally the result of treatment clears up the diagnosis. A rapidly progressive endarteritis obliterans is generally due to an embolus, while if slowly progressive there is a persistent endothelial irritant which causes a continual swelling of the endothelial cells until they finally completely obliterate the lumen of the vessel. Hardened arteries and high blood pressure form part of the clinical syndrome of thyroid degeneration. Under thyroid medication the blood pressure will drop, but other measures for reducing the blood pressure have only a slight and temporary effect. In the hypertrophic form of arteriosclerosis there will be high blood pressure if there is cardiac hypertrophy. If there is no cardiac hypertrophy the blood pressure will be low as the increased tonicity of the vessels diminishes the work of the heart, but there will be a stronger pulse than the heart action could account for. It is not possible to differentiate between the pure sclerotic form and the irritative form of arteriosclerosis. The condition has been found upon autopsy in cases of chronic plumbism and alcoholism where there was a high blood pressure and hard arteries during life, but no histological change in the arteries could be demonstrated after death. The determination of the many varieties of inflammatory degeneration depends upon the discovery of the etiological factor. This is not usually difficult. Before middle age it is generally syphilis; about middle age it is nephritis; in old age it is usually chronic constipation with the resultant autointoxication. There are numerous other causes, as infection, chronic intoxication, gout, diabetes, other diseases producing abnormal or excessive products of metabolism, etc. In this form of arteriosclerosis the degeneration of the vessels progresses as the disease progresses, remains stationary when the disease remains stationary, and when there is an improvement in the causative condition there may be an improvement in the condition of the vessel. The senile degeneration and the presenile mechanical form of arterial degeneration are not amenable to treatment. It is possible in these cases to lower the blood pressure temporarily, but it is not possible to restore the muscle waste or retard the progressive fibrosis. Physicians sometimes report the cure of arteriosclerosis in the aged basing their claim of cure upon a lowering of the blood pressure and possibly relieving symptoms which may be due to arteriosclerosis. In these cases the degeneration was not the normal senile degeneration, but a pathological condition due to a primary pathological state which was benefited by the treatment, or else some factor involved in the production of high blood pressure was temporarily inhibited. Let me point out here a factor which is usually not considered among the factors concerned in blood pressure. All authorities declare that blood pressure depends upon heart action, arterial tension, and peripheral resistance. None takes into account the viscosity or density of the blood itself. Yet we know that under the same pressure a dense or viscid fluid will flow through a tube, whether rigid or resilient, more slowly than a thin fluid, as the thick fluid offers greater frictional resistance to the walls of the tube and is itself more resistant to pressure. In some conditions, as anemia, tuberculosis, and underfeeding, the blood is thin and of low specific gravity, and the blood pressure is low. In nephritis and other diseases in which the specific gravity of the blood is high the blood pressure is high. Blood of high specific gravity passes through the arterioles and capillaries with greater difficulty, increasing the peripheral resistance, and adding another factor to its own density to raise the blood pressure. In the aged the specific gravity of the blood is from 1,050 to 1,060; there is a physiological mechanical arteriosclerosis, increased activity of the heart to overcome the lessened tonicity of the vessels, and increased peripheral resistance. Thus all factors raising blood pressure, including greater density of the blood, combine to raise the blood pressure in the aged.

I have tried here to show that physicians do not agree upon the meaning of arteriosclerosis, that it covers many conditions which have but one feature in common, a hardening of arterial walls, and that the term should be restricted to its literal significance.

103 West Eighty-eighth Street.

SUPRAPUBIC PROSTATECTOMY WITH MECHANICAL DRAINAGE.*

By Courtney W. Shropshire, M. D.,
Birmingham, Ala.,
and Charles Watterston, M. D.,
Birmingham, Ala.

It is not the purpose of this paper to discuss the value of the various methods of removing the prostate gland, for sufficient has been written on this subject, it seems, to show that the operations of the suprapubic and perineal prostatectomy are entirely different, as far as indications and predilection are concerned. The question of necessity for operation will not be considered, for abundant statistics are at hand to prove that the average catheter life is two years, and while an exceptional case is reported in which the patient lives in a fairly comfortable manner for a number of years, this does not prove that the statistics are incorrect for a great many patients do not live more than a few months, even though the rigid aseptic precautions are taken.

In all suprapubic operations one, and probably the most objectionable, feature to be considered is drainage. It is impossible for siphonage to start until the bladder is completely filled and sufficient pressure is exerted for the column of fluid to rise above the level of the patient's body, and it is almost impossible to close a suprapubic wound in such manner that leakage does not occur. This leakage causes infection in the perivesical tissue, composed in great part of fat, and the subsequent toxemia, septicemia, or pyemia is often one of the contributory causes of death. We have seen, and we are sure that a majority of the physicians have seen, severe infection of the prevesical tissue extending even into the muscle sheaths following suprapubic cystotomy for drainage, stone, or prostatectomy.

Without mechanical drainage and where we depend on pressure to produce siphonage, it is almost impossible to prevent leakage around a catheter which is sutured in place in the bladder, for the slight pressure necessary to form a siphon is usually sufficient to force the urine through a weak point in the sutures surrounding the catheter before siphonage is started. The inevitable result is infection or necrosis of tissue. Another point in favor of mechanical drainage is that the bladder is kept comparatively dry all the time, the tube extending deep and the bladder contents being removed every few seconds. Numerous attempts have been made to construct an apparatus that would drain the bladder mechanically at stated intervals, and at the same time not produce sufficient vacuum to incite hemorrhage or cause discomfort to the patient. These consist of the hydraulic suction pump of Chetwood which was later, because of variation in water pressure, changed to an electrically driven pump; the tipping cup of Bremmerman, which produces a weak vacuum, but sufficient to cause the formation of a siphon which, once started, completely empties the bladder; and last, the Kells suction pump or the Kells constant drainage machine as described by Hume, Logan, and Kells (1).

We believe that the success of any bladder drainage lies as much in the form of drainage tip to be used in the bladder as in the apparatus producing the suction, and to be of value the suction tip must be so arranged that sufficient vacuum is produced to remove urine, mucus, and blood clots from the bladder, but not strong enough to produce enough vacuum within the bladder to cause hemorrhage or pain. The pump should be so constructed that it does not run after a certain fixed degree of vacuum is produced, for if it does, in the event that the section tube or tip becomes occluded by blood clots or mucus, the amount of vacuum will be continuously raised and when it becomes sufficiently strong to dislodge the obstruction within the tube or tip the vacuum may be great enough within the bladder to cause severe pain or hemorrhage. Another objectionable feature which must be overcome is noise. If we place a machine beside a patient's bed which produces enough noise to keep him awake, we do more harm than good, for rest and sleep are essential to recovery.

The apparatus which we have been using for the past several months is the Kells constant drainage machine. This machine consists of an electrically driven Kells vacuum pump designed for alternating or direct current, a vacuum gauge, and two two gallon jars, one for receiving the bladder contents and the other to be filled with a solution of permanganate of potash through which the exhaust from the pump passes, thus preventing the dissemination of obnoxious odors. The intake air of the pump is filtered through cotton and the circuit is closed at stated intervals by means of a clockwork arrangement; an emergency switch is provided for the use of the physician, nurse, or patient. The apparatus is capable of producing twelve inches of vacuum; it is noiseless and reliable in its workings.

Points or tips to be used in the suprapubic opening deserve special attention. They are composed of an outer sheath which is perforated on the sides and open at both ends. This is passed through and fastened to a flat piece of metal. The tube therefore forms the perpendicular part of the letter T, while the flat metal forms the top. Within this sheath is a second sheath, the inner sheath which differs from the outer only in having a closed lower extremity with a large opening on either side within the inner sheath in the drainage tube proper, composed of a simple piece of metal tubing bent at right angles to form the letter L. This tube does not quite reach to the bottom of the inner sheath. This drainage tip proper is easily removed for cleaning and sterilization, as is also the inner sheath, since neither comes directly in contact with the wound proper. The tubes are held in place by means of strips of adhesive plaster. This tube not only drains the bladder proper, but also that part of the wound coming in contact with the tube or influenced by whatever vacuum is produced. The flat metal forming the upper part of the letter T and being a part of the outer and inner sheaths may be fashioned so as to direct the tip into any part of the bladder cavity. For instance, the tip may be directed into the upper part of the bladder and the foot of the patient's bed elevated; this will assist in keeping the lower part of the bladder dry, but it must be remembered that when using this or any other apparatus, or any drainage apparatus, whether simple or mechanical, siphon or suction, the part of the bladder receiving the tip must be made the most dependent part of the cavity.

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*Read before the Alabama State Medical Association, Montgomery, Ala., April 17-20, 1917.

The Kells constant drainage machine is supplied with drainage tips of various sizes, the larger ones to be used where the fluid to be aspirated contains a large amount of pus, blood, or mucus, and the smaller ones to be substituted as soon as the character of the fluid permits in order to hasten the closing of the wound. This machine in our hands has proved of the greatest value, but we feel that the ideal drainage apparatus will be one which does not depend upon a clockwork arrangement for automatic operation, but is so arranged that when the vacuum falls below a certain point, the machine automatically starts and continues to run until this vacuum is reestablished. The following history will illustrate the manner in which we have used this machine following suprapubic prostectomy:

CASE.—J. L.; age seventy-six years; colored; male; occupation, farmer; married; no children. Patient has had trouble in urinating for the past two years, and has noticed that he has greater trouble when the bladder is full and the desire is urgent than when the desire is not so great. Two years ago, during the summer months when working in the field, he tried to urinate but was unable to do so, and it was necessary to send for a physician to catheterize him. He remained in bed for several days and had no further trouble for about six months, when it was again necessary to use a catheter, which operation had to be repeated on numerous occasions since that time. When first seen the patient had a very much distended bladder and had not passed his urine for ten hours. He was immediately catheterized and the specimen of urine examined. This proved to be negative, except for the presence of a few hyaline casts. Cystoscopic examination the following day showed a very great enlargement of the lateral lobes together with some enlargement of the middle lobe. Functional test: Indigo carmine—right, eleven minutes; left, thirteen minutes; twenty-four hours specimen of urine—quantity, 1,400 c. c.; specific gravity, 1018. Patient was kept under observation for several days and another functional test and twenty-four hour examination made. The results were practically the same.

Operation was done the following day, suprapubic prostatectomy under gas oxygen anesthesia. The prostate was very easily removed and the subsequent hemorrhage was negligible. In fact, the whole operation did not require more than twenty minutes. Following the removal of the prostate, the largest sized drainage tip was placed in the bladder and immediately upon the patient's return to his bed the machine was connected up. For twenty-four hours the urine was colored with blood and some clots were withdrawn. The smaller tip was used after twenty-four hours. On the third day the patient sat up in bed, the drainage apparatus being continued. A few days later he was placed in a chair, the apparatus still being used. About the tenth day the suprapubic wound became so small that it was decided to discontinue the suprapubic drainage. The wound was drawn together with adhesive straps and the patient was allowed out of bed. Slight leakage resulted for about four or five days, then the wound closed. A sound passed through the urethra on the seventh day met with no obstruction.

During the whole time that this patient was in bed, or we might say during his whole convalescence, there was no leakage, no infection, and no bad odor in the room. The wound healed by first intention and he was comfortable at all times. The nurse was very grateful and said that he was less trouble than any patient she had.

In conclusion we wish to say:

1. Mechanical drainage is of the greatest value in suprapubic operations.

2. The machine used must have sufficient power to remove mucus and blood clots, but it must be so arranged that the vacuum does not exceed a certain fixed point. It must be noiseless and reliable in its workings.

3. The ideal machine would be one in which the working would be governed by vacuum and one in which a certain fixed amount of vacuum would be maintained.

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THE WASSERMANN REACTION IN DUPLICATE.

By MAXIMILIAN SCHULMAN, M. D.,
New York,
(*From the Department of Clinical Medicine, Columbia University.*)

It has been my custom for some time, when drawing blood for the purpose of performing a Wassermann test, to draw sufficient for two tests, and to have one portion sent to the laboratory of the New York Department of Health and the other to the bacteriological laboratory of the College of Physicians and Surgeons. I thus secure reports on the selfsame specimen from two very reliable laboratories whose technic is very similar. In regard to technic I wish to say nothing beyond urging attention to articles by Doctor Ottenberg (1) and Mr. Koopman (2).

The accompanying table deals with the reports on blood of eighty consecutive patients. Laboratory A reported on ninety-three specimens and Laboratory B had 110 specimens. The difference is due to the fact that for various reasons it is sometimes impossible to secure enough blood for two laboratories, and in such cases I send blood only to Laboratory B. The table is largely selfexplanatory. I wish to draw attention particularly to the following: Both laboratories agreed in rendering definitely negative reports on sixty-one specimens. Of these fifty-seven were clinically apparently definitely not syphilitic. The other four cases were as follows: Case 40819, a case of gumma of the frontal bone; Case 38739, a case of aortic disease with a clear history of syphilis and good treatment, though none in nine years; Case 16057, a case of aortic aneurysm, without a history of syphilis, but a strongly positive Wassermann reaction in the patient's wife's blood; Case 37549, a case of aortic disease in a man sixty years of age without history of rheumatism or syphilis, but two attacks of gonorrhea. In five cases, both laboratories reported + + + +, and these cases were all clinically definitely syphilitic. In two cases, No. 45691 and No. 25711, Laboratory A reported + + + + and Laboratory B reported + + +. These were both cases of active and clinically definite syphilis; both patients had had slight treatment before coming to the clinic. In one case, No. 6721, Laboratory A reported + + + and Laboratory B reported + +. This was a case of tertiary glossitis that had had considerable treatment before the blood was taken, but the treat-

CASE.	LABORATORY A.	LABORATORY B.	DIAGNOSIS AND REMARKS.
23101	0	0	Thromboangitis obliterans; migrating phlebitis.
45202	0	0	Chronic myocarditis.
37346	0	0	Acute indigestion.
45909	0	0	Furunculosis.
45691	++++	+++	Cerebrospinal syphilis; very active.
44394	0	0	Hypersensitive cardiovascular disease.
39955	0	0	Acute bronchitis.
38309	0	0	Neurasthenia.
32495	0	0	Hypersensitive cardiovascular disease; fractured acromion.
30392	0	0	Atrophic rhinitis.
40819	0	0	Gumma of frontal bone; headache improved by specific treatment.
39476	0	0	Tracheitis; epilepsy.
38739	0	0	Aortic disease; history of chancre and secondaries; had good treatment but none in nine years.
29208	0	0	Chronic laryngitis; furunculosis.
25711	++++	+++	Aortitis; secondaries in 1912.
30320	0	0	Muscular rheumatism.
31794	0	0	Hepatic cirrhosis; chronic gastritis.
41826	0	0	Subacute polyarthritis.
41555	0	0	Sexual neurasthenia.
39975	0	0	Muscular rheumatism.
42747	0	0	Subacute polyarthritis.
31515	0	0	Muscular rheumatism.
37337	0	0	Undetermined.
45051	0	+	Aortic regurgitation; negress; alcoholic.
	+	?	
44787	0	0	Subacute infectious arthritis.
42276	0	0	Pulmonary tuberculosis; stage I.
42408	0	0	Undetermined.
43886	++++	++++	Latent syphilis; suspicious history.
43886	0	0	Husband of above; negative history.
41405	++++	++++	Latent syphilis; constitutional.
39029	0	0	Habitual constipation; subacidity.
31632	0	0	Intestinal intoxication.
45477	0	++	Syphilitic periostitis; chancre thitry-two years ago; prompt relief from specific treatment.
7042	0	0	Undetermined.
44568	++++	++++	Syphilitic rhinitis; negro.
38456	0	0	Cellulitis of hand.
27922	0 (Nov. 16, 1916)	+++(Nov. 16, 1916)	Chronic nephritis; age 40; five miscarriages.
27922	+++(Dec. 9, 1916)	++++(Dec. 9, 1916)	
44050	0	0	Chronic myocarditis.
44036	0	0	Tuberculous sinus of chest.
37773	0	0	Chronic constipation; choroiditis.
39481	0	0	Undetermined.
31798	0	0	Muscular rheumatism.
45215	0	0	Plumbism?
34652	0	0	Chronic infectious arthritis.
6721	+++	++	Tertiary glossitis, rhinitis and pharyngitis; had considerable but irregular treatment.
43041	0	0	Hypertensive cardiovascular disease.
37549	..	0	Aortic stenosis and regurgitation; coronary fibrosis; age, 60; no rheumatism; lues denied; gonorrhea twice.
37549	0	0	
37549	..	0	
41214	0	0	General hypotonia.
77581	++	++++	Cerebrospinal syphilis.
35313	0	0	Carcinoma of gallbladder.
32171	0	0	Prostatic hypertrophy.
20834	..	+? (Dec. 1, 1913)	Negress, age 24, married age 14, 3 children, all died before 2 months old; no symptoms or signs of syphilis now; takes alcohol, cocaine and heroine.
	..	+? (June 1, 1916)	
	0 (Sept. 1, 1916)	++(Sept. 1, 1916)	
	..	++(Nov. 1, 1916)	
	..	++(Jan. 1, 1917)	
45489	0	0	Tuberculous kidney.
45697	0	0	Pulmonary tuberculosis.
39279	0	0	Neurasthenia
40833	0	0	Muscular rheumatism.
40833	0	0	Muscular rheumatism.
42280	++++	++++	Syphilitic hepatitis, splenitis, ascites, keratitis; congenital.
39185	0	0	Habitual constipation; bradycardia.
11406	++	++++	Aortic disease, definitely syphilitic; negro.
19645	..	++++(May 18, 1916)	Syphilitic periostitis; "sciatica"; prompt relief from specific treatment started May 18, 1916.
	0 (Sept. 21, 1916)	+? (Sept. 21, 1916)	
	+? (Feb. 15, 1917)	+? (Feb. 15, 1917)	
13650	++	0?	Negress; "pain in head"; no other history, signs, or symptoms; only one visit.
40820	0	0	Traumatic periostitis.
39475	+? (Jan. 4, 1917)	0 (Jan. 4, 1917)	Acute bronchitis; no history, signs, or symptoms of syphilis.
	0 (Jan. 11, 1917)	0 (Jan. 11, 1917)	
46186	0	0	Periarthritis, gonorrhoeal?
45034	0	0	Deflected nasal septum.
36840	..	+++(Feb. 15, 1916)	Latent constitutional syphilis; no history, symptoms, or signs; complained of insomnia and general lassitude.
	..	++++(Feb. 17, 1916)	
	..	++++(Mar. 15, 1916)	
	..	++(May 18, 1916)	
	0 (Sept. 21, 1916)	+? (Sept. 21, 1916)	
	0 (Feb. 15, 1917)	0 (Feb. 15, 1917)	
	0 (Feb. 24, 1917)	0 (Feb. 24, 1917)	
31618	0	0	Splenomegaly; chronic malarial.
20157	..	+(May 23, 1916)	Syphilitic hepatitis.
	..	+++(June 1, 1916)	
	0 (Sept. 21, 1916)	++(Sept. 21, 1916)	
	+? (Sept. 28, 1916)	+? (Sept. 28, 1916)	
	0 (Feb. 8, 1917)	0 (Feb. 8, 1917)	
43050	0	0	Astigmatism; eye strain.
16057	..	0 (April 15, 1916)	Aortic aneurysm; x ray positive; wife's Wassermann++++
	..	0 (April 22, 1916)	
	0 (Sept. 23, 1916)	0 (Sept. 23, 1916)	
41819	0	0	Thromboangiitis obliterans.
13147	..	++++(Mar 1, 1916)	Miscarriages; husband nervous; no other signs or symptoms; mercury injections taken since April, 1916.
	..	++++(April 1, 1916)	
	+(Sept. 1, 1916)	++(Sept. 1, 1916)	
	+++(Feb. 1, 1917)	+++(Feb. 1, 1917).	
90924	++++	"Anticomplementary"	No signs or symptoms of syphilis; gonorrhea and epididymitis 20 years ago; wife three miscarriages; several attacks of lead colic
	++++	"Anticomplementary"	
	++++	"Anticomplementary"	
[illegible]	0	0	Traumatic periostitis.
[illegible]	0	0	Vagotonia; spastic constipation.
41576	0	0	Pulmonary tuberculosis.
44207	++++	++++	Syphilitic periostitis.
30349	0	0	Brachial nueritis.
30349	0	0	
30963	0	0	Multiple sclerosis.
45907	0	0	Neuritis, sciatica; trauma.

ment was not regularly taken. In one case, No. 13147, Laboratory A reported + and Laboratory B reported + + while on a subsequent specimen both reported + + +. This was a clinically definitely syphilitic case, but blood was taken in an interval of considerable treatment with mercury and potash. In one case, No. 45051, once Laboratory A reported 0, while Laboratory B reported +; another specimen was reported in the reverse manner by the two laboratories. This was a case of aortic disease in an alcoholic negress. In one case, No. 39475, once Laboratory A reported + ? while Laboratory B reported 0, and on a subsequent specimen both reported 0. This was a clinically nonsyphilitic case.

In two cases, No. 77581 and No. 11406, Laboratory A reported + +, while Laboratory B reported + + + +. These were both definitely positive and active syphilitic cases, in which no treatment had been given. In all the cases above cited, where there were discrepancies in the reports from the two laboratories, no reasonable person would say that they were serious discrepancies nor such as would mislead any well informed doctor as to diagnosis, prognosis, or treatment.

In the five cases that follow, the discrepancies were more marked but it is to be noted that in three of the cases there was no opportunity to have the tests repeated. As two of these were definitely syphilitic cases while the third was very likely syphilitic, the cases merely again illustrate the well known fact, which it does no harm to emphasize, that a single negative Wassermann, nor yet repeatedly negative Wassermanns, in the face of positive clinical evidence of syphilis, should not be looked upon as strong evidence against the diagnosis of syphilis. The five cases were as follows: In Case 45477 Laboratory A reported 0 while Laboratory B reported + +. This was a clinically positive case. Case 26834 was an exactly similar case, with exactly similar reports. In Case 13650 Laboratory A reported + +, while Laboratory B reported 0 ?. This case was probably syphilitic. In Case 27922 one specimen was reported by Laboratory A as 0, while Laboratory B reported it + + +. Another specimen examined three weeks later, was reported as + + + by Laboratory A, while Laboratory B reported it as + + + +. This was a case that clinically was positively syphilitic. In Case 20157 Laboratory A reported 0, while Laboratory B reported + +. However, two later specimens were both reported identically by both laboratories, once 0 and once + ?. This was a definitely syphilitic case. All the specimens above mentioned were taken in intervals between active treatment, while specimens examined in one of the laboratories before treatment had been begun were always reported as positive.

Finally, there was one case three times reported + + + + by Laboratory A in a man whose history was unreliable as to syphilis, but who had some years previously suffered from lead colic. Laboratory B in every instance where Laboratory A had reported + + + +, reported the serum as anticomplementary, though hemolysis was completely inhibited.

I think that from the above it is fair to conclude that reliable laboratories, working with a closely similar technic, will report concordant results, and that a clinician who exercises judgment in the application of the technicians' reports will always be aided and never misled.

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1845 SEVENTH AVENUE.

A CASE OF ACUTE ERYTHEMATOUS LUPUS.

By GEORGE ARNOLD BROWN, M. D.,
Philadelphia,
Resident Physician, Girard College.

This case is of unusual interest because of the general features associated with the characteristic skin lesions of lupus erythematosus, the relative infrequency, and the grave prognostic outlook. Whether there is any definite relation between the local manifestations and the general features or whether they are two separate condititions does not seem to be clearly understood. The relation of the disease to tuberculosis is well known, but there are many cases in which the history and clinical features of tuberculosis are lacking.

CASE.—W. S., age eleven years, was admitted to the infirmary at Girard College April 11, 1917, complaining of a rash on his cheeks and ears, and pain in the abdomen and vomiting. There was nothing in the family history of interest. The father died at the age of forty years following an operation for brain abscess. His mother and two brothers were living and well. There was no history of tuberculosis in the family. The patient had had measles and chicken pox and never any serious illness. Three years ago he had his tonsils and adenoids removed. The latter part of March, 1917, his ears became reddened and inflamed and were somewhat painful to the touch. It was thought that they were frostbitten. The condition progressively became worse. On admission there was a rash on the ears and cheeks extending across the nose. His temperature was 100° F. Examination showed a fairly well nourished boy, rather anemic; his scalp showed considerable hair loss. His eyes were reddened and watery and the tongue was coated in the centre and bright at the tip and edges; the breath was foul. There were several circumscribed, rather sharply defined, reddish patches on both cheeks. These patches were slightly scaly. The cervical, epitrochlear, and inguinal lymphatic glands were enlarged. The thorax was well developed and symmetrical and expansion good and equal. Lungs were clear and resonant throughout; no râles. Heart: Apex beat was in the fifth interspace well within the nipple line; no murmurs; no irregularities. The abdomen was quite rigid, but there were no areas of tenderness; spleen was not palpable; liver was about one inch below the costal margin. There was a slight bluish discoloration on the legs. April 20th, small reddish inflammatory areas appeared on the tips of the fingers and toes. These patches showed atrophic changes in the centres. On April 23d the spleen was palpable, temperature was 103° F. There were no rose spots. The abdomen was apparently normal. He was given sponges every three hours. The bowels were moved by enemata. At times the patient was quite delirious. There was marked tremor. The rash appeared to be fading somewhat. There was a peculiar odor not unlike that of typhoid. The lips were cracked and the gums bleeding. His condition remained about the same until May 10th, when pneumonia developed. Four days later pulmonary edema developed and he died.

The laboratory examinations were as follows: The von

Pirquet, Wassermann, and Widal tests were all negative. Repeated examinations of the urine were negative. On April 23d and 28th leucocyte counts were 6,400 and 5,800, respectively. The differential count showed polymorphonuclears, fifty-six per cent; lymphocytes, forty-one per cent.; eosinophiles, three per cent. The red blood cells were normal.

There are three types of lupus erythematosus. The first, or chronic, form is not at all uncommon and runs a chronic and persistent course. Usually there are no constitutional symptoms. The usual location is about the nose, cheeks, and ears; rarely it may occur elsewhere. It begins as one or more rounded small circumscribed inflammatory areas or patches which slowly spread until they attain a certain size. They are usually sharply defined and shown atrophic changes in the centre. The second type, or the acute variety, is more diffuse and scattered, and there are quite marked constitutional disturbances. The location is practically the same. The fingers and toes may become involved. There may be small patches on the trunk or on the extremities. These patches are all moderately inflammatory and slightly scaly and show a tendency to atrophy in the centre. The temperature is high and runs a more or less definite course, ranging from 100° to 103° or 104° F. There may be gastrointestinal disturbance, or there may be nervous features as headache, tremor, and delirium. As to the diagnosis of the acute form of lupus erythematosus, there are a number of conditions that may simulate it. The relation of the fever and pulse, the coated tongue, and the mental state would suggest typhoid. Tuberculosis, syphilis, and pellagra might be mistaken for it. The location and the appearance of the rash and elimination of other conditions will enable one to make a diagnosis. The third form occurs on mucous membranes and is usually an extension of the chronic. The patches may spread from the cheeks to the eye lids or the lip. It may occur on the nasal mucous membrane or on the mucous membrane of the larynx.

The treatment consisted in the local application of a one percent. solution of salicylic acid in seventy per cent. alcohol to the cheeks and ears, together with the general principles applied to all infections, as eliminative measures in combating toxemia, hydrotherapy, etc. Quinine and iron were given internally. There are many other drugs such as Lassar's paste, calamine and zinc oxide lotion that often prove of value in treating the condition locally. The usual discoid lesions of lupus erythematosus are resistent to all forms of therapy and after all others have failed a resort to the x ray may not be without avail. Repeated reactions need not be feared because of the danger of producing Röntgen atrophy of the skin, for lupus erythematosus in its normal course is followed by atrophic scarring.

Treatment of Chronic Intestinal Stasis.—Iginio Tansini (*International Journal of Surgery*, April, 1917) thinks that medical treatment should first be tried. If this does not prove successful, surgical measures should be instituted. A large median incision should be made. Operative interference includes fixation of the stomach or intestine, resection of the bands, colectomy, and short circuiting operations, depending on the anatomical structure affected.

A CASE OF AMYOTROPHIC LATERAL SCLEROSIS IN THE FORM OF PROGRESSIVELY DEVELOPING TRIPLEGIA.

By G. B. Hassin, M. D.,

Chicago,

Attending Neurologist, Cook County Hospital.

Case I.—Mr. E., locomotive engineer, forty-two years old, entered Cook County Hospital on September 15, 1915, complaining of severe paroxysmal pain in the face (trifacial neuralgia) and weakness in the right upper and both lower extremities. He was well until nine years ago, when several tons of coal fell upon him. This accident did not disable the patient, and he soon went back to work. About five months after the injury he noticed clumsiness and weakness in the right leg, which, a year and a half later, became totally useless. Four years after the accident the left leg became weak and "stiff," followed a year afterwards by weakness in the right arm. By this time he had to use canes in walking, and about two years later crutches. During the last year and a half he was totally helpless, could not walk even with the help of crutches, and was entirely confined to his bed or to a chair. The previous and family histories were good. He denied venereal diseases, alcoholism, or any other diseases. He had two healthy children, but his wife had three miscarriages. Examination showed a well nourished white man, unable to stand without support. He could move about with the aid of crutches, but with great difficulty; the steps were very slow, short, the feet scraping the ground, and a marked clonus setting in in the left leg when it touched the floor. All cranial nerves were normal with the exception of the left lower facial, which was somewhat paretic from the numerous unsuccessful alcoholic injections that had been given for the neuralgia. The bony system was well developed, but some muscles, as the right deltoid, the muscles of the right forearm, and the small muscles of the right hand, were markedly atrophied, without fibrillary twitchings. The right little finger was in a position of *main en griffe*. The right biceps in the middle measured 19.5 centimetres, the left twenty-one; below the elbow, the right side showed twenty-four centimetres, the left 24.5 centimetres; three inches above the wrist the right measured 17.1 centimetres, the left 18.2 centimetres. The muscle power and the active movements were fairly good in the left upper extremity, but lost in the right and both lower limbs, while the passive movements in the affected portions were greatly limited. The tendon reflexes in the lower limbs were considerably exaggerated, with a bilateral Babinski, bilateral ankle clonus, and an occasional patellar clonus on the right. The triceps reflex, on the right, was much exaggerated, the abdominal and cremasterics were absent. The pupils reacted normally to light and accommodation. The sensibility, heart, lungs, genitourinary organs, mentality, speech, and fundi were normal. The spinal fluid and the blood gave a negative Wassermann, a slight positive Nonne with fourteen lymphocytes per c. mm. in the spinal fluid. Urine was normal. The electrical examination done only with the galvanic current revealed slight quantitative changes with a quick, lightning like response. The blood pressure was 133 systolic and 84 diastolic.

The clinical anomalies were thus exclusively confined to the motor nerves for the right upper and both lower limbs. The pyramidal fibres for these portions of the body evidently had been undergoing a progressive degeneration that began nine years ago, having first started in the fibres controlling the right leg, affecting the opposite side four years, and the right arm five years later. At the time of the examination the patient showed a triplegia, spastic in character, without contractures, but with atrophies of the small muscles of the right hand and of the entire right upper extremity. The condition remained stationary during the patient's stay of two months in the hospital. He was transferred to the surgical ward for a Gasserian operation, of which he died. A post mortem was refused.

This case somewhat resembles the clinical syndrome described by Mills in a number of contributions (1).

Case II.—One of his patients, fifty-two years old, has been complaining for two years of weakness and stiffness of the right lower extremity. Eighteen months later weakness set in in the right arm, which was followed by paresis of the entire right facial nerve. There was no spasticity, no contractures, but the affected limbs were somewhat atrophied, and the movements, though impaired, were not lost. The right tendon and muscle reflexes were exaggerated, with a right patellar and a slight right ankle clonus. Babinski was absent. Cranial nerves, except right facial and fundi, were normal.

Mills hesitated to diagnose this case as amyotrophic lateral sclerosis because of the absence of localized atrophies, spasticity, and contractures. However, he suggested the possibility in this case of a somewhat unusual form of amyotrophic lateral sclerosis. "Indeed," says Mills, "the most probable diagnosis would seem to be that of a slowly increasing degeneration of the pyramidal fasciculi." Three years later this patient was reexamined by Hugh T. Patrick (2), under whose care he was before Mills saw him. Patrick's findings differed slightly from those of Mills—absence of patellar clonus, an "evanescent" trace of ankle clonus, lack of marked atrophy—and Patrick comes to the conclusion that this patient suffered from paralysis agitans without tremor. Yet he accepted the clinical type of progressive ascending hemiplegia in a case which he reports in detail in 1903.

Case III.—Patrick's patient was a girl, eighteen years old. At the age of fourteen years she noticed slight clumsiness of the right foot and some fatigue in the forearm during writing. The clumsiness of the foot and the disability of the hand gradually increased, and at the age of seventeen and one half years she had to give up work. At the time of the examination she showed a slight paresis of the seventh and of the motor branch of the fifth nerves, combined with an incomplete right hemiplegia. The arm appeared to be flaccid, was swinging flabbily to and fro with every step. The gait was not spastic nor of the steppage variety, but foot drop was plain. The distal muscles were the weakest, but without local paralysis, without marked atrophy, without degenerative changes. The difference in the size of the muscles was about an inch and a quarter in favor of the left side. The right side thus appeared somewhat atrophic. In spite of the apparent flaccidity and atrophy of the right side the deep reflexes were here exaggerated, with an indication of an ankle clonus and a typical Babinski. Fibrillary twitchings, ocular disturbances, and bulbar symptoms were absent.

Patrick diagnoses this case as "a progressive, slowly increasing degeneration of the pyramidal fibres," and excludes amyotrophic lateral sclerosis.

Somewhat similar was the case described by L. Newmark (3):

Case IV.—A twenty-three year old man had weakness in the left leg for six months and occasionally weakness in the left arm. The examination revealed bilateral lively knee jerks, a left ankle clonus; the left lower extremity was flaccid, not spastic, and showed a general wasting. The left upper limb was also thinner than the right, but showed neither exaggerated reflexes nor electrical changes.

Newmark thinks that "there is a systemic disease in the spinal cord, perhaps involving cells in the anterior horns as well as motor tracts yet different from the ordinary type of amyotrophic lateral sclerosis." A patient of Mills and Spiller (4) bears a very striking resemblance to my case.

Case V.—This patient, fifty-four years old, had a hemiplegia for six years before he was reexamined. The reexamination revealed spasticity in the right upper and both lower limbs, contractures and wasting having been absent. Voluntary movements were fully present in the upper extremities and were somewhat weak in the legs, especially in the right one. The tendon reflexes were exaggerated on both sides, but more so on the right, with a right patellar clonus, bilateral ankle clonus, right Babinski, and normal sensibility. The post mortem revealed a degeneration especially of the right crossed and left direct pyramidal tracts, while the ganglion cells of the anterior horns showed "some changes, though generally normal." The pyramidal tract degeneration could be followed through the oblongata and pons—Marchi method—but none could be found with Weigert stain in the foot of the right or left cerebral peduncles. With Marchi stain, a slight degeneration could be found in the middle portion of the foot of the right cerebral peduncle only as far as the internal capsule. The paracentral lobule was found normal.

As no focal lesion or marked meningeal lesions could be detected anywhere, Spiller and Mills think they have reason to speak of the pyramidal tract degeneration being primary, thus corroborating, in their opinion, the existence of the clinical type described by Mills, and called by some Mills's disease.

As my case strongly resembles the last one of Mills and Spiller, we ought to interpret it as one of progressive chronic hemiplegia or triplegia. However, the presence in my patient of atrophies of the small hand muscles and of the right upper extremity would rather suggest the diagnosis of amyotrophic lateral sclerosis, i. e., a combination of progressive degeneration of pyramidal fasciculi with progressive muscular atrophy. The latter, i. e., the atrophy, was also present in the cases of Patrick and Newmark, but was so overshadowed by the signs of the pyramidal tract lesion that clinically it appeared insignificant. The same may be said relative to the pathological findings of Spiller and Mills. They could demonstrate a marked degeneration of the pyramidal fibres and comparatively slight atrophy of the anterior horn cells. Yet it is questionable whether the anterior horn changes can be ignored, insignificant as they might have been. The assertion of Mills and Spiller that the chronic degeneration of the pyramidal fibres is a primary degeneration cannot be considered correct in the light of the modern histopathological research.

The study of degeneration of central nerve fibres in amyotrophic lateral sclerosis and subacute cord degeneration (5) shows that the degeneration is always a secondary process. In subacute cord degeneration it is secondary to an inflammation similar to what we see in peripheral neuritis and in amyotrophic lateral sclerosis it is secondary to cortical changes. Simultaneously with the changes in the nerve fibres remarkable pathological phenomena obtain in the glia tissue which plays an active rôle in removing the damaged fibres from the body. The changes in the nerve tissue proper and in the glia can be very well followed by using the modern methods of histopathological research as elaborated chiefly by the school of Alzheimer. These methods have not and could not be used by Spiller in the study of his case of the so called progressive hemiplegia, and his findings, therefore, are not conclusive.

As a post mortem of my case has been denied, I am, of course, unable to present a histopathological report. Yet the clinical picture of the case so much resembling that of "unilateral progressive hemiplegia" of Mills undoubtedly was that of amyotrophic lateral sclerosis, as it can be proved by similar clinical and pathological reports to be found in the medical literature. Here belong cases of Cornil-Lépine, Webber, Babinski, and Dreshfeld.

CASE VI.—The patient of Cornil-Lépine (6), twenty-seven years old, had in early childhood a transient paralysis (?) of both lower extremities. Three years before his entrance to the hospital he started to feel weakness in the right leg, followed nine months later by that in the left leg. During the following two and one half years the weakness was increasing and the patient had to use crutches. About three years after the onset of the weakness in the right leg the lumbosacral muscles became involved, followed by weakness in the upper extremities. There was a general flaccid atrophic paralysis without pain, or sensory disturbances, but with marked fibrillary twitching. The lower limbs became totally inert without rigidity. A few months later bulbar symptoms became prominent, and the patient soon died from respiratory disorders. The post morten showed atrophy of the anterior roots, of the gray matter all along the spinal cord,, namely, of the anterior horn cells, and numerous granular bodies especially around the vessels. In addition, there was degeneration of the lateral columns, while the posterior horns and posterior columns were intact.

In spite of the presence of the typical picture of amyotrophic lateral sclerosis, Cornil and Lépine rejected this diagnosis and diagnosed subacute anterior general spinal paralysis of Duchenne. Equally interesting is the case of Webber (7) reported by him in 1875 almost simultaneously with that of Cornil and Lépine.

CASE VII.—Webber's patient, a man, twenty-four years old, struck his hip and cut his forehead fourteen months before seen by Webber. A few days later he got well, but two months later he began to experience weakness in the left knee. Soon the left leg gave out altogether, and the patient had to use crutches. The weakness of the left leg was followed by that of the right thumb, right leg, and of both hands and arms. The weakness was accompanied by wasting and fibrillary twitchings. There was no bladder or rectum disturbances. The examination showed paralysis of the left lower extremity, weakness of both arms, wasting of thenar and interossei of both hands and of nearly all of the muscles of the legs. Tickling of the soles of the feet "caused no action." Sensibility was normal. There was nasal speech, slight deglutition troubles, and attacks of dyspnea. The bulbar symptoms as well as the atrophy and the weakness were increasing within the next month, and the patient died sixteen months after the injury. The post mortem revealed atrophy of the anterior horn cells of the cervical region, of the Clarke columns, tractus intermediolateralis, slight changes in the post cornua cells, and total destruction of the white columns; the report does not say which. There was also present atrophy of the hypoglossus nucleus and of "the anterior roots."

The description of the changes was a most complete one of amyotrophic lateral sclerosis, taking into consideration, of course, the imperfect methods of thirty-two years ago.

CASE VIII.—Babinski's patient (8), a man, thirty-four years old, with good personal and family histories, was feeling pain in the back for four years which suddenly was followed by weakness in the upper limbs and eight days later by paralysis of the legs. The patient gradually got better. Three years afterwards there appeared gradual paralysis of the upper limbs, weakness in the lower ones, and muscular atrophy of the upper. No fibrillary twitchings, and no atrophy in the lower extremities. Reflexes, sensibility, and genitourinary organs were normal. The patient was getting progressively worse, and died a few months later. The post mortem showed atrophy of the anterior horns, normal posterior horns, changes in the lateral columns, though not very marked, and very slight changes in the posterior columns.

Valpian diagnosed this case as subacute chronic diffuse myelitis, but the pathological findings certainly justify the diagnosis of amyotrophic lateral sclerosis.

Two years later Dreshfeld described a case:

CASE IX.—In this case weakness of the right leg was followed by wasting and gradual paralysis, which two years later became complete. By this time the left leg also became paralyzed and atrophied, with the disappearance of both patellar reflexes. During the patient's stay in the hospital the upper extremities became weak, especially the muscles of the shoulders and arms. A year later the patient was readmitted, and the examination revealed a complete atrophic paralysis of the upper limbs, with lively wrist and triceps reflexes, but no *main en griffe*. There was also a complete paralysis of the abdominal and pectoralis muscles, but the muscles and nerves of the head and neck were normal. The post mortem showed atrophy of the ganglion cells of the anterior horns, coupled with a lateral sclerosis in the cervicodorsal region; in the upper cervical region there was no lateral sclerosis, but only anterior horn atrophy. No changes were found in the hypoglossus nucleus, but some were found in the vagus.

The changes in the spinal cord were not, according to Dreshfeld and Nonne (10) characteristic enough to justify a diagnosis of amyotrophic lateral sclerosis.

In Spiller's two cases (11) with a very brief clinical and pathological report, a triplegia gradually developed, as in my patient, though it did not take so much time as in my case. In one of Spiller's patients an amyotrophic lateral sclerosis could be shown post mortem, and in the other only some atrophy of the anterior horn cells. In nearly all of the cases quoted the paralysis and wasting were slow in developing, i. e., in all of them the paralysis was of slow progressive course, which lasted, in my patient nine years, until their untimely death. In all of the cases quoted in which a pathological examination has been made there was found a combined lesion of the lateral tracts and of the anterior horn cells which is characteristic for amyotrophic lateral sclerosis. Yet, in some of the cases either chronic subacute spinal paralysis was diagnosed, by older authors, or chronic progressive ascending or descending hemiplegia, by newer observers, as Mills, Patrick, Spiller, etc. Lately, Rhein (12) endeavored to prove that in some cases of amyotrophic lateral sclerosis the atrophy of the anterior horn cells may prevail to such an extent that the lateral column symptoms will be totally overshadowed, and the picture of progressive muscular atrophy or chronic anterior poliomyelitis will obtain. On the other hand, just the opposite can be imagined: the symptoms of pyramidal tract lesion may prevail over those of anterior horn lesion, and the picture of spastic hemiplegia, paraplegia, or triplegia will obtain, i. e., pictures of atypical or incomplete amyotrophic lateral sclerosis. Histopathological studies of such atypical cases with the newest methods are absolutely necessary for the purpose of establishing their real character and nature which may prove to be nothing but amyotrophic lateral sclerosis.

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3040 JACKSON BOULEVARD.

A STUDY OF SOME FUNCTIONAL INEFFICIENCIES OF THE TEETH ASSOCIATED WITH OCCLUSAL ANOMALIES.*

BY MILO HELLMAN, D. D. S.,
New York.

(*Concluded from page 892.*)

THE FUNCTION OF RESPIRATION.

Respiration, though a topic that would apparently concern the rhinologist exclusively, is nevertheless of no little interest to the dentist and orthodontist. Just as the highest efficiency in the function of mastication is attained through the normal activity of the teeth, so also is the perfection of the function of respiration dependent upon their normal passivity. Normal respiration, i. e., natural nasal breathing, is subject to two general conditions: 1, a clear and healthy nasal tract, and 2, normally shaped jaw bones and dental arches in harmonious relationship. The first condition is entirely rhinological, and is not within the scope of this paper. With regard to the second condition we may divide the disturbances into those due to teratological or deformed conditions of certain parts of the jaws such as the alveolar process of either jawbone, or the palate process of the upper jaw; and those due to well shaped jaws but disharmonious in their relationship to each other, such as Class II and Class III (Angle), cases of malocclusion where the dental arch formation may be quite right, but where the teeth are not in normal occlusion. In the teratological type are cases that present a deformity in certain portions of the upper jaw, while the lower jaw may be quite well formed; and others again may present just the reverse condition; i. e., the upper jaw may apparently be in good form and the lower deviate considerably. The deformities in the upper jaw are mainly limited to the hard palate. The vault of the palate is usually narrow and high; the lateral halves of the bone plates constituting it, instead of describing a gradual curve, unite in the median line in an acute angle, the so called V shaped vault. If it is remembered that the tissues constituting the hard palate are but thin plates of bone, forming the roof of the mouth by their undersurface and the floor of the nose by their upper surface, it will be apparent in what manner the nasal chamber will be affected by such a deformity thereof. Fig. 8 illustrates a case of such description. Two rhinological operations were unsuccessful in the restoration of nasal breathing. The nasal tissues were so sensitive to various disturbing factors that the slightest cold, for instance, would occlude the constricted nasal chamber. As it is difficult to convey a correct idea of the form of the palate by the models (Figs. 8A and B) representing the occlusal view of the same upper dental arch before and after treatment, diagrams were prepared from sections of impressions to illustrate the exact condition. Fig. 9 shows the diagrams of the palate region made of this case, and in order to emphasize the degree of this malformation, similar diagrams of the same case after treatment were made and placed side by side as well as in a composite form to facilitate comparison of the previous condition and the subsequent improvement. With the change produced in the shape of the palate, the extreme susceptibility to "colds" also disappeared, and nasal breathing was greatly improved. Thus it is shown that in this case nasal breathing was defective not only through pathological conditions existing in the respiratory tract, but also through a deformity remediable by orthodontic measures.

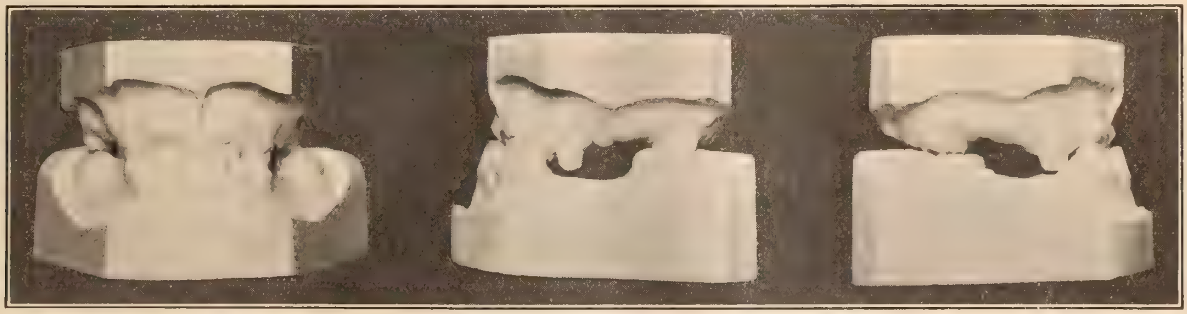
A B C

FIG. 7.—A. Front view same case as Fig. 6 (see page 892) two years later. Deciduous teeth were allowed to decay without interference. B. Left side view of same case, showing condition of occlusion and lack of function. C. Right side view of the same case.

In the lower jaw these deformities are not as frequent, but when they do occur they present disturbances of an entirely different character. Thus, the alveolar process with the teeth may assume such forms as to describe any figure but that of a dental arch. The teeth may be so malposed as to encroach upon the space allotted for the tongue and the latter

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*Read before the Harlem Dental Society, New York, October, 1916.

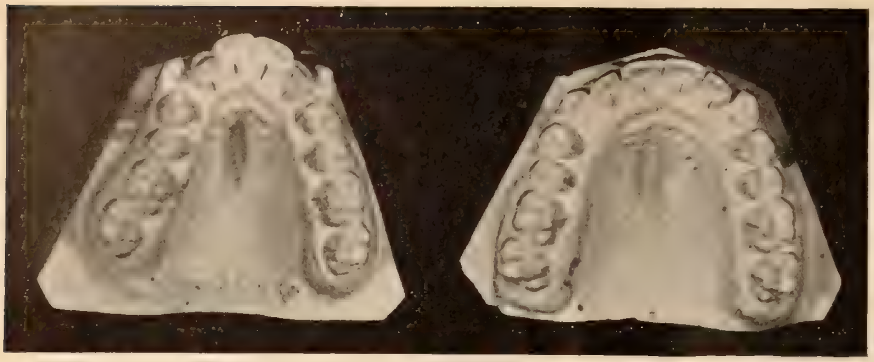

FIG. 8.—A. Occlusal view of case with extreme narrow or V-shaped upper dental arch and palate. B. Occlusal view of same case after treatment.

prevented to assume its normal position when the mouth is closed. Fig. 10A illustrates a case where the lower jaw (Fig. 10B) is so deformed that it was impossible for the patient to rest his tongue on the floor of the mouth during repose and handicapped him in speech—to which I shall refer later—the distance between the lower second premolar being 13.7 millimetres, while it should be 31.7 millimetres, as it measured after completion of treatment.

In order to emphasize some points, it will be necessary to digress for a moment and consider the oral mechanism involved in nasal respiration. "In the normal breather the mandible is raised and the teeth brought into occulsion, and as the act of swallowing is performed, the tongue expresses the air from between itself and the roof of the mouth, the lips and cheeks are sucked down upon the teeth, the lower lips binding over the lower edge of the upper incisors [and canines], the soft palate is raised and then allowed to drop upon the dorsum of the tongue, shutting off the oral cavity. The teeth then just drop apart from occlusion, and the mandible is suspended by atmospheric pressure and the muscles of the cheeks and lips are in repose" (Stanton). It is, therefore, clear that when the mouth is closed, the tongue fills the entire oral cavity within the dental arches, while the lips are in contact with the teeth externally, so to speak. The tongue, lips, and cheeks are in a relaxed condition, held in place by muscular tonicity.

Recalling the last two cases, it is obvious that it would be as impossible to force the tongue against the roof of the mouth in the former, as it would be to rest it on the floor of the mouth in the latter. Where there is no provision for the repose of the soft tissues surrounding the dental arches during nasal breathing, as in the above cited cases, the mouth will not stay closed without special effort. That effort may be exerted when the individual is conscious of it, but the moment consciousness is lost, as during sleep, the tissues relax, the mouth opens, and respiration is changed from nasal to oral.

While in one form of disturbance the nasal passage is encroached upon by the deformity of the hard palate and the tongue is deprived of its room either by the encroachment of the deformed palate or malposed teeth and deformed alveolar process, in

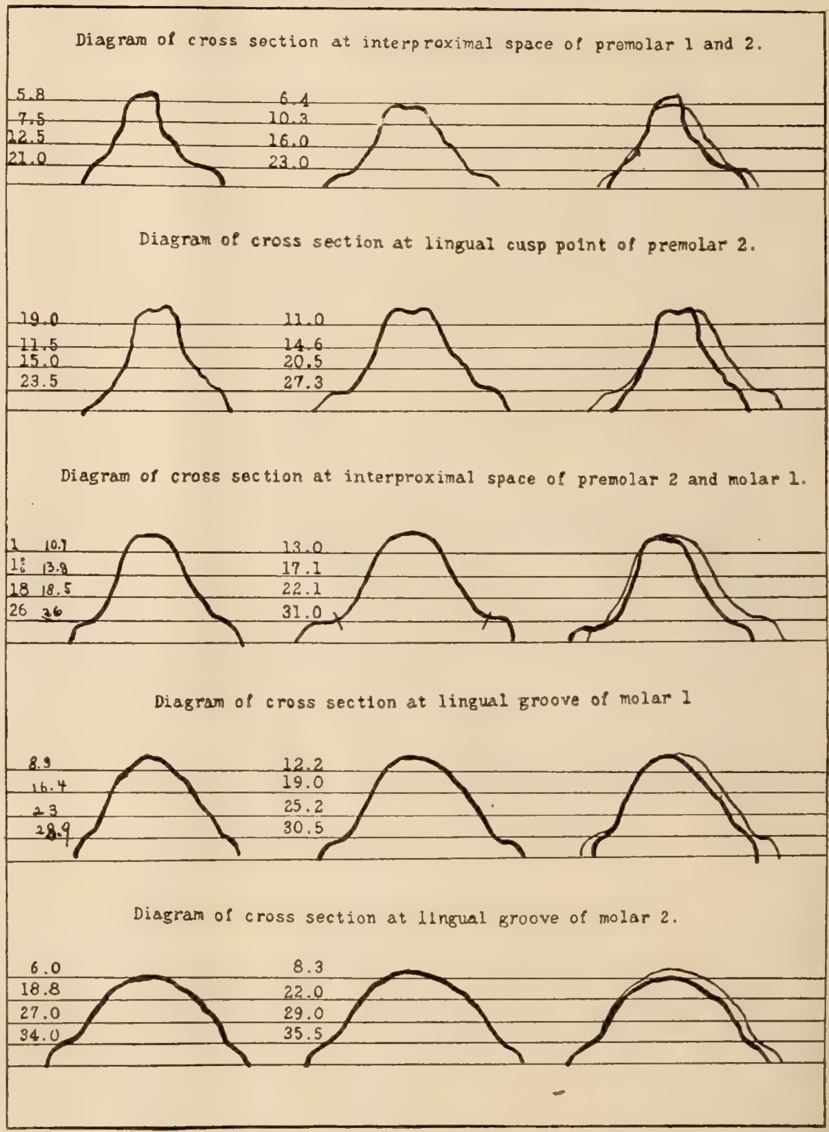
Diagram of cross section at interproximal space of premolar 1 and 2.
5.8
7.5
12.5
21.0
6.4
10.3
16.0
23.0
Diagram of cross section at lingual cusp point of premolar 2.
19.0
11.5
15.0
23.5
11.0
14.6
20.5
27.3
Diagram of cross section at interproximal space of premolar 2 and molar 1.
1 10.1
1: 13.9
18 18.5
26 26
13.0
17.1
22.1
31.0
Diagram of cross section at lingual groove of molar 1
8.9
16.4
23
28.9
12.2
19.0
25.2
30.5
Diagram of cross section at lingual groove of molar 2.
6.0
18.8
27.0
34.0
8.3
22.0
29.0
35.5

FIG. 9.—Diagram of sections made from impressions of the palate of Fig. 8. First column shows the diagrams of the palate before treatment; second column, the same case after treatment; last column shows the composite figures of the first two columns to illustrate graphically the extent of the changes that occurred. The numbers represent the measurements in millimetres taken at the points where the horizontal lines are intersected by the diagrammatic lines.

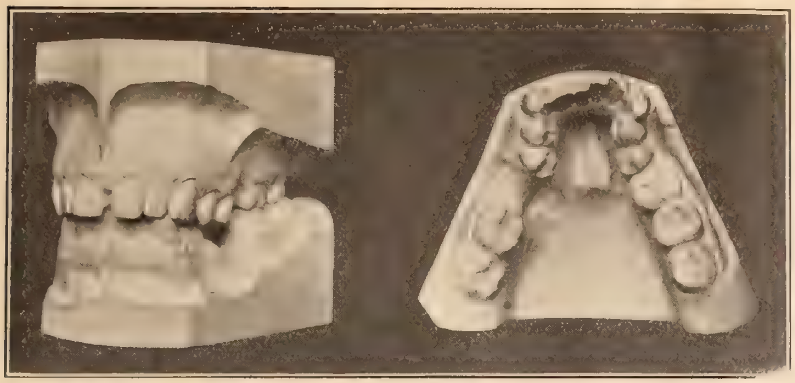
A B

FIG. 10.—A. Case of extreme maldevelopment of lower jaw where upper is not markedly deformed. B. Occlusal view, showing extreme narrowing in premolar region of the lower dental arch, handicapping the tongue in assuming its position in repose during respiration as well as interfering with its manipulation during the articulation of speech.

the other form of disturbance, nasal breathing is interfered with by the inability of the lips to assume their normal position mainly through the effect of disharmonious relationship of the jaws and the consequent malposition of the teeth; as in Classes II and III (Angle).

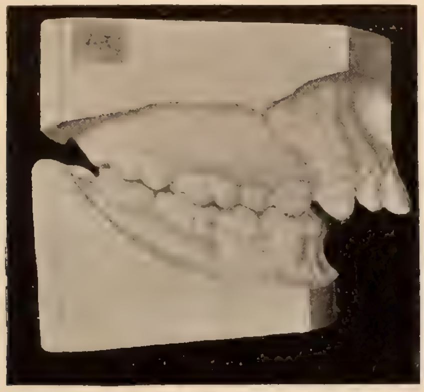
FIG. 11.—Side view of case of malocclusion, illustrating difficulty in closing the lips during nasal breathing.

In Fig. 11 it will be obvious how impossible it would be to place the lips in their normal position, as is necessary in nasal breathing when the mouth is closed. As a result of this condition the lower lip instead of resting upon the incisal third of the labial surface of the upper anterior teeth, giving an expression to the face as in Fig. 12A, it assumes a position between the lower and upper anterior teeth, just filling in the gap created by the malocclusion (Fig. 12B). The upper front teeth are grasped between the upper and lower lip, giving not only an unfavorable facial expression, but also aggravating the occlusal condition and interfering with respiration, for, as this position cannot be maintained indefinitely, due to the unnatural muscular tension, the lips drop apart when the mind is diverted, and mouth breathing is the result.

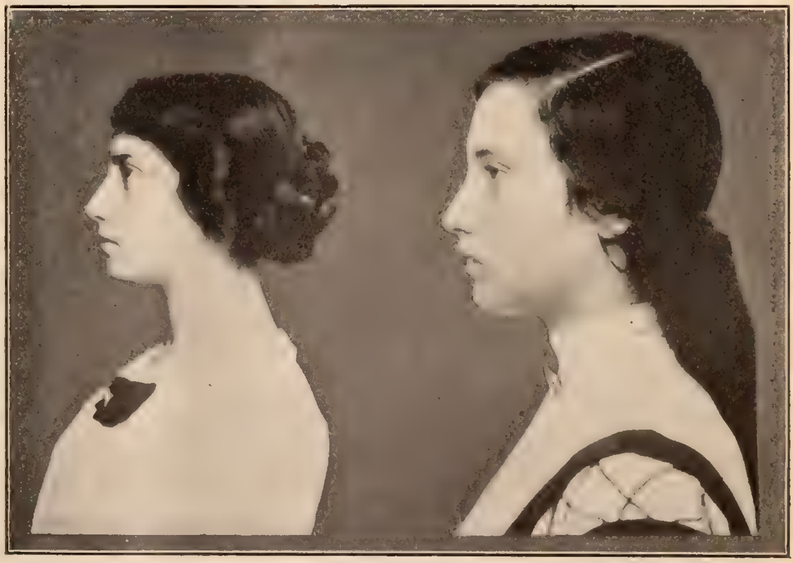
A B

FIG. 12.—A. Lower facial region of case of Fig. 11, showing normal position of the lips during respiration after orthodontic treatment. B. Same case, showing faulty position of lips before orthodontic treatment.

Again, when malocclusion is of a reverse character, as in Class III (Angle) (Fig. 13), the normal relationship of the lips is again interfered with and similar conditions, but of a reverse order, are brought about, as in the cases cited. In this instance it must be mentioned that mouth breathing, apart from nasal and nasopharyngeal disturbances, was due not to the malrelation of the jaws alone, but also to the unusually large tongue and underdeveloped upper jaw. It may readily be seen that an enlarged tongue could hardly be adjusted against a palate of the size depicted in Fig. 14, which will be appreciated when the subsequent size and form of the same dental arch after treatment is observed in Fig. 15. It can thus far be safely concluded that, as the process of decay may so impair the teeth individually as to render them incapable of proper mastication, so the condition of certain forms of malocclusion will interfere not only with efficient mastication, but also with normal respiration.

THE RELATION OF THE TEETH TO THE FUNCTION OF SPEECH.

The dependence of articulate speech upon the dental organs is at once evident when a person with missing upper incisors endeavors to pronounce words containing such sounds as are represented by the letters f, v, s, z, j, sh, ch. It is a well recognized fact that in old people with edentulous mouths speech becomes indistinct owing to the defective enunciation of these sounds. Actors have long ago recognized this and when impersonating the aged, will imitate the manner in which these sounds are uttered. For instance, the sound of the letter f will be produced by bringing the upper and lower lips together by the edentulous person and forcing the air out between them, while the individual possessing the necessary teeth will express that sound by placing the upper border of the lower lip against the incisal edge of the upper incisors. Also in children it is generally known to be a natural course of events for these sounds to become defective during the period between the shedding of the deciduous incisor teeth and the eruption of their permanent successors. However, between the extremes of the correct enunciation in the individual with the normal denture and the completely defective speech in the one with the edentulous mouth, there may be found a continuous gradation of defects in the production of such sounds that vary from the least recognizable to the most marked. Of course, in resourceful man particular effort and careful exercise may correct these faults by special training. Ventriloquists can make themselves well understood by the manipulation of the tongue in such a manner as to pronounce every word without the use of lips, but while ventriloquists can speak intelligibly by the use of special artificial means, it is in many instances a great effort to speak correctly under ordinary circumstances when certain parts constituting the mechanism of speech become defective. The disturbance of speech known as cluttering is produced when the desire to speak exceeds the ability to do so, and stuttering, when owing to some nervous disturbances the tongue or lips cannot be finely controlled.

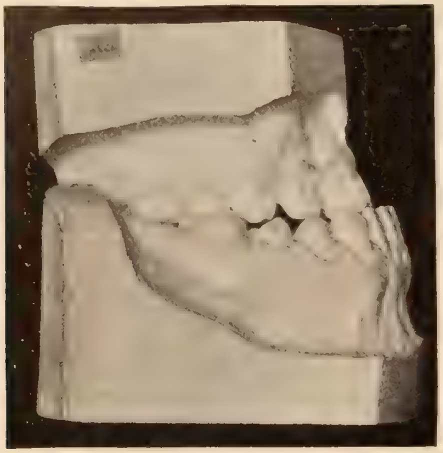
FIG. 13.—Case showing reverse relation of the teeth than that presented in Fig. 11, with similar difficulties in normal lip function.

Even with nervous and muscular elements in the best condition articulation may be affected when the teeth are in malocclusion. For instance, in the correct articulation of all the vowels it is first necessary for the tongue to assume a position in the floor of the mouth and then by changing the form of its dorsum and the shape of the aperture between the lips the various sounds are pronounced; as a, o, u, e. i. If Fig. 10B is examined again, it will be evident how impossible it would be to accomplish it under the conditions illustrated. Normally it would require a distance of about thirty millimetres at least between the lower second premolars to accommodate a normal adult tongue on the floor of the mouth in that region, while in this case the teeth were only 13.7 millimetres apart. This patient is a young lawyer and was seriously handicapped in the discharge of his duties.

Of the consonants the sounds of s, sh, z, f, and v will be mentioned. For the sound of s the incisors of both the upper and lower jaws are brought into an edge to edge position, and the tip of the tongue is placed behind and below the lower incisor teeth. For the sound of sh the same position of the incisors is maintained, while the position of the tip of the tongue is changed from the previous one to that behind and above the upper incisors, in the region of the first palatine rugæ. For the sound of z the tip of the tongue is moved slightly forward and the voice is added to the current of air. Fig. 11 will show how difficult it would be to assume those positions with the teeth in that type of malocclusion. The sound of f or v would be difficult to articulate properly, since the lower lip comes in contact with the lingual surface of the upper incisors instead of the incisal edge. While in this case

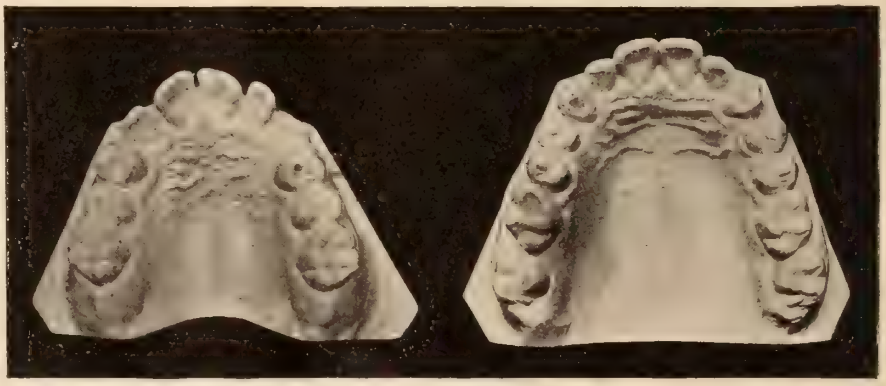
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FIG. 14.—A. Occlusal view of case Fig. 13, showing extremely underdeveloped palate and dental arch. B. Occlusal view of the same case, showing change in form and size of the same dental arch and palate.

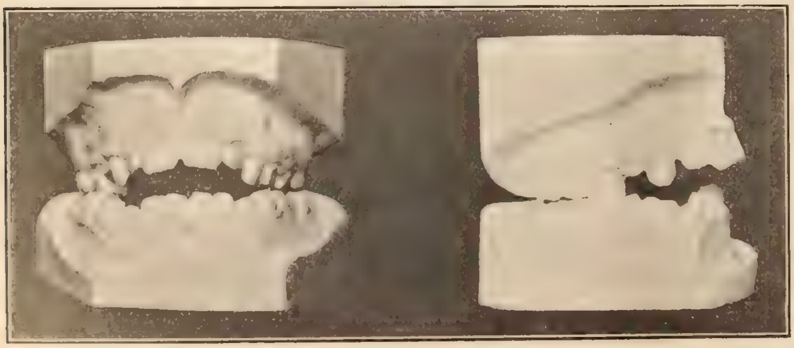
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FIG. 15.—Case of malocclusion illustrating such malrelation of the teeth as to interfere not only with mastication but also with respiration and speech.

only difficulties were encountered, there are cases in which it is quite impossible to accomplish it. Fig. 13 represents one form where it is impossible to bring the incisors edge to edge, for the mandible can under no circumstances be retracted to accomplish it. Fig. 15 presents another case where the position of the teeth is such as to prevent absolutely the normal production of the s, z, or sh sounds. The best that could be done by this patient was to produce a lisping sound by the substitution of the lower incisors with the tip of the tongue placed against the edges of the upper incisors. The lisping sound may be very "cute" in children, but when it becomes a settled habit in the adult, it becomes a serious handicap. It then conveys the idea of assumed childishness or unintentional affectation. It is then extremely difficult to overcome despite the correction of the occlusal disturbance and remains a menace to the permanence of the orthodontic result.

CONCLUSIONS.

1. The efficiency of a denture is dependent not only upon the full complement of teeth in normal occlusion, but also upon each tooth being complete in its form, integral in its constituent parts, and secure in its attachments to the supporting structures.
2. With the loss of one unit of a denture the functional efficiency is reduced to a vastly greater extent than that represented by the relative numerical proportion of the teeth in that denture.
3. The teeth, though vitally concerned in the mastication of food, constitute at the same time important adjuncts in the perfection of the functions of respiration and of speech.
4. With every digression from the normal in occlusion affecting the process of mastication, there is also a corresponding deviation from the normal in respiration and speech.
5. As these fundamental facts are fully recognized and the lesson appreciated, the profession may learn to pay greater heed to the warnings in every act, urging on to the best efforts, with punishment in the shame of failure and compensation in the glory of success.

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Wounded Knee Joint.—H. G. Barling (*British Medical Journal*, September 1, 1917) holds that the essentials of treatment comprise the excision of the wound; opening into the joint for removal of foreign bodies and fragments of bone when necessary, thorough lavage of the joint, closure of he joint, and suture of the wound or its packing as an alternative when closure is not possible. There is little choice of the fluid for the lavage nd it would seem that any effective antiseptic gent would do more harm than good by damaging he joint tissues. The lavage cannot be done thorughly without a free exit channel for the fluid nd lavage through cannulas is unsatisfactory. The ree opening of the joint is best accomplished by a teral incision on each side of the joint covering he extreme limits of the great bursal sac. With ee opening Carrel's method of treatment should adopted, using at least four tubes, but this should not be continued for more than a few days. The conservative treatment as outlined should be practised in every case not urgently demanding amputation, for it is never possible to be sure that by it one cannot secure a good movable joint. H. M. W. Gray also believes in the conservative method and emphasizes the need for its early adoption. He urges the complete excision or disinfection of the whole track of the missile and recommends the use of the actual cautery where this is not very extensive, or thorough rubbing of every part of the track with tincture of iodine or ten per cent. alcoholic solution of picric acid. Where foreign bodies or bone fragments are to be removed the joint should be opened sufficiently widely to allow their removal under direct inspection. After washing, the wound and joint should be closed at once in layers, a small opening being left down to the outside of the capsule and filled with a small salt pack where this is needed. All tendons and ligaments exposed during operation should be covered carefully with skin and subcutaneous tissue. Injections of ether, formaldehyde, and other solutions into the closed joint cavity seems of very doubtful value. C. Max Page also advocates conservative treatment in all cases where such seems possible, but suggests that where there is strong evidence that the joint cannot be saved primary excision should be undertaken at once. In conservative treatment, wherever the joint cavity has been opened, he believes that it is unwise to try to suture the capsule and that it is better merely to close the skin over the opening, or if this cannot be done, to insert a light dry gauze packing down to the opening in the capsule. In every case treated conservatively the one matter of greatest importance after the removal of the wound track and an initial cleansing of the joint is that of absolute rest for a prolonged period of time. This can be accomplished best only by means of a divided plaster splint extending from the femoral trochanter to and including the foot, the upper and lower sections being connected by two lateral steel or aluminum bars. With this cast in place the limb should be elevated by slinging and all dressings should be done without removing the cast until healing is progressing and there has been no fever for a week. Where suppuration develops lateral incisions should be made into the crural pouch, the pus evacuated and sterile dry gauze packed down to the openings into the joint cavity. W. Rankin expresses quite different views from the preceding authors and contends that the best that can be hoped for in septic wounds of the knee is a fibrous ankylosis, while there is always danger of spreading sepsis from an unopened or a closed joint. He recommends for all cases in young and robust men that the knee be laid wide open from the first by a curved incision running up over the top of the patella and down to be extended laterally on both sides of the joint. The lateral and crucial ligaments should be cut, the semilunar cartilages removed, and the tibia completely dislocated from the femur. The leg should then be put up in a position of partial flexion with the joint wide open for daily dressing. Phenol, 1:40, on gauze is alternated with alcohol.

Medicine and Surgery in the Army and Navy

WAR HOSPITALS IN ITALY.

By Charles Greene Cumston, M. D.,
Geneva, Switzerland,
Privat Docent, University of Geneva; Fellow of the Royal Society of Medicine of London; Honorary Member of the Surgical Society of Belgium; Member of the Surgical Society of Switzerland, etc.

Those who are interested in the conditions in medical and surgical Red Cross hospitals in Italy will do well to follow this article with a war map. At Belluno there is the Red Cross Hospital No. 28, a transportable building containing 275 beds. It can be taken down and packed in boxes and carried on muleback. In the heart of the Dolomites in the beautiful village of Cortina d'Ampezzo is to be found the large hotel Cristallo transformed into a hospital of the first line. It contains 300 beds, 100 for surgical cases, 200 for medical. The wounded coming directly from the front can reach this hospital in from four to ten hours. The apparatus for disinfection are particularly complete and well arranged. Going up still higher into the mountains at an altitude of 9,600 feet, where fighting has been going on this summer, eighty-four Italians and fifty Austrians were wounded in one encounter at 10 p. m. and by 4 a. m. the next morning every one of them was in bed in the hospital at Pocol, 3,900 feet below, this miraculous transport being made by the wonderful system of air cables, the voyage taking one hour and a half, while on foot it takes seven hours!

Hospital No. 34 at Pocol, a first line hospital, is lighted by electricity which the Alpine regiments make themselves, by borrowing the power from neighboring waterfalls. This hospital has 180 beds and an operating room, where every sort of operation on the head and abdomen has been done. Patients who can stand further transportation are sent by automobile to the hospital at Borca, situated in a valley a little below Curtisen. This hospital is fitted out in a large hotel quite close to the old Italian frontier. It contains 200 beds and has a very complete radiological outfit. During June and July, 1916, it received 3,000 wounded during the Austrian offensive.

At Mezzano there is a model military camp hospital composed of ten barracks or sheds, altogether containing 500 beds and with a splendid sterilizing plants for clothes, etc., and incinerators for soiled dressings. At Fiera di Primiero is a first line hospital of 200 beds and a little above at Siror is a small hospital which receives the wounded coming directly from the front in motor ambulances. In a beautiful private place at Valdobiadene a hospital of seventy beds for wounded prisoners has been established. Last June there were sixty patients representing all the races of Austria-Hungary and even some Vienna citizens were among them. The care given them is admirable, a contrast to that offered to prisoners unfortunate enough to be in the clutches of the more "kultured" races.

Farther on, at Montebelluno, is a hospital of 180 beds for the temporary care of tuberculous soldiers. There are very few cases, it is said, because the recruiting is very strict in Italy. At Vanegazzu is the Red Cross Hospital No. 38, given up entirely to the treatment of malarial cases. The patients come from the region of Montefalcone, Albania, and Salonica. At Galliera is a magnificient château which belonged to Ferdinand of Austria in the early part of the last century. It is now a hospital of 800 beds. It has a complete electric heating plant. During ten months 6,000 wounded were cared for. At Verona is the great military hospital containing 1,800 beds. Here they are using with great success in severe burns a preparation of paraffin called ambrine. It is applied in the state of fusion and forms a protective covering, under which burns of second and third degrees heal without leaving a cicatrix. The treatment is also used in cases of congelation. Professor d'Espine, of Geneva, tells me that some of the results he saw there were really marvelous. At Schio there are four military hospitals and two Red Cross hospitals, the total number of beds being 1,700. Patients are brought here from the top of the Pasubio by aerial cables, or *teleferi,* in from three to six hours. The wounded brought by automobiles come to the railway station at Schio and the serious cases are sent to the hospitals; those that can be transported are sent on to Verona or Milan in hospital trains. At one of the Red Cross hospitals of 600 beds is Professor Agostinelli, who has performed 101 operations on the brain with thirty-one deaths, a mortality of less than thirty-three per cent., which is remarkable.

At Sant' Orso is a pretty hospital of the first line installed in a beautiful villa overlooking Vincenza, under the direction of a very remarkable surgeon, Professor Saviozzi, of Pisa. Patients are brought here in from two to four hours after receipt of their injuries on the plateau of Asiago. Out of a total of fifty craniectomies there were thirty-three recoveries and seventeen deaths. Out of a total of 137 penetrating thoracic wounds there have been ninety-six recoveries and forty-one deaths. Thoracic wounds he treats by absolute rest, semisitting position, injections of morphine and camphorated oil, disinfection of the wound and removal of the projectile is necessary. Saviozzi has treated 101 cases of penetrating abdominal wounds. All patients operated within the first six hours following the receipt of the injury gave a mortality of thirty-eight per cent.; when operated on after the lapse of six hours the mortality has been ninety per cent. He treats compound fractures by Carrel's permanent irrigation with Dakin's fluid. In knee cases the irrigation is continued after arthrotomy has been done and has been able to cure cases of suppurating arthritis in ten days by this treatment.

Udine is an important hospital centre having altogether 20,000 beds and nothing is more curious than the hospital at Zagora, hollowed out in solid rock and electric lighted. During the great offensive it received and sent off 2,500 wounded men in three days! It is now still receiving some 200 wounded a day brought down the mountain on muleback or on stretchers. This hospital has eighteen beds which are used for cases too severely injured for further transportation. Another hospital installed in a grotto has seventy-five beds for the same purpose. The hospital has a room fitted out with everything necessary for scientific radioscopy, an operating room, and a disinfecting plant. Professor Marro, of Turin, is the surgeon in chief. The entire plant is a marvel of engineering skill and surgical science that would make any good Yankee sit up and take notice. At Bivio Cosbana is a sanitary station possessing forty automobile trucks with twelve surgeons, 200 stretcher bearers, and nurses. It receives and sends to the rear all the transportable wounded coming from Plava and Zagora. This station can lodge 1,200 patients under its tent.

At one prisoner's camp 71,391 prisoners have passed through since the beginning of the war. When the men arrive they are submitted to a complete cleansing and disinfection of their clothes, and they do not pass on to the second camp until a bacteriological examination of the feces of every man has been made. The physicians here state that to this rigorous quarantine is to be attributed the fact that both the Italian army and civil population have been preserved from epidemics of cholera and typhus since the beginning of the war. In the third camp the prisoners are newly equipped throughout and ready to be sent into the interior of Italy. Their food is good and abundant and is the same as that of the Italian army.

At San Giorgio di Nogara is a field university where during winter and spring medical students follow instruction in the surgery of warfare and here Professor Tusini, of Padua, has a large surgical service for teaching purposes. At Venice there is a large Red Cross hospital of 500 beds. The hospital is admirably fitted out for quarantine for both Italians and prisoners coming from the front directly to Venice. At Milan there are altogether 25,000 beds and 40,000 if the suburbs are included.

Let me now say a few words on the health service of the Italian army, on wound treatment and the hygienic measures taken throughout the war zone. In the first place the aid to the wounded is organized as perfectly as is humanly possible over the entire Italian front and the very complete outfits of the advanced field hospitals allowed operations and hospitalization for a week or more of serious wounds of the head, thorax and abdomen. The operative statistics are unquestionably very brilliant, particularly when the serious injuries are seen and operated on within the first six hours after receipt of the injury. From this standpoint I would mention the importance given the radiological services and the sterilizing plants which abound everywhere. Another important point to which I would call particular attention is that in the advanced field hospitals the operators are in most cases well known hospital surgeons and professors and it is largely due to the fact that skilled and competent men first see the serious injuries and deal with them at once that the Italian surgery of this war has been so strikingly successful and scientific.

The Health Service of the army is wonderful and it is due to it that no epidemics of cholera or typhus have occurred. In this respect Teuton science is nowhere compared with the Italian. Vaccination for typhoid and smallpox have preserved the soldiers from these diseases and every wounded man receives an antitetanic vaccin. Thus, tetanus has been almost unknown. Too much praise cannot be given to the great scientific work accomplished by our Italian confrères.

THE WORK OF THE UNITED STATES PUBLIC HEALTH SERVICE IN RELATION TO THE PRESENT WAR.*

By John W. Trask, M. D.,

Assistant Surgeon General, United States Public Health Service.

In general, the work of the United States Public Health Service in relation to the present war may be classified under three heads, Doctor Trask said in his address before the general session of the American Public Health Association on October 19th. "The Public Health Service is protecting the health of troops in mobilization camps and cantonments by securing the best possible sanitary conditions and health administration in the territory surrounding these camps. It is increasing the facilities at quarantine stations, particularly on the Atlantic seaboard, so that they will be able to meet . . . any emergency that may arise in connection with returning troop ships with communicable disease on board. It has also been able to be of service in various ways to the army and navy."

The sudden increase in the population near cantonments gave rise to hazardous conditions of sanitation and health. Where towns sprang up or where the population of existing towns was greatly and suddenly increased, the danger of the spread of communicable disease through infected persons, infected milk and other food products, infected drinking water, and flies and mosquitoes was greatly increased. As soon as locations of cantonments were decided upon, the Public Health Service made sanitary surveys of adjacent civil areas as to the efficiency of the local health administration, the condition of the water and milk supply, and the prevalence of communicable diseases, and reports were submitted concerning measures necessary to remedy such defects in these details as were discovered. Public health officers with Federal, State, and local authority were placed in charge of sanitation and health administration in civil zones around twenty-one mobilization camps. In taking stock of the resources available in each zone, the following factors were considered: the existing resource of the local governments; the assistance of the State health departments; the service of the Public Health officers themselves who assumed responsibility for malaria control in rural territory; and the Bureau of Sanitary Service of the Red Cross which furnishes units consisting of bacteriologists, sanitary inspectors, public health nurses, clerks, laboratory assistants, and miscellaneous employees. Through the mobilization and coordination under an officer of the Public Health Service of the authority and resources of the communities concerned of the State and Federal governments supplemented by the assistance of the Red Cross, effective sanitary control was made possible.

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*Abstract of an address read before the general session of the American Public Health Association, October 19, 1917.

In determining the civil areas to be taken under sanitary control it was intended to include all the territory which would be frequented to any considerable extent by the troops from the cantonment or camp. In some instance zones covered all of a county, two counties, or parts of several. Upon taking charge, one of the first steps of the public health officer was to have adopted and enforced additional regulations necessary for proper sanitary control such as regulation pertaining to wells, sewers, water mains, and the handling, care, and sale of milk and other food products. He also saw to it that the requirements for the reporting of communicable diseases were enforced. The staffs of the local health departments were used as the nucleus to which were added experts of the State health departments, trained men of the Public Health Service, chiefly for administrative supervision, and finally the Red Cross sanitary units filled in the gaps. To facilitate and enforce, where necessary, the reporting of cases of communicable diseases, practising physicians were to be encouraged to report cases over the telephone and to use forms and franked envelopes for the purpose when they did not use the 'phone; homes of the patients were to be visited and members of the household instructed and given precautions as to the disease present; limited or absolute quarantine was to be instituted and inoculation of exposed persons administered; school children were to be supervised for the early detection of disease; free vaccination against smallpox, typhoid, and paratyphoid was to be offered; and public health nurses were to supervise cases of communicable disease in poor households where precautions against their spread would be at a minimum. It was intended to make a sanitary inspection of all the homes in small towns and rural communities, paying particular attention to the water supply and sewage disposal. As regards malaria prevention, it was the intention to prevent the breeding of the anopheles mosquitoes in an area a mile wide immediately surrounding the camps, by draining swampy areas and accumulations of water, channeling streams so that water would flow quickly, oiling places that could not be drained or filled in, screening houses, supervising cases of malaria and administering prophylactic doses of quinine to exposed persons.

Regarding the increase in the quarantine facilities certain stations along the Atlantic seaboard were being greatly enlarged and improved. The twenty-three hospitals of the service would be of increasing service as the war progressed. Public Health officers who were on the Coast Guard vessels at the outbreak of war were now definitely assigned to those vessels and constituted its medical service. The service was continuing to furnish medical and surgical relief to the Coast Guard on land, and it also made physical examinations of applicants for enlistment or commission. If the war was prolonged, there were other functions that the service might perform, such as sanitary supervision of important war industries, captured towns and prison camps. If the Government should find it necessary to mobilize industrial workers their medical and surgical care would undoubtedly fall to the service.

SURGEONS IN THE WAR.*

By COLONEL SIR BERKELEY MOYNIHAN, C. B.,
Senior Consulting Surgeon of the Royal Army Medical Corps.

Sir Berkeley Moynihan said that Major George W. Crile and himself might be called the oratorical twins for together they had been for the past three weeks delivering addresses on the subject of the war, particularly from the viewpoint of the medical man, the surgeon. Their main desire had been to try to tell their audiences something of the truth as they had seen it in the very heart of the situation. Truth was a crystal of many facets; some of the most brilliant had already been viewed but there were others that he hoped to project on the consciousness of those who listened to him.

When a nation, or many nations were at war, they did not at first realize why they had been called to arms of all the underlying motives and principles involved which guided those who were conducting the war. Therefore it was necessary that those who understood and who had had experience should call attention to the main issues. There had been in France and England and there was beginning to be in this country a propaganda, not only on the platform by those speaking in authority of the things they had seen, but one supported by the best authorities of their kind in the world, whose real nature had been shown in their "Song of Hate." If this propaganda was to be confounded all the science and all the real knowledge of those who knew the facts must be used. Unless it was realized what war meant and all that was happening over there, all the conflict would be in vain.

With regard to this war, away down beneath the surface there were two sharply contrasted and unconformable moral systems; this was not a material war; it had been a moral, a holy war since the beginning. The principle guiding the enemy was ground into the very fibre of the people and worshiped by them, the doctrine of tyranny, a complete surrender of individual rights and submission to a power exercised from without. The principle guiding the Allies was liberty, the inalienable and indestructible right to be oneself, to express oneself and to develop one's own character from within. Liberty could easily develop into license; the thing that prevented it doing so was a self-surrender on the part of the individual and the fact that he conformed by his own free will to laws which he had imposed on himself. In a democracy it did not matter whether the laws were good or bad; the point was that all the laws were made by the people themselves.

If one followed these two contrasting principles, tyranny and liberty, one would find that the nations that believed in them began the practice of them on their children from the day of their birth. The doctrine of tyranny, of Prussia, commanded the whole educational machinery of Germany. In 1911 the proportion of those having private instruction to those instructed under the Prussian Government was one to 750. The teachers were servants of the State, their livelihood, careers, honors, and titles depended on the authority above them. In consequence every individual so educated conformed to a certain pattern. In England and America things were done in a different way. There it was not the real desire of any parent that their children should have great individual acquirements or achieve great distinction in the world; the great desire was that the child should be clean, honest, and straightforward, that he "play the game." Taught in early youth to play with others and for a side, what he played for was not the achievement, but the effort; what he felt he ought to secure was not the goal but the knowledge that he had played well. The finest epitaph raised to those Englishmen who had died in the war was that "they played the game." It could be said of any one of them, killed in action, that there died a gallant English gentleman.

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*Abstract of address delivered at the meeting of the Medical Section of the New York State Committee of the Council of National Defense, Waldorf-Astoria Hotel, New York, November 8, 1917.

There were then in this war two contending and irreconcilable views, autocracy against democracy, and tyranny against liberty. To medical men this was a vital issue, critical and grave. The victory of tyranny meant restriction of intellectual outlook, a fettering of thought to authority and the atrophy of long disuse of those qualities which made for original endeavor. Tyranny made for the negation of scientific advancement, for the sterility and death of progress. It was impossible for any nation governed by tyranny to give to its citizens individual freedom for advancement in science which must first and last depend on unrestricted freedom of all the faculties of the human mind of which the chief was imagination, the mother of fact, the scaffold on which men stood to build up the structure of truth. Imagination could not live in the atmosphere of tyranny; thought must develop along the paths of challenge and inquiry. Germany had been for the last forty years an organizer, never an originator, the exploiter, not the explorer. Even if this were only an intellectual conflict, Germany would and must be beaten in this war.

Now that it had been explained why there was a war, a few words might be devoted to explaining how it was being conducted. At the outbreak of hostilities in England the consciousness of the entire nation was stirred. The whole kingdom rejoiced when England declared war for it was realized that this was a turning point in history. Germany then treated England as she now treated America and as she speaks of her today, with frank and open contempt. But Germany's contempt for England first changed to thoughtfulness, then to anxiety and wonder and now was approaching fear. There were certain ideals which England knew she possessed but in the old days never talked about, that she thought all countries possessed, ideals of the sanctity of the pledged word, but Germany said, and proved she thought, that this was not worth the paper on which it was written. The Allies thought the other nations, as they did themselves, protected the rights of small nations, stood for universal justice. These things were ideals, yet they were real to every Englishman as had been shown by the splendid and efficient rapidity with which the colonies had come forward to aid; they were daughters, after all, in their Mother's home, though mistresses in their own and one of the heartening things to see in France was the complete absence of any camouflage of strained politeness between the peoples of different colonies, meeting for the first time, not as strangers but brothers.

At the time war broke out, England had her troubles. There was the eternal and insoluble Irish problem. This had been laid aside, so one could say Germany had done that much good. There were threatening troubles with regard to democracy which sometimes thought of its rights more than its duties, but on the outbreak of war the troubled waters of politics calmed; selfsurrender became the social antiseptic. Even the Royal Academicians took up arms and peers became privates in the ranks. The medical men everywhere rallied around the flag. Much was expected of the profession and it was not expected in vain. There were in Great Britain and Ireland and Scotland 30,000 practitioners and of that number not less than 10,000 had already been in khaki and had seen active service. The 30,000 included every physician in the country, those too old for any kind of service except that offered them now, those retired, the halt, the lame, and the blind, even the derelicts. So the proportion was one to three. In Leeds, the speaker's home town, the surgeons were asked to start a hospital of 520 beds, that being the size of a military hospital in times of peace. After consideration it was decided that as there were four surgeons and four assistant surgeons in Leeds it might be possible to carry out this duty and by relays of work assume the responsibilty of so large a hospital as 520 beds. Of the eight surgeons there were now only three at home, five having gone to the front. Those three called to their aid the general practitioners remaining in the surrounding country and the city itself and when Sir Berkeley departed to come on this trip to America, he left them in charge of a hospital containing 6,300 beds. He did not like to leave them idle while he went away so he put certain plans into execution so that when he returned he expected to find 7,300 beds in working order.

The civilian medical practitioners who had become soldiers had a double function to perform; they were partly soldier and partly doctor. The medical was the equal of any corps in the British army and in some things surpassed them; they had had a far larger proportion of those distinguished with the Victoria Cross. Twice in its history a bar had been added to the decoration which meant that it was for a second act of valor greater than that for which the cross was originally given; the bars had been won twice in the present war and both had been won by doctors. The first was won by a Glasgow medical student, shot through the thigh. He was carried to a dugout by the side of the communicating trench and lay there refusing to be taken back—a deplorable lack of discipline—for twenty-two hours without a dressing but attending to a long chain of wounded brought back to him as he half reclined in this dugout. It was known now what that meant. He lay there until his wound passed through the stage of certain infection and, when help reached him, it was in a condition of rapid suppuration and eight days later he was dead.

So far as the scientific part of the work of the medical corps was concerned, the most dramatic was that achieved in connection with that attack on

August 29, 1915, by the Germans when they sent over chlorine gas shells. Within twenty-four hours the best physicist obtainable was in the trench and in three days a protecting mask had been designed, tested and ordered manufactured in quantities.

Perhaps the greatest achievement was in connection with typhoid fever. The figures had been quoted so often in the last three weeks that they were probably already quite familiar; but lest some should not have heard them, they might be allowed here. In the South African War, lasting nearly three years, 57,684 were stricken with typhoid fever and 8,022 died. In this war, up to August 25, 1917, with ten times as many troops engaged where every condition in respect to soil and climate was worse there were only 6,022 cases and 292 deaths. In Egypt there was a disease called bilharziasis from which one third of the population had always suffered and which was considered incurable. A medical commission sent out by the British war office in 1914 studied this disease, discovered the secrets with regard to it and made certain that this disease could now be considered extinct, swept off the earth forever if reasonable precautions were taken. In many other directions in medicine and surgery most notable advances had been made. Full information with regard to them would soon be presented.

Perhaps a few words as to the way the men behave would be interesting. They had been paid many tributes which as one who had seen them at all time, under all conditions the speaker could cordially support. In the field they were terrible fighters; in the hospitals they were cheery, patient, and uncomplaining, though most of them were hardly more than boys. A corporate feeling held them together, in the time of attack, but even when alone in the hospital there was never a whisper or a whimper of regret or surrender, they were always "playing the game."

And now that America had come into the war what was it going to be like? All felt that when America entered the war it took on a different complexion. It became clearer then that Germany was not at war with a people, but with the will and conscience of mankind. Germany was more powerful now than she had ever been before; she could get fresh troops into line at the rate of 1,250,000 men a year, year after year, for, accordng to their statistics, that number reached the age of eighteen years annually. She was a great nation, ruthless, implacable, fighting for her life. She was never going to be beaten from within; she would have to be conquered by the Allies from without and it was going to be a fight to a finish and against an enemy who used unsportsmanlike and unfair methods. It was interesting to one who knew that he had fought in every part of the world to note the attitude of Thomas Atkins, the most fair minded fellow on earth; he had no respect whatever for the individual Boche; he was kind to him, attended to him when wounded, but he never had a word of praise for him though he spoke with admiration of the fighting qualities of the Turks. It was extraordinary how universal that opinion was.

Americans must be prepared for a long war that would take unending resolution, but they would realize in the end that the whole thing had been worth while. The war would only begin when every man of military age in the country had offered his services and was prepared to surrender his life; when upon the high altar of patriotism in the temple of freedom lay honor still requiring defense; when thousands, ten of thousands of illustrious dead were mourned. A high price would be demanded for the achievement of victory in the noblest cause in which sword had ever been drawn.

For England and America, what after the war? The best thing about this war, that made it really worth while was that America and England at last stood together side by side. They so stood already, represented by those young medical men that America had sent to assist in the treatment of the wounded and those who welcomed their coming and their gladly accepted help. Watching them, one realized that after this war was over there would be in England and America many ambassadors of affection and good will. They were young and youth was the time for surrender to mutual ideals which would serve as the cement binding the two countries together forever.

COUNCIL OF NATIONAL DEFENSE.

Medical Section Holds Public Meeting in New York —Brilliant Audience Listens to Scholarly Addresses.

A brilliant audience, including practically all the leaders in the medical profession in New York, gathered in the ballroom of the Waldorf-Astoria Hotel, on the evening of November 6th, at the invitation of the New York State Committee of the Medical Section of the Council of National Defense. Many medical officers of both the army and the navy were present, one of the boxes being occupied by General Charles Richard, surgeon of the Department of the East, and his staff and another by a naval medical director and a number of naval surgeons. A group of Canadian nurses in khaki and leather leggings and the Canadian nurses' corps—the nurse in Canada is a lieutenant—and several French officers also attracted much attention. On the platform were a number of men prominent in medicine in New York, many of them in uniform. They had attended a dinner given to the speakers at the Metropolitan Club.

Dr. George D. Stewart opened the meeting with a short address in which he said that as America was now in the war with the determination to end the menace to individual liberty, a conflict in which medical men were vitally interested, it was a valuable privilege to be able to hear at first hand of things as they were from physicians who had been in the very smoke of battle as well as those who had been engaged in organizing the medical forces of this country.

WORK OF THE COUNCIL OF NATIONAL DEFENSE.

Major Franklin Martin, M. R. C., member of the Advisory Commission, chairman of the General Medical Board of the Council of National Defense, Washington, D. C., expressed his appreciation of all that had been done for the Government through the Council of National Defense, and paid tribute to the executive efficiency of Surgeon General Gorgas, that most loved soldier in the whole army, and the others who had assisted him to bring about the present day results. It was a privilege to be living in the time of the greatest war in history; it would be a privilege for every one to accomplish something toward victory. It was time for Americans to awaken to the responsibility before them, to realize that their selfconfidence was the result of a propaganda that made them feel they were safe. Germany had won at every point except the western front, and everyone knew why she had not won there. What had Germany been doing? She had been annexing territory equal to all the territory she had at the beginning of the war; by diplomacy if she could, by conquest and plunder if she could not. As each of the territories had been taken over, what had happened? Had they been a burden to her? No. German efficiency had immediately organized those countries and they were now contributing to Germany. The prisoners were doing her work and where she brought produce she paid in paper; where she sold it she received payment in gold, until she had today in gold reserve double the amount she had in July, 1914.

This conflict was to be a serious matter, and the selfconfidence, the feeling of false security should be eliminated or America with her allies would go down in defeat. From whom was this propaganda of false security coming, this "Take your time, America" view? There was no time to spare, and if there was nothing else that could be accomplished by this meeting, it would be worth while if from it spread, like a splash of red across the continent, the warning to rouse before it was too late.

The Council of National Defense had been doing its part. It was composed of six members of the Cabinet and seven civilians and was supposed to act in an advisory capacity. With few exceptions, the advice given by the Council had been accepted. Each of the seven civilians had charge of one portion of the work. It was the speaker's privilege to have charge of the Medical Committee, which coordinated the work of the four administrative offices of the surgeons general and that of the Red Cross. That had been done by gathering together from all parts of the country a committee of thirty-five of the strongest medical men who could be selected and they were appointed to the General Medical Board of the Council of National Defense. They gathered together every Sunday at the beginning of the war, week after week, some from as far as the Pacific Coast, giving their services without compensation and paying their own expenses, and helped the four departments of the Government and the Council of National Defense to organize the Medical Department. When the history of this war was written it would be said of them: "There were giants in those days." Many of the original thirty-five had gone abroad; they saw the necessity of doing things and they went ahead and did them, going over to help England win the war. Their places had been taken by others and the work of the Board went on. The regular Army Medical Corps consisted of about four to five hundred with 450 for the Navy. When this war had brought out an army of five million men it would be necessary to have 35,000 civilian doctors to man the Medical Departmet of that army; therefore it was plain how necessary was cooperation between the regular army Medical Corps of 500, and the 35,000 civilian doctors. By all kinds of efforts, in all kinds of ways and bringing all kinds of pressure to bear, the Medical Department of the Army had been increased to an actual enrollment of 21,000, or enough to take care of three million soldiers, one million more than had yet been called to arms. Of this 21,000 over 14,000 had been accepted by the Surgeon General and had received their commissions, enough to supply an army of two million. Besides this there were 1,400 medical officers in the National Guard and the original 500 of the regular army. The 450 of the navy had been increased to 1,700 or several hundred more than the navy would need unless it was enormously increased in the next three years.

All this had been accomplished without any more friction than there was in the office of the United States Steel Company. But this was not surprising, for doctors, many of them, had a genius for organization. Was anything better organized than a laboratory? The Red Cross also was doing wonderful work and was ready to serve at any point where the army or navy Medical Departments could not act fast enough. Those men of the Medical Department had been given the opportunity to serve their country as Americans once served themselves in the days of the Declaration of Independence. The outcome of such devotion to principle could not but result in the defeat of the enemy of the liberty of the world.

Major Charles H. Mayo, of Rochester, Minnesota, then spoke in the absence of Major General W. C. Gorgas who had expected to be present but who had been detained in Washington on official business. An abstract of Major Mayo's remarks will be published shortly in the JOURNAL.

THE GERMAN PHILOSOPHY OF MIGHT.

Major George W. Crile, M. R. C., director of Base Hospital No. 4, asserted that the Germans believed that they, as the fittest nation, would survive, was based on a conception as primitive as that which existed in prehistoric man. They regarded themselves as the fittest because they believed they were the strongest, overlooking the fact that through the ages strength had been overcome by brain; in other words civilization had conquered savagery.

As one who had actually known, he wished to pay tribute to three groups of people. First, the three hospital units from this country, now abroad and who sent greetings to all their friends here. They were doing great and splendid work that reflected great credit on their country and their profession. Second, the Red Cross for their aid in the prevention of disease and in taking care of the sick and supporting the widows and orphans. Third, the fortitude and courage and devotion to duty of the English soldiers, many of whom he had seen sick and wounded but from none of whom had he ever heard a word of complaint or of regret; they lived or they died at the post assigned to them. It was impossible to conceive of their ever leaving Flanders alive, except after victory.

The struggle was destined to be long. This was more than a war; it was a social and moral revolution of the human race and if right was to win the United States must put her whole force into the struggle for liberty and civilization. The German philosophers had stated very clearly their conception of the deeper meaning of the war. They had built up a certain logic, a certain theory, and had reached a certain conclusion, which they impressed on all their people through their schools and universities, a state of mind peculiar to the German people, and resulting from Darwin's theory of the survival of the fittest. In nature the strongest and most clever animal was best adapted for existence. Among the people of the earth the Germans were the strongest and most clever; so to the German mind it followed that the German nation was the fittest to survive and entitled to take from all other nations, land, wealth, even national existence. But this was the necessary view of the caveman; when men through the process of evolution merged into communities this necessity no longer existed. Might and force were no longer synonymous with fitness, and the man who exercised them, being a robber, a murderer, was banded against by the community as a menace to it and destroyed. Germany realized that the community of the world was against her; when she realized why, it would no longer be necessary to destroy her, for she would no longer constitute a menace. Every member of the community, for the good of the community, the peoples of the world, must join in the conflict against the nation that claimed the right to rob and plunder because of her strength which she claimed enabled her to defy laws, community behavior, and justice.

MAJOR FRANKLIN H. MARTIN, M. R. C.,
Chairman, General Medical Board, Council of National Defense.

An abstract of Colonel Sir Berkeley Moynihan's address is published in this issue of the JOURNAL.

Following is a list of the New York State Committee, Medical Section of the Council of National Defense, which organized the meeting: Dr. George D. Stewart, Chairman; Dr. J. Bentley Squier, Treasurer; Dr. James B. Clemens, Secretary; Dr. F. T. Van Beuren, Jr., Executive Secretary; Dr. Herman M. Biggs, Dr. Arthur W. Booth, Dr. Samuel A. Brown, Dr. Alexis Carrel, Dr. R. S. Copeland, Dr. F. H. Crandall, Dr. R. L. Dickinson, Dr. Simon Flexner, Dr. Russell S. Fowler, Dr. W. Stanton Gleason, Dr. S. S. Goldwater, Dr. George W. Goler, Dr. Walter B. James, Dr. Samuel W. Lambert, Dr. Adrian V. S. Lambert, Dr. Walton Martin, Dr. William M. Polk, Dr. Frederick E. Sondern, Lieutenant Colonel A. W. Williams, M. C., U. S. A.; Dr. Howard C. Taylor, Dr. Martin B. Tinker, Dr. Albert Vander Veer, Dr. R. W. Westbrook.

LETTERS FROM A MEDICAL OFFICERS' TRAINING CAMP.

An Officer Student's Outfit.—Initiation Into Camp Life.—Routine of Daily Duties.

U. S MEDICAL OFFICERS' TRAINING CAMP,
FORT BENJAMIN HARRISON, IND.
November 5, 1917.

My Dear Doctor:

When I left home in the early summer you asked me to give you some kind of detailed narrative of the life and work in this training camp so that you could make up your much disturbed mind as to whether or not you would send in your application for a commission in the reserve corps. I have waited until now as I wanted to be able to write about all the doings here from my own experience which at this time covers a period of over four months.

Let me begin with the purchase of your equipment and outfit when ordered into active service. One wool serge or melton suit, and one khaki cotton suit with an extra pair of breeches; as the quartermaster does not supply any more officers with "issue suits, wool, O. D." it is necessary to get this from a private tailor. A service hat and a cap; two flannel O. D. shirts; O. D. belt; black four in hand tie; two or three pairs heavy broad toe, tan shoes; one pair pigskin puttees; one raincoat, or slicker, O. D.; one overcoat; one regulation trunk locker; one bedding roll with light mattress; two wool blankets; one or two quilts; a pillow and sheets optional; hat cord; collar insignia; caduceus; cap ornament; shoulder bars; and a cot. This about completes your outfit and equipment, and you won't need very many additional things if you come into camp.

When you leave home you ought at once forget that you are a licensed practitioner of medicine; for the army needs not so much a physician as it does a military surgeon, with the word military in capital letters. You may have been a little or big tin god on a pedestal to your patients and even to your fellow practictioners, but *"lasciate ogni speranza voi ché entrate."* You are to be made over into a soldier who will positively obey orders and not insist on continuing the czar he was among his patients, a thing only too natural with all of us medicos. Shed that skin, for to continue in it means not only discontented hearts, but sometimes also trouble with those in authority above you. "You're in the army now, you're not behind the plow . . ." And how easy such transmutation is is shown you by the daily patent fact that whoever has "joined" is more than satisfied, nay, even enthusiastic. Men of all creeds and positions, millionaires and poor, college professors, interns, young graduates who still smell of the recent quizz rooms, men of metropolitain reputation and authority, and men from out of the virgin forests of the mountaineers —all, all have come. So why should you linger? The fleshpots of Egypt are a good thing; but one becomes soft and flabby in mind and body on that diet. And what is more, in this melting pot of military training real democracy is bred and truly exemplified and proved. Here we meet man to man, the naked soul exposed to the sharp eye of superior and of fellow students in camp. Real manhood is brought out, the unfit in mind and body eliminated, and who would wish to miss the opportunity of proving himself a real man? Among us are men of our profession who went across as ambulance drivers and stretcher bearers, men of wealth in gold, and men of wealth in golden hearts and souls; and again those not blessed with this world's goods. "When Johnnie comes marching home" we too, shall march, in body or in spirit.

When you arrive at the camp be sure to wear your service hat; bury your cap in the bottom of your trunk; else shouts of greeting, "Hello, Doc," "Where's your orderly?" "Got your horse, Doc?" will go up from the company streets. Don't feel peeved at such merriment; it is part of the initiation ceremonies.

> "Doctor, get your gun and your sword and your pistol,
> Doctor, get your horse and your orderly, too!"

Many a newcomer was thus greeted when he appeared with side arms, belt, and canteen around his aching hips, and his bedding roll over one shoulder and his trunk dragged after him in the other hand. Report to the adjutant at headquarters and then to the C. O. of the company you are assigned to. The latter will show you a place in the barracks where you put up your cot at once, and then you get out within five minutes and get busy at drill. Up at 5:30 a. m., roll call, breakfast at six, and from seven to twelve drills, hikes, lectures, q. s. Dinner at twelve. From one to five again on duty as in the morning, and when 8:30 comes you are ready for Morpheus without any lullaby. It is astonishing to see how quickly and how thoroughly this transformation from physician to soldier takes place; you won't know yourself after one week's training; the embonpoint is gone, your breathing is free and easy, and you eat with an appetite that would seem worthy of a more lucullian fare than what you get at the mess. You learn in that first week that what counts in this game is efficiency, being "on the job," and not dodging anything connected with your duties or work. You may rest assured that your efficiency will be rewarded proportionally by assignments to duties in regimental detachments, field hospitals, ambulance companies, evacuation hospitals, base hospitals, administrative positions, adjutants, sanitary inspector, aviation corps, engineers' corps, and the numerous other positions open.

The work in camp is divided according to schedule into eight to ten weeks. Beginning with drills—salute standing at attention, marching, "fours right" and "fours left" up to passing in review—hikes daily from three to eight miles, litter and tent drill, lectures on army regulations, manual of the Medical Department, field service regulations, sanitary instruction, paper work, one gradually reaches the meaning of it all and goes on to the work in field hospitals and ambulance companies within the required time, unless one has shown particular fitness for special work and is detailed to it and becomes assistant instructor, or is assigned away from the post to other organizations anywhere in the United States or across the pond.

Sincerely yours,

JOHN SMITH.

MEDICAL NEWS FROM WASHINGTON.

Low Government Insurance Rates Justified.

WASHINGTON, *November 7, 1917.*

Medical Inspector H. C. Holcomb, of the navy, on duty at the Navy Department in the bureau of medicine and surgery, in the recent conference at Washington on the war risk insurance law, called attention to the fact that the placing of government insurance at a lower rate than ordinarily is considered justified by the American experience table, which is the basis of rates of mortality according to age. This is a cost assumed by the government for the benefit of the insured. Doctor Holcomb also brought out the fact that in the present instance there is extra hazard to be added to the ratios cost of the war risk. It would be hard, he said, to say exactly what this additional risk would be, but the risk has been placed at twenty-five dollars a year a person. This would bear no relation to age, because the chances for a man of twenty-one years of age and for one of thirty are practically equal. So it was possible to add to each monthly rate an amount equal approximately to $2.09, which risk is not asked, but like the overhead charges is assumed by the government.

Doctor Holcomb added that there is another fact, shown by statistics of the army and navy, which has to do with morbidity or sickness. Year by year, the surgeons general of these services publish their reports, and those who study these matters carefully have long since come to the realization that sickness or morbidity, like death or mortality, is a constant factor. From seventy to eighty per cent. of all persons in the services suffer annually some illness, minor or serious, in the period of one year. Thus some kind of physical attention is required by the majority of men during the period of one year. Out of this morbidity rate, approaching eighty per cent., each disease has its average annual ratio. This changes very little from year to year, unless the particular disease is influenced by some new method of treatment. In 1911 the navy rate for typhoid was 3.6 per 1,000; the two preceding years it was 3.3 per 1,000, the rate being fairly constant. The next year typhoid prophylactic was introduced, and the admission rate, which had been so constant for so many years, dropped from 3.3 to 0.3, and last year was only 0.19 per 1,000. The rate for every disease, and even every class of injury, is fairly constant. Injuries will average in the navy about 125 per 1,000, or 12.5 men out of every 100 suffer injury of some kind in each year. We may now look for an increase in the incidence of certain types of contagious disease and great increase in the incidence of injuries.

Editorial Notes and Comments

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EDITORS
CHARLES E. DE M. SAJOUS, M.D., LL.D., Sc.D.,
Philadelphia,
SMITH ELY JELLIFFE, A.M., M.D., Ph.D.,
New York.

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FOOD AND GOOD SENSE.

Anyone who has followed the course of the educational propaganda on food conservation during the past few years cannot have failed to notice the close attention devoted to public discussions of the relative nutritive values of different foods. In these discussions frequent use is made of such terms as calories, protein, mineral salts, vitamines, etc. This is most encouraging, for it is obvious that there can be no intelligent discussion of this most important subject without a clear conception of food as a fuel, and as a building material, and this, of course, implies a mental grasp of the unit of fuel value, the calory, and of the rôle of protein, mineral salts, etc., in the animal body.

That the nutritive value of foods has not yet, however, received the full attention it deserves, is clear from the remarkable analysis of the food problem now facing this country presented by Dr. Carl Alsberg, in a scholarly address delivered before the Harvey Society last Saturday. Although he did not deal with the immediate practical solution of these problems, Doctor Alsberg laid down certain principles which must be adopted if we wish to insure the adequacy of our food supply in war times. Thus, he pointed out, it is important not only to consider how much acreage is available, but also what crops yield the largest supply of energy, i. e., calories, in an acre. An interesting table, prepared by the speaker, showed that from this standpoint potatoes were the most desirable crop, the number of calories in the form of available human food being almost double that of the next most valuable crop, corn. Wheat, oats, and rye follow corn. But this, according to Alsberg, is only part of the story. One of the first effects of a nation's entry into war is a marked shortage of male labor, a shortage usually felt most keenly in agriculture. For this reason any system of food production will prove ineffective which does not take cognizance of the labor factor. The speaker accordingly presented a table showing the number of calories yielded by various staple crops in the form of available human food as the result of a given unit of labor. In such a table corn occupies first place, followed by wheat, oats, and rye. Potatoes comes much further down the line. Still another factor must, however, be taken into consideration, namely the protein yield, and when this is done we discover the very sound basis for the great esteem which wheat enjoys throughout the civilized world. With a protein yield twenty-five per cent. higher than corn and sixty per cent. higher than rye, it is easily the most valuable staple food crop on which this country should place its chief dependence.

Another phase of Doctor Alsberg's analysis related to the use of animals as foods. In contrast to the advice given to the nation by the Federal authorities, to raise pigs, Doctor Alsberg clearly showed that the conversion of hog fodder energy into human food energy was extremely wasteful, far more wasteful than the conversion of cattle fodder energy into milk or beef. Alsberg therefore objects to hog raising at least in so far as this requires the use of fodder corn and skimmed milk. Moreover, since the degree of waste in the conversion of the animal fodder into meat increases considerably after the animal has reached mature growth, Alsberg very properly insists that veal and young beef should be given the preference over fattened steers. For the same reasons, the speaker pointed out, we should learn to utilize a larger proportion of the vegetable oils, especially since in this country large quantities of oil are obtainable from corn, cotton seed, peanuts.

Altogether, the analysis of the food situation as it was presented by Doctor Alsberg constitutes a notable contribution to our knowledge of this important subject. In this respect it is in striking contrast to the puerile advice and admonitions emanating from a host of amateur food and economic "experts" who very evidently have no conception whatever of the real problems involved.

SYMPTOMATIC ZONA.

Whether or not symptomatic zona or, better still, zosteriform eruptions, is the term used for this variety of herpes zoster, it is none the less true that the process has many causal factors, the principal ones being central and peripheral nerve lesions, intoxications, infections, and traumatisms. It is uncommon to observe symptomatic zona in cerebral diseases, but in chronic affections of the cord it is often encountered. Tabetics in particular are very prone to acquire it. A large number of cases of zosteriform eruptions are the result of peripheral nerve lesions, such as compression of a nerve trunk by a callus, exostosis, etc., and neuritides themselves produced by a more general cause, such as pulmonary or bone tuberculosis, cancer of the spine, traumata, tabes dorsalis, or gonorrheal infection. Zosteriform eruptions have been reported in cases of poisoning by carbon oxide, arsenic, lead, sulphate of quinine, and shellfish. An intramuscular injection of mercury salicylate has been known to give rise to this process, either because there was a true mercurial intoxication or simply a local irritation. By analogy, it may be assumed that zona occurring in diabetes has a toxic origin. It is to be noted that the etiological factors mentioned are known to provoke neuritis and paralysis. Therefore, zona is only a manifestation of the nerve lesion like the paralysis observed in the same circumstances.

Intercostal zona is common in fully developed pulmonary tuberculosis and Leudet even maintains that out of a total of eighty-six cases of herpes zoster which have come under his observation, in twenty a chronic pleurisy was presumably the etiological factor. Some writers even suppose that in some instances a zona is a premonitory symptom of phthisis, but it is, perhaps, difficult to affirm that the tuberculous process was not already in a state of latent evolution. Local tuberculous lesions may be accompanied by zosteriform eruptions occurring in the neighborhood of the focus, while other infectious diseases, such as pneumonia, influenza, and measles have been incriminated.

Certain cases of zona appear to be more or less directly related to some former traumatism. The process resulting in these instances is undoubtedly due to the neuritis produced by the injury. Perhaps in some cases there is a simple coincidence between the supposed causative factor and the effect. These cases of traumatic herpes zoster can be assimilated to those following a chilling of the body, particularly from the action of damp cold on rheumatic subjects. It may even be that the cold is susceptible of favoring the penetration of the infectious germ that some writers believe to be necessary for the realization of the socalled idiopathic zona.

All the causative factors of symptomatic zosteriform eruptions that have been mentioned, as well as some rarer varieties, act by the same mechanism and the same intermediary, viz., the resulting neuritis, the eruption being the secondary consequence of the nerve lesion. As can be foreseen, this eruption will recur if the neuritis returns, as the primary cause will again be in play. And in point of fact, it is not uncommon to meet with a series of zosteriform eruptions arising in the same area, which would seem to indicate that the original lesion is still active and by recurring produces the same effects.

NUTRITION IN DIABETES.

It is only recently that problems of health and disease, and of nutrition in these have been considered in terms of a constantly shifting functional activity. Heat and energy concepts have long held ground, but in a formal fashion, becoming too easily words requiring little definite applicability. This attitude makes it difficult, even in this day of food conservation, to appreciate the difference between quantitative bulk and qualitative use of a certain amount of food by actual energy transformation and use. Diabetes gives a field where a definite test can detect and define this difference where it must count one way or the other in the scale of advantage or disadvantage to the patient. Here both the profession and the laity have tended toward an increase in amount of food and the question is raised whether the Allen method of treatment by fasting and low feeding is commendable or otherwise. Will it in time exhaust the patient in the face of the muscular weakness which is always a feature of the disease?

A few definite measurements help to establish a basis upon which such a question can be decided. These have been undertaken with a number of diabetic patients in which the actual effect upon muscular power has been made [John R. Williams: The Effect of Undernutrition on Muscular Force, *Archives of Internal Medicine,* vol. xx, No. 3, September 15, 1917]. The writer has used the simple device of a Collin dynamometer, by which the maximum pressure of each hand could be made and therefore the muscular vigor be determined as treatment progressed. The tolerance of the individual for an amount of food was marked by the number of calories which could be utilized without the appearance of acid or sugar. All recent studies have agreed that diabetic tolerance admits of but little more than half the number of calories of food for a kilo of body weight which is required by the average individual.

Williams's tests prove, however, that though the diabetic is distinctly physically weaker than the average person his muscular vigor increases with his food tolerance. In other words, the decrease in diet to the limit of tolerance provides for the taking of only so much food as can be sufficiently metabolized and this causes, according to the tests, an appreciable gain in the muscular power. On the other hand physical strength is diminished when the diet is increased beyond the point of physiological metabolism, so that there is no gain from the larger amount of food. Overeating, on the contrary, has been found to lead to a decided loss in muscular vigor and has resulted in exhaustion and death. The facts are summarized simply and strikingly by saying that "diabetics gain in physical vigor as they become and remain sugar free, while overfeeding causes a definite and often a serious loss of strength."

EXTERNAL URETHROTOMY FOR FOREIGN BODIES IN THE MALE URETHRA.

Adverse arguments respecting external urethrotomy for the removal of foreign bodies lodged in the male urethra are not logical. This operation is definitely indicated in these cases and a clear history of the case is thus obtained. The patient naturally will endeavor to conceal the reasons for which the foreign body was introduced, but this is of little import. The principal data to be obtained is the nature of the body introduced and the various attempts which have been made for its removal.

The foreign body having been recognized, the question of the advisability or necessity of external urethrotomy must be considered. It may be a piece of glass tube or rubber catheter; briefly, it is a body large enough to obstruct the urethra and may present roughness on its surface which will injure the urethral mucosa if drawn along the canal in an attempt to extract it by the meatus. Unquestionably under these circumstances external urethrotomy is indicated because a clean urethral wound which will quickly close is vastly preferable to a torn urethral mucous membrane which will inevitably result in stricture later on. The length of time that the body has been lodged in the urethra is likewise an indication, because the irritation set up in the structures surrounding it finally leads to inflammation of the mucosa with intense hyperemia which causes the body to become partially imbedded in it, so that extraction becomes very difficult. Therefore, when the phenomena of reaction are marked external urethrotomy is indicated.

The attempts at extraction which have already been made by the patient before coming under observation, may have been violent and much damage to the patient may have resulted. In many instances extraction will have been essayed with a piece of wire with one end turned to form a hook and the inevitable result is great damage to the urethra indicated by severe urethrorrhages and violent pain. Here again, it is far better practice to open the urethra than to risk inflicting additional trauma to that already existing by futile attempts at extraction through the meatus. The problem is quite similar to the case of a strangulated hernia when taxis is useless; no surgeon today would hesitate to operate in these circumstances. Therefore, the same judicious reasoning should guide the practitioner when he fails to remove a foreign body by instrumentation through the urethra and resort should be had to external urethrotomy without delay.

PLASTER SAINTS.

Vox Populi, Constant Reader, and A Christian are bombarding the newspapers with a new protest. They have been horrified to observe the growing tendency to send packages containing tobacco to the trenches. This, they say, can infallibly have but one result. The encouragement given this nauseous habit by respectable people, nay, even by churches, will induce a toleration of tobacco that will cause good people to first endure, then pity, then embrace. Already, says the *Northwestern Christian Advocate* recently, cigarette smoking has increased forty per cent., and women (!) are beginning to take to it freely. It is well known that cigarette smoking by women across the Atlantic is considered a venial vice indeed and the attitude of America toward it has always been considered provincial. The writer was in a café one evening and saw a middle aged woman, sitting with her husband, start to light a cigarette when the waiter loomed up to inform her that smoking by ladies was not permitted there. Glancing around the room, there might be observed any number of young girls, many of whom could hardly have been twenty-one years of age, drinking high balls, gin fizzes, and cocktails. Surely a logical state of affairs!

Still this is beside the mark. The point is that our soldier boys are not callow youths, peering timidly out from behind their mothers' skirts, but real men, fighting the battles of a nation. Who would deny them what pleasure they may get, they whom tomorrow may find bathed in the ghastly dew of No Man's Land. They have banished the *fille de joie* from the camps and we approved; they threw overboard from our battleships the red, red, wine and we acquiesced, but shall we see these pallid champions of the uplift reach across the seas that stretch between them and danger and snatch from the American soldier his tobacco, the solace of his despondent hours, the cheerful companion of his midnight vigil? What does Kipling say?

> And if our conduct sometimes isn't all your fancy paints,
> Why, single men in barracks don't grow up to plaster saints.

Nor do we want them to be such. Democracy will be preserved by the red blooded, hard muscled men of the New World, the college huskies of the East, the strong men of the South, and the breezy Westerners, the descendants of that race of pioneers who grasped a wilderness by the throat and wrung from it a home. Let us moralize after the war is won and in the meantime if so harmless a thing as tobacco will take the soldier's mind for a few moments from the Grim Reaper that stalks down the firing line in Flanders and if in the clouds that curl gracefully above the old briar pipe he can see the face of his gray headed mother and the tender eyes of the only girl, then for God's sake send him tobacco and be thankful he is there to guard your home and protect you and save you for many years of enjoyment of your pleasures.

Obituary

FRANCIS LE ROY SATTERLEE, M. D.,

of New York.

Dr. Francis Le Roy Satterlee died November 12th at his home, 154 West Seventy-third street, after a brief illness. Doctor Satterlee practised his specialty, the treatment of gout and rheumatism, up to a few days of his death. He was professor of physics, chemistry, and metallurgy at the New York College of Dentistry for fifty years, retiring as emeritus professor last spring. Doctor Satterlee was born in New York seventy-one years ago. He was a graduate of New York University in 1865, and of the New York Medical School in 1868. He was a police surgeon for eighteen years, retiring twenty years ago. He was attending physician at St. Elizabeth's Hospital and consulting physician at the Midnight Mission, and formerly was the attending physician at the Northwestern Dispensary in the department of skin disease and rheumatism. He made exhaustive studies in rheumatism and gout and wrote several treatises on these subjects which were used as textbooks in medical schools. He was an honorary member of the Society of Arts, London; a fellow of the New York Academy of Medicine, the Geographical Society, the New York Historical Society, the American Medical Association, the Medical Association of Greater New York, and the Pathological Society. He is survived by two sons, Dr. Francis Le Roy Satterlee, of Flushing, a cancer expert, and Dr. Henry S. Satterlee, in charge of the sanitary train of the Eighty-third Division, U. S. A., at Camp Sherman, Ohio, and two daughters, Miss Madeline Le Roy Satterlee and Mrs. Tracey A. Johnson, both of New York.

News Items.

Drafted Pharmacists to Be Transferred to the Medical Department.—Announcement is made that the Surgeon General's Office has requested that all drafted men with pharmaceutical training shall be transferred to the Medical Department, enlisted personnel.

Ambulances for Italy.—The Poets' Committee, which is raising funds for ambulances in Italy, announces that the cash receipts up to noon, Saturday, November 10th, are $113,400.08. Adding to this $10,000 assured from five special subscriptions of $2,000 now under way, the grand total is $123,400.08.

Harvey Society Lectures.—The third lecture in the series will be given Saturday evening, November 24th, at the New York Academy of Medicine, by Dr. Linsly R. Williams, on Medical Problems of the War. Professor Alfred S. Warthin, of the University of Michigan, will deliver the fourth lecture, on December 8th, his subject being The New Pathology of Syphilis.

Red Cross Nurses in Europe.—About 2,000 Red Cross nurses have been sent to Europe, according to a statement issued by the Red Cross headquarters on November 2d. Fifteen thousand nurses have been enrolled, a number estimated as sufficient for an army of 1,500,000 men. Approximately 1,000 nurses are being added every month. In order to meet the demand for more nurses, if it should become necessary, there has been a slight modification in the requirements. The most important change contemplated is a lowering of the age limit for specially qualified persons.

Drug Production in the United States.—Steps toward maintaining and developing a domestic supply of the drugs which are now short on the market are being taken by the drug trade, under the leadership of government experts. Dr. Warner W. Stockberger, who is in charge of the drug and poisonous plant investigations for the Bureau of Plant Industry of the United States Department of Agriculture, has been appointed chairman of a special committee organized by the American Pharmaceutical Association for the purpose of determining a conservative policy in regard to the stimulation of drug production in the United States.

Personal.—Dr. William M. Leszynsky, of New York, has been appointed neurologist to the Manhattan State Hospital, Ward's Island.

Dr. Maynard Ladd, physician in chief of the Children's Hospital of the Boston Dispensary, has been appointed associate director of the child welfare work in France, which is being conducted by the Red Cross. He will be accompanied by his assistant, Dr. Robert Sharpe. His work at the dispensary will be carried on by Dr. Elmer W. Barron.

Dr. Alonzo E. Taylor, of Philadelphia, is a member of the War Mission from the United States now in London, representing the Food Administration Committee.

Dr. Frank Billings was tendered a testimonial banquet by the Physicians' Club of Chicago on the evening of November 1st. Dr. Augustus O'Neill acted as toastmaster and presented a silver loving cup to Doctor Billings on behalf of the club.

Medical Society of Virginia.—Dr. Ennion G. Williams, of Richmond, was elected president of this society at the forty-eighth annual meeting held in Roanoke, October 31st and November 1st and 2d, and other officers were elected as follows: Dr. S. W. Dickinson, of Marion, first vice-president; Dr. H. T. Marshall, of Charlottesville, second vice-president; Dr. E. P. Sutherland, of Halifax County, third vice-president; Dr. Paul Irving, of Farmville, secretary and treasurer. Next year's meeting will be held in Richmond.

Elks to Build a Reconstruction Hospital.—America's first reconstruction hospital will be built in Boston by the Order of Elks. The Elks' War Relief Commission, at a meeting in Washington on November 8th, announced that the government had agreed to accept the hospital. The institution will cost $250,000 and will be erected on Parker Hill. It will consist of a complete unit of twin ward hospital buildings, vocational workshops, barracks, mess hall, and post exchange, and is to be a standard for similar hospitals. Part of the $1,000,000 relief fund contributed by the 500,000 Elks of the country will be used.

Medical Association of the Greater City of New York.—A stated meeting of the association will be held in Du Bois Hall, New York Academy of Medicine, Monday evening, November 19th. The program will consist of practical talks by members of the Department of Health of the City of New York, on the diagnosis and treatment of infectious diseases, as follows: The Prevention of Hydrophobia, by Dr. Harry Louis Abrahamson; How the Health Department May Aid in the Diagnosis and Treatment of Meningitis, by Dr. Josephine Bicknell Neal; Diagnostic Kinks in Infectious Diseases, by Dr. Samuel Dana Hubbard. Among those who will take part in the discussion are Dr. William Lang Somerset, Dr. John Randolph Graham, Dr. Louis I. Harris, Dr. Charles H. Nammack, and Dr. Aaron Silkman.

Proposed Amendments to the Constitution and By-Laws of the Academy of Medicine.—The Council transmits the following proposed amendments to the constitution and bylaws of the New York Academy of Medicine, with the recommendation that they be adopted:

> Amend Article III, Section 1, of the Constitution by changing the word "twelve" in line 9 to "thirteen," so that it shall read:
>
> The number of Fellows residing in the City of New York and paying dues shall be limited to *thirteen* hundred, and the number not residing in the city and paying dues, to two hundred and fifty.
>
> Amend Article X, Section 12, of the By-Laws by adding the following:
>
> It shall be empowered during the continuance of the war, to remit, wholly or in part, or permit the postponement of the payment of the dues of any Fellow while in active service, or to transfer Fellows in such service from resident to nonresident membership.

War Relief Work in Rumania.—The American Red Cross war council has appropriated $1,250,000 for emergency relief work in Rumania. There is a shortage of food, and especially food fats. The military hospitals also are in need of bedding and surgical and medical supplies in large quantities. No supplies of this kind are available there. Approximately $1,000,000 of the appropriation will be used for the purchase of 2,000 tons of foodstuffs. Another large item in the appropriation will supply 40,000 pairs of shoes. Medical supplies will be sent in large quantities. The need of relief in Rumania is particularly pressing because of the overcrowded condition of certain areas caused by the war operations. In a territory normally occupied by 1,000,000 persons there is now a population of 3,000,000, according to advices cabled by Red Cross workers in the field.

Civil Service Examination for Medical Intern.—An examination for the position of medical intern, open to both men and women, will be held on December 5th, to fill a vacancy in St. Elizabeth's Hospital, Washington, D. C., and future vacancies requiring similar qualifications. The positions are tenable for one year, and pay $75 a month and maintenance. During the year, however, a post-graduate course in mental and neurological diagnostic methods is given, an examination is held, and promotions to the next grade, junior assistant physician, are made. Beyond this there is regular advancement for men whose services are satisfactory. St. Elizabeth's Hospital has over 3,000 patients and about 800 employees to care for. In addition to the general medical practice offered, the scientific opportunities in neurology and psychiatry are unsurpassed. For the proper application blanks and for further information regarding the examination, applicants should address the Civil Service Commission, Washington, D. C.

The Yorkville Medical Society of the City of New York.—This society will hold a stated meeting at the Hotel Bon Ray, New York, Monday evening, November 19th. The program will consist of a symposium on early tuberculosis, as follows: Radiography, by Dr. I. Seth Hirsch; Symptomatology and Diagnosis, by Dr. A. F. Shrier; Surgery of the Bones, by Dr. Jacob Heckmann; Medical Treatment, by Dr. Fritz Neumann. A general discussion will follow. Superstitions in medicine will be discussed at the December meeting of the society, and the programme for the January meeting will consist of a symposium on geriatrics.

Pathologist Wanted in Freedmen's Hospital, Washington, D. C.—The United States Civil Service Commission announces an examination for pathologist, on December 5th, open to men only, to fill a vacancy in this position in Freedmen's Hospital, Washington, D. C., at a salary of $2,000 a year. Applicants must have had at least one year's experience in a pathological laboratory after graduation from a medical college of recognized standing, and must be able to make all kinds of pathological examinations, including x ray. Applicants should apply at once to the Civil Service Commission, Washington, D. C., for the proper application blanks and for full information regarding the examination.

Cooperation Between Faculties of Medical Schools and City Hospitals.—In an address entitled The Municipality's Relation to Medical Education before the Society of Medical Jurisprudence, at the Academy of Medicine, Deputy Commissioner H. C. Wright, of the Department of Public Charities, proposed that officials and instructors of medical schools of the city and the staffs of the various municipal hospitals cooperate in using the material that the city has to offer for clinical studies. Of eighty-eight hospitals in the city having one hundred or more free beds, he said, eighteen of the hospitals were operated by the city, having 16,000 beds, or many more than all the others combined, and he asserted that not more than one fifth of the cases treated were considered for clinical or other educational opportunities by post-graduate students. Dr. L. Pierce Clark, attached to the Randall's Island Hospitals, said an arrangement had been approved by Commissioner Kingsbury for systematic courses of medical college education in the City Hospital and the Institution for Feeble Minded, which would open the first of the year.

Personnel of American Medical Units Attached to British and French Forces.—There are 3,180 medical officers, nurses, and members of ambulance sections of the United States army now attached to the British and French forces. This total is made up of 870 medical officers and 470 nurses with the British forces and forty ambulance sections, each of 46 officers and men (a total of 1,840), with the French army. All of this American personnel is loaned to the British and French forces. It is subject to recall, and can, if the War Department so decides, be assigned to duty with the American forces. All wear the uniforms of the United States army. The plans contemplate the replacement of some of these officers and ambulance sections from time to time by fresh units from the United States and the assignment of the experienced units to the American expeditionary forces. Considerable additions to the number of American ambulance sections attached to the French army are in prospect. Provision has been made for the formation and training of 120 more sections at Allentown, Pa., all for eventual service with the French army.

Alienists Wanted by the City.—The Municipal Civil Service Commission will hold an examination for alienists in the city's service, for which applications will be received at Room 1400, Municipal Building, Manhattan, until November 19th, at 4 p. m. Appointments will be made at the Clearing House, Blackwell's Island, under the jurisdiction of the Department of Charities. This work is in connection with the administration of the new patrol system, dealing with the indeterminate sentence and the practical application of some of the most advanced theories in the treatment of the feebleminded and the mentally deficient. It is estimated by the Department that 60,000 prisoners a year of both sexes, of all ages and nationalities, are sent to the clearing house on Blackwell's Island for observation and diagnosis. The position pays a salary of from $1,020 to $2,280, with maintenance. Candidates must be not less than twenty-one years of age. For further particulars apply to the Municipal Civil Service Commission, New York.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

THE TREATMENT OF BOILS.

By Louis T. de M. Sajous, B. S., M. D.,
Philadelphia.

(Concluded from page 905.)

Early incision of boils, calculated to lay open completely the inflamed tissues and provide immediate drainage, has at times been advocated with the thought that it will shorten the course of the affection as well as relieve pain. Experience seems to have shown, however, that the desired abbreviation of the disturbance does not actually result, and as E. H. Ochsner has recently pointed out, an attempt to evacuate before pus is macroscopically present is not only absurd but may be attended with serious disadvantages, such as septic absorption and extension of the process into surrounding tissues before immunity against the invading microorganism has been developed. In comparative clinical tests, he actually observed that cases incised too early recovered much more slowly than others in which immunity had been allowed to develop before incision. A procedure manifestly preferable in furuncles late in the first stage is that advocated by P. G. Skillern, Jr., 1911, who scratches off the small vesicle at the centre of the lesion and applies a Bier suction cup. By this method, at four hour intervals, seemingly the earliest possible benefit from elimination of infected tissue fluids is secured. The intention is not only to evacuate toxic material, but by removal of serum and blood the defensive activities of which have already been locally expended, to make way for the entrance of fresh serum and leucocytes to antagonize the infection. To keep up this stream of defensive materials during the intervals between suction treatments, a moist gauze dressing of one per cent. sodium citrate in normal saline solution—one teaspoonful of the citrate and two and one half teaspoonfuls of table salt to a glassful of hot boiled water—is applied, the surrounding skin having previously been protected with an ointment. If one continues with this treatment until a central slough or core becomes detached from the surrounding tissues and can be readily removed with small forceps, all visible scar formation from the subsequent healing is usually obviated.

Where distinct softening through pus formation has already taken place when a furuncle is first seen, incision is clearly indicated, and if made at this time probably will shorten the subsequent course of the lesion. Infiltration of a ring of the surrounding healthy tissues with a local anesthetic frequently causes less pain than anesthesia by freezing, and while the knife is generally used for making the incision, a cauterizing instrument will serve better through prevention of unnecessary bleeding. Thus, Bartlett establishes an anesthetic zone with 0.5 per cent. novocaine solution containing a few drops of epinephrin solution, and makes a crucial incision with a thin platinum electrocautery blade. Emphasis is laid by Ochsner on strict aseptic precautions in incising superficial suppurative processes, in order to avoid mixed infection; the importance of this is held to arise especially from the fact that at the time of incision some degree of immunity will already have been established against the organism causing the boil, while protection against the added infection will not be as satisfactory, and in severe cases an unnecessary burden will thus be placed on the defensive functions, possibly delaying recovery.

After incision, the use of the Bier cup is recommended. Bartlett employs it every hour, with gentle suction, where the core has not been found on incision so loosened as to be readily removable with forceps. Even for the mere elimination of the purulent contents, the method is manifestly a vast improvement over squeezing from the outside—always to be avoided because of the resulting mechanical disturbance of the defensive wall and the tendency toward forcing the infection into additional tissues. The mechanical disturbance from the cup being exerted only toward the centre and superficial aspect of the lesion, extension of the infection by outward pressure, as in squeezing, is obviated. Attention is called by Ochsner to the advantage of packing a cavity after incision with a strip of gauze soaked in tincture of iodine to favor prompt formation of venous thrombi and lymphatic occlusion and prevent the entrance of virulent septic material into the general system. Various antiseptic pastes for application to boils after evacuation have been recommended; the formulas of those employed by Unna were given in a previous instalment. According to Brunner, 1914, in furuncles occurring in the presence of diabetes, good results are to be obtained by washing the boils twice a day with a five per cent. solution of sodium bicarbonate or by irrigation of the pus cavities with the same solution, plain sterile gauze constituting the outer dressing.

The constitutional treatment of boils, especially important where there is a tendency to recurrence, i. e., in furunculosis, comprises the use of medicinal agents and that of vaccine therapy. Among the various remedies used internally, fresh brewer's yeast is by many believed most efficacious. According to Brocq, who cured himself of recurrent pustules with it and obtained similar results in a number of other sufferers, baker's yeast may be substituted if necessary, but is slower in action and less easily tolerated by the stomach. The dose is one teaspoonful two or three times a day before meals. The yeast has been said to stimulate phagocytosis. Another measure, the mode of action of which is rather obscure, is the use of dilute mineral acids. Dilute sulphuric acid was recommended in 1897 by Bulkley. In 1913, J. and R. J. Reynolds reported good results from the B. P. dilute acid in doses of twenty or thirty minims, diluted in two ounces of water, every four hours. Tweddell, 1914, advocated doses of thirty to sixty drops. P. G. Skillern, Jr., 1914, called attention to the value of sulphurous acid, one teaspoonful in a large glass of water after meals, the mouth being rinsed with milk of magnesia, after each dose. Finally, C. W. Allen, 1914, reported success with freshly prepared dilute nitrohydrochloric acid, ten to fifteen drops in water after each meal, after vaccines, sulphur baths, baker's yeast, and dilute sulphuric and phosphoric acids had failed. Ingestion of mercury bichloride in full doses was recommended many years ago in recurrent boils by R. H. Skillern. In furunculosis occurring in the anemic and feeble, Roussloff, 1901, believed arsenic to be of value. Gaucher in 1904 recommended boric acid internally, one tablespoonful of a three per cent. solution, well diluted, at each meal. Small doses of quinine have seemed serviceable to many, as in other infective disturbances. Frouin and Grégoire, 1917, have recently called attention to the marked efficiency of salts of tin in staphylococcic infections, including furunculosis. They use a mixed preparation of metallic tin and oxide of tin which they term stannoxyl; the dose is one half to one gram a day. Confirmatory observations will be awaited with interest.

The vaccine treatment of furunculosis consists, as a rule, in the injection of one hundred million dead staphylococci, increased progressively at subsequent doses to one or even two billion bacteria. Dennie and Bufford, 1915, studying the effect of stock and autogenous bacterins—prepared by themselves—in pyogenic dermatoses, obtained sixty-four per cent. of apparent cures and twenty per cent. more of beneficial results. Furunculosis responded better than acne or sycosis, and in the first named stock bacterins proved equal to autogenous in their effects. In the external treatment of recurring boils, J. T. Bowen, 1917, has forcefully emphasized the necessity of keeping the entire skin surface as free of bacteria as possible. The patient is required to take, both morning and night, a hot bath with thorough scrubbing of whole body and head with soap. The skin is then dried and bathed again with saturated boric acid solution. All clothing worn next to the skin is changed daily, and in extensive furunculosis likewise the bed clothing. Often the succession of boils, it is asserted, is thus interrupted at once, even where vaccine therapy and other measures have completely failed, and in all instances relief is obtained within a reasonable time. The treatment is to be continued for several weeks after cessation of the pyogenic lesions.

Physiological and Antiseptic Action of Flavine.—Alexander Fleming (*Lancet*, September 1, 1917) says that the statement that flavine approaches the ideal antiseptic in that it is not harmful to the tissues and is increased in activity in the presence of serum is based upon inadequate and unsound experiments. As the result of a long series of experiments with flavine to test the various claims made for it and conducted to include a wide range of conditions, Fleming finds that flavine is capable of agglutinating the red cells markedly in dilutions as high as 1:3,200 and has a very marked anticoagulant effect upon human blood, which may be of value in some cases and harmful in others. Contrary to statements made by others the drug is markedly destructive to leucocytes, and if its destructive action on bacteria is tested in comparison with that on leucocytes for a period of twenty-four hours it can be shown that the latter is far the more pronounced action. The lethal concentration of flavine varies very widely with changes in the number of bacteria upon which it is made to act, and while small numbers of organisms are readily killed by weak solutions of flavine, large numbers of bacteria are not destroyed by high concentrations even after long exposure. In the presence of serum the bactericidal action of the drug is greatly reduced, thus in such a medium staphylococci will grow in the presence of flavine in a concentration of 1:32,000; Bacillus coli in 1:1,000; and Bacillus proteus in 1:2,000. A 1:500 solution of flavine will usually not sterilize an equal amount of pus even in twenty-four hours. It has been recommended that the drug be injected in and about infected wounds to exert a local bactericidal action, but the affinity of flavine for the tissues is so great that it has no bactericidal effect whatever under such conditions.

Standardization and Administration of Antimeningococcic Serum.—Harold L. Amoss (*Journal A. M. A.*, October 6, 1917) points out that the greatest obstacle to the preparation of an effective antimeningococcic serum lies in the fact that this organism contains several more or less distinct type groups. However, eighty per cent. of cases of meningitis are due to the normal strain of meningococci or to the parameningococcus, and almost all of the remaining twenty per cent. to two intermediate strains, A and B. A potent serum can therefore be prepared from cultures of these four strains, which, if of sufficient titre, may be taken as standard. The serum should agglutinate cultures of all four strains in dilutions between 1:400 and 1:1,000. Other and aberrant strains should be added as they are isolated. Tests of representative commercial serums show that most of them are grossly deficient in potency and usually fail to represent the four essential strains. Such serums also frequently contain considerable hemoglobin and are therefore likely to provoke severe reactions. A standard for antimeningococcic serum should be adopted and should include the physical character of the product as well as the titre against the four strains. In the administration of the serum one should repeat the dose every twelve hours so long as the temperature is high and meningococci are present in the spinal fluid, unless there is some contraindication. As improvement progresses the intervals should be lengthened to twenty-four and later to forty-eight hours or longer. After each dose of serum the foot of the patient's bed should be raised eight to twelve inches for six hours to allow the fluid to pass upward. Then the head end should be similarly elevated until the time for the next dose in order to drain the spinal canal. One or more doses should be given intravenously in all very severe or fulminant cases. These doses should be from fifty to 100 mils each.

Nonspecific Protein Treatment of Psoriasis.—Eleanor V. N. Van Alstyne (*Medical Record,* September 29, 1917) reports four cases treated by this method with four recoveries. The proteins were prepared from the millet and alfalfa seed, the injections produced no disturbing reaction, and the skin lesions improved without modifying the diet in any way. The skin improvement begins in from two to five weeks after the injections are begun and at a point where larger doses are being given.

Treatment of Tuberculosis with Copper and Potassium Cyanide.—George H. Evans (*Medical Record,* October 6, 1917) from a careful study of the treatment in ten cases finds that this drug in amounts of eight to twelve mgm. in uncomplicated tuberculosis does not produce injurious effects. Large doses, or even small ones in extensive or complicated cases, may cause serious focal reactions resulting in permanent harm, while severe general reactions are not seen, nor are hemorrhages. The preparation is not very irritating to the perivascular tissues if small amounts are accidentally injected into them and while its value in the treatment of pulmonary tuberculosis has not been definitely and conclusively demonstrated, nevertheless its further trial in this disease is justifiable.

Radium Treatment of Mediastinal New Growths.—Curtis F. Burnam (*Journal A. M. A.,* September 22, 1917) records the results of treatment of eight cases of mediastinal neoplasm by intensive radiation with enormous doses of radium. All but the first patient have shown continuous improvement from the treatment, and even the first showed immediate improvement, although she died subsequently from a large abdominal metastasis. One patient has been under observation for three years after the beginning of treatment and is apparently cured, although röntgenograms still show a shadow in the chest. Another has been apparently cured for four years and three more cases seem to have been cured for periods of one to two and a half years. The others are on the road to cure. The treatment, to be successful, must be very intensive, amounts of radium in excess of one gram being employed and multiple exposures over different areas made to provide for cross radiation. All of the cases but one of Hodgkin's disease were of malignant tumors.

Surgery of the Prostate.—R. L. Payne, Jr. (*Virginia Medical Semi-Monthly,* August 24, 1917) attributes his low primary mortality of one case in fifty-five suprapubic prostatectomies to avoidance of both continuous irrigation and the indwelling catheter after operation. In operating, he grasps the top of the bladder with two towel clamps in preference to the customary traction sutures. Preliminary distention of the bladder is never practised. Adenomata are enucleated by striking the line of cleavage first in the roof or lateral walls of the urethra. In small, hard, fibrous prostates, however, the fingers of the left hand are introduced in the rectum and a large V shaped piece of the hard tissue cut away by the right hand with blunt scissors, the rectal fingers meanwhile pushing the gland accurately against the cutting instrument. Bleeding is best controlled by firmly pressing two gauze pads into the cavity in succession for five minutes. A cigarette drain three quarters of an inch in diameter, with a large fluffed end, is then inserted into the cavity and the bladder and abdominal incisions sutured up to the drain. Great stress is laid on the postoperative treatment, which consists in giving a quart of warm water by rectum at once upon return to bed, and one pint every four hours thereafter. Sparteine sulphate, one or two grains, is given hypodermically every four hours until the patient is taking liquids by mouth freely and the renal secretion is satisfactory. The cigarette drain is removed after forty-eight hours and the bladder then irrigated twice daily through the suprapubic fistula with 1:500 solution of hydrochloric acid or, if the urine and dressings tend to become ammoniacal, a 1:250 solution. The acid seems to inhibit both the streptococcus and colon organisms, no bladder infection having occurred since its use was begun. Urotropin and acid sodium phosphate are given for several weeks if tolerated. Twenty-six patients were operated on under nitrous oxide and eight under novocaine local anesthesia. Ether or chloroform should never be used, and local anesthesia is probably the method to be preferred.

Treatment of Infected Suppurating War Wounds.—Rutherford Morison (*British Journal of Surgery,* April, 1917) describes the method of treating infected war wounds as follows: Under an anesthetic, usually open ether, cover the wound with gauze wrung out of 1:20 carbolic acid, and clean the skin and the surrounding area with the same lotion. Open the wound freely and, if possible, sufficiently to permit of inspection of its cavity. In doing this special regard must be paid to nerve trunks and muscular branches of nerves, since the division of blood vessels, excepting the largest, and of muscles themselves, does little harm as compared with the disability following nerve damage. Cleanse the cavity with dry sterile mops, Volkmann's spoon, etc., and remove all foreign bodies. Mop the surrounding skin and the wound cavity with methylated spirit. Cotton wool mops conveying the spirit are used for this purpose, and are introduced on forceps. Fill up the whole wound with the paste known as bismuth iodoform paste, or "Bipp" and composed as follows: iodoform, sixteen ounces; bismuth subnitrate, eight ounces; liquid paraffin, eight fluid ounces, or a sufficient quantity. The powders are mixed together in a mortar, and the liquid paraffin incorporated. The quantity of liquid paraffin required varies according to the bulk of the powders, the bismuth in particular being liable to a considerable variation in bulk. A sufficient quantity should be added to form a paste. It is then advisable to rub down the paste, in small quantities at a time, on a slab with a spatula, to insure freedom from grit and dry particles of powder. Dress the wound with sterile gauze, and cover all with an absorbent pad, which is held in position by sticking plaster and a bandage. This dressing requires no change for days or weeks if the patient is free from pain and constitutional disturbance. Should discharge come through, however, the stained part must be soaked in spirit, and a gauze dressing wrung out of the same applied as a further covering. At the present time, Morison does not entirely fill the wound with the paste, but rubs the preparation well into all parts with dry gauze, removing any gross excess.

Redressing is very simply done. After removal of the old dressings the wound is covered with a dossil of wool soaked in spirit, and the sticky dirty looking discharge is wiped off the surrounding skin until it is clean. This is done with dossils of cotton wool soaked in spirit and applied by forceps. Morison states that so far as he can judge at present all infected discharge comes from the surface of the wound in the neighborhood of the skin. The paste in the depths is clean and should not be disturbed.

Operative Treatment of Peripheral Nerves After Severance.—G. Carl Huber (*Journal of Laboratory and Clinical Medicine,* September, 1917) presents a criticism of much of the work on this subject, and adds observations based on experiments made in his laboratory. The results of these experiments and the previously published work are interpreted entirely from the viewpoint of the laboratory man, and not from that of the clinician. Since the injuries to peripheral nerves are so extensive in the war, the operative repair of nerves has necessarily received much attention. From the character of the modern bullet and artillery fire, these injuries are often very difficult to repair, and present problems which are never met with in civil practice, where the suture of nerves is a comparatively simple affair. If so much loss of the nerve tissue has occurred that it is impossible to bring the ends together and make a direct suture, one of the following procedures has been suggested to bridge the gap: 1, nerve flap or neuroplastic, nerve anastomosis or grafting, multiple grafting, and cross suturing of nerves; 2, *suture à distance* with catgut; 3, tubular suture and tubulization; 4, nerve transplantation. Huber considers the practicability of these methods from three sides: the purely theoretical, the clinical, and the experimental. From the last standpoint, the methods considered under the first heading are condemned. *Suture à distance* is not enthusiastically recommended, but does not deserve complete rejection. Tubular suture and tubulization are being used frequently in the present war. The following substances have been employed for the purpose: decalcified bone tube; iodoform gauze and epidermis of man; magnesium tubes; hardened gelatin tubes; hardened arteries of calf; fascia lata, without or with fat layer; Galabith and cargile membranes. In choosing such a suture, the object is to find one which can be sterilized and is nonirritant, not too readily absorbed, and not subject to secondary contraction. Of those considered, Huber especially recommends the hardened arteries of the calf and fascial sheaths, as the use of the other methods is not justified by experimental work. Tubular suture and tubulization must often be combined with other procedures, such as direct nerve suture, neurolysis, plastic operations, and nerve transplantations. But of all the methods that have been tried, that of nerve transplantation has given the best results, especially if autotransplants or homotransplants are used. Heterotransplants of nerve segments are not to be altogether condemned, as the operation seems warranted, both clinically and experimentally.

Retention of Devitalized Teeth Without Danger of Focal Infection.—M. L. Rhein (*Journal A. M. A.,* September 22, 1917) emphasizes the value of the natural teeth in the maintenance of health and says that teeth should not be extracted in a wholesale manner on insufficient evidence of their menacing nature. Röntgenograms alone are insufficient evidence for extraction and must agree with clinical evidences. Complement fixation tests should also be employed to indicate whether an organism isolated from a tooth is really the source of the trouble attributed to its presence. When a root abscess has been proved to be a source of metastatic infection it should be subjected to treatment as soon as possible. In some cases, where speed is very important it may be necessary to extract the tooth, but in most it will be possible to cure the tooth infection and still preserve the tooth. The dental surgical methods of such treatment are given in more or less detail and include the thorough opening of the root canals, removal of all pulp tissue from the roots, sterilization by means of zinc ionization, control of the sterilization by repeated cultures, complete covering of the root with guttapercha, complete hermetic sealing of the root canal and frequent röntgenographic control of the result for two years. In some cases this plan of treatment cannot be carried out, but a tooth may still be saved by amputation of the root and covering of the stump, after sterilization, with gutta percha.

Ostectomy and Stomatoplasty in the Treatment of Bone Sinuses.—F. Jayle (*Presse médicale,* August 23, 1917) points out that while a bone cavity, asepticized, freed of sequestra, and filled with bone paste, can in some cases be cured with healing of the skin over it, failures are more frequent than successful results after such treatment. His own procedure is to bring skin to the bone cavity and allow it to grow down into it without attempting to fill it. The sinus having first been excised, the cavity is broadly opened into with chisel and mallet until all its surfaces are in plain sight. The skin is then loosened for three to five centimetres all around, and U shaped sutures of silkworm gut, with their loops within, are inserted into its margins to carry the latter down to the cut edges of the periosteum, which the sutures include. At each end of the cavity, a small skin flap is made so that it can be similarly "entropionized" and brought into contact with the bone. The wound is then treated with undiluted hydrogen peroxide solution, compressed to arrest bleeding, a one in ten solution of zinc chloride poured in and sponged over the cavity, iodoform gauze packed in, and rather tight outer dressings applied. If, as is occasionally the case, there is marked oozing, pituitary solution is injected subcutaneously. The first redressing is carried out after forty-eight hours and the subsequent dressings daily. Zinc chloride solution, silver nitrate, or tincture of iodine is applied in the cavity every two or three days. Sterilized boric acid powder, aristol, traumatol, etc., should be used topically in rotation. Sun or artificial light exposures, hot air, and in some cases electrolysis and hydrotherapy, are useful adjuvant measures. An advantage of the procedure is that the redressings cause but little pain, the bone cavity constituting the only open surface.

Hot Air and Calomel Vapors in Catarrhal Deafness.—Edward J. Brown (*Medical Record,* October 6, 1917) declares that the best method of treating Eustachian and aural catarrh is by hot air and calomel vapors. In some cases the application is made to the postnasal space and the patient directed to swallow every few minutes, in other cases the catheter is used and the application made directly to the Eustachian tubes and to the middle ear. The amount of calomel used is two or three grains depending on the length of time of inhalation which may be from one to fifteen minutes.

Prophylactic and Therapeutic Properties of the Antitoxin for Bacillus welchii.—Carroll G. Bull (*Journal of Experimental Medicine,* October, 1917) believes that at least two weeks' passive immunity to infection with this organism can be conferred on man by a single injection of antitoxin. This was accomplished in guineapigs, as well as the arrest and control of an established infection by treatment with the antitoxin, and these animals showed a marked resistance for twelve days to infection with virulent bacilli, after the pigs had received a prophylactic dose of Bacillus welchii antitoxin. The antitoxin should be administered intravenously and probably locally about the wound in man. It is hoped that such treatment will check early infections and help the more advanced ones, so that surgery will be more effective.

Oiled Gauze.—Torald Sollmann (*Journal A. M. A.,* September 29, 1917) conducted a series of experiments with oiled gauze enclosing cotton sponges with a view to determining its usefulness in wound dressing. He found that loose mesh gauze, impregnated with liquid petrolatum by dipping into the petrolatum and expressing the excess, permitted much better absorption of the enclosed cotton sponges foi viscid fluids than unimpregnated gauze. Gauze impregnated with Fisher's paraffin mixture does not absorb as well as plain gauze. If the cotton sponge contained in the gauze is compressed absorption is better than if it is loose, and it is even better in the compressed cotton if the layers of the cotton are parallel to the surface from which they are to absorb. The impregnation of gauze with petrolatum aids absorption of viscid fluids by protecting the fibres from wetting and swelling with the obstruction of the mesh.

Therapeutic Application of Hypertonic Salt Solution in Conjunction with Leucocytic Extract.—R. A. Archibald and Gertrude Moore (*California State Journal of Medicine,* September, 1917) say that while beneficial results may be obtained from the use of leucocytic extract and magnesium sulphate solution alone, much more gratifying results are obtained from their joint use, provided that the extract is given subcutaneously and the salt solution intravenously. If both are given intravenously at least half an hour must be allowed to elapse between the administration of the two. The joint action of the leucocytic extract and the magnesium sulphate solution is intensified when administered to a patient in a bacteriemic condition. They hold that the combined use of these substances has proved to be more efficacious in the treatment of all bacteriemias than any other method yet devised.

Simplified Preparation of Carrel-Dakin Solution.—Frederic Rosengarten (*Journal A. M. A.,* September 29, 1917) recommends the following as a simple and rapid method of preparing this solution: The materials required are a solution of chlorinated soda containing 2.8 to 2.9 per cent. of available chlorine; a solution of sodium bicarbonate of about five per cent. strength; and some phenolphthalein powder. To make the Carrel-Dakin solution one part of the chlorinated soda solution is diluted with five of water and to this twenty-five mils of the bicarbonate solution is added for each litre. The whole is well mixed and twenty mils removed and tested with a small amount of the phenolphthalein. If there is no red color the solution is ready for use. If red appears, from ten to twenty mils more of the sodium bicarbonate solution should be added and the test repeated until the red does not appear. The chlorinated soda solution is readily obtainable and keeps well and the bicarbonate solution can easily be made by anyone.

Dichloramine-T in War Wounds.—Joshua E. Sweet (*Journal A. M. A.,* September 29, 1917) says from his experience that this oily solution gives as good results in infected military wounds, either fresh or old, as any method of treatment yet advocated and has several material advantages over the other methods. These advantages can be summed up in the following statements: 1. Its use requires a minimum of antiseptic solution, thirty-five mils having sufficed to dress forty-two wounds. 2. Its use eliminates the Carrel tubes and reduces the frequency of changing the dressings to once in twenty-four to forty-eight hours for acute cases. 3. It very greatly reduces the amount of both cotton and gauze required for the dressing of wounds, as well as greatly diminishes the soiling of the bed linen. 4. It makes the dressing of wounds practically painless, thus saving the patient much suffering. 5. Finally, the mixture is strongly lymphagogic, promotes healthy granulation, digests and removes necrosed tissue, and does not lead to superabundance of granulation tissue.

Simplified Technic in Laminectomy.—F. J. Gaenslen (*Journal A. M. A.,* October 6, 1917) makes a curved incision through skin and subcutaneous tissues just to one side of the spinous processes and reflects the flap to expose the deep fascia. This fascia is incised down the midline over the tips of the spinous processes, the supraspinous ligament being split. The intraspinous ligaments are then split with a tenotomy knife and the spinous processes are divided longitudinally to near their bases with a narrow sharp chisel. Each half is broken from its base and all on each side are reflected laterally, the periosteum being carefully stripped from each lamina to the articular process. Then the remaining spine bases are bitten off and the laminæ removed. When the cord operation is completed the two flaps, containing the split spines, are replaced and sutured, the sutures being passed through the several split spines if desired. Where it is demanded a longitudinal bone graft may be inserted before closure. The method is simple and rapid, gives good closure, and causes little trauma or hemorrhage.

Proceedings of National and Local Societies

CLINICAL CONGRESS OF SURGEONS OF NORTH AMERICA.

Seventh Annual Meeting Held in Chicago, October 22-27, 1917.

The Retiring President, Dr. **Frederick B. Lund**, of Boston, in the Chair.

Dr. A. J. **Ochsner**, chairman of the Committee of Arrangements, welcomed the distinguished surgeons, especially military surgeons, and said he considered them the most useful members of the medical profession at this critical time. He spoke of the work of the Committee on the Standardization of Hospitals which had just closed its meeting, and felt sure that this work would be an inspiration to every man to work toward the standardization of hospitals in his community.

Dr. **Frederick B. Lund** stated that about 14,000 medical men had already enlisted and were ready for service, and that 8,000 more were needed, but he was sure that medical conscription would not be necessary. He spoke of the wonderful service that had already been rendered by the men in charge of the units in France and of the other men who had volunteered their services and had attached themselves to the British Expeditionary Forces two or three years ago.

Dr. **John G. Clark**, of Philadelphia, was inducted into office as the new president of the Congress, and said it was a pleasure to sit as an auditor for the evening in this assembly of military surgeons who were devoting their time and attention to military affairs. Splendid progress had been made in the matter of lifesaving devices that were already in use and many others were promised which would revolutionize medicine and surgery. He was convinced that medicine would come out of the war far richer than when it entered it.

Secretary **Daniels**, of the navy, said that it was to the physician that the nation turned in time of war with supreme confidence that in preventive measures they could save the lives of the youths who were willing to rally to the standards, and he expressed the thanks of America to the men who were making the great sacrifices to devote their time and their skill to this purpose. He urged that the physicians use their great influence to stamp out the most destroying evil that touched American youth. We could not win this war unless our soldiers and sailors had steady nerves and clear heads, and men did not have these unless they lived straight lives. For the first time in the history of the world our country had started on a new line. We had recognized the evil of the venereal diseases and no longer whispered about it in dark corners, for this peril of today was great. In the English army 78,000 men were impotent and out of the war because of venereal disease. Congress had passed a law and put it in the hands of officials to carry forward measures more drastic than were ever dreamed of before. During the last year because of these diseases 141,000 days were lost in the service of the navy. One man in 112 in the navy had to be treated and almost as many in the army.

During the evening the following telegram was received from President Wilson:

To the Clinical Congress of Surgeons of North America:
My warmest greetings and best wishes. It cheers us all to see thoughtful, patriotic work done in such good spirit.

Surgeon General **William C. Gorgas**, of the army, said he had contemplated with dread the necessary enlargement of his corps on account of the war, and had expected to have considerable trouble in the management of so many, but everything had gone on smoothly. With the nation engaged in the most important war of all history we must acknowledge that it had responded most nobly in all its branches and not swerved away, but he thought the medical profession could claim preeminence so far. His fellow countrymen had measured up to the standard of all that could be expected.

Surgeon General **William C. Braisted**, of the navy, alluded particularly to the National Board of Medical Examiners, which had been carrying on its work for two years and reporting from time to time. The quality of the examinations had been recognized everywhere, and it had recently been announced that the Mayo Foundation would receive their licentiates without further requirements.

Surgeon General **Rupert Blue**, of the Public Health Service, stated that this was the time for the estimation of values and that everything which led to efficiency brought us nearer victory. The health of the United States was in better condition today than ever before. There had been an awakening of the conscientiousness of the American people regarding the prevention of disease, and the water and food supplies, the inspection of schools, and the control of communicable diseases had all been placed on a good basis. Research had tracked infection to its lair and provided new methods for its control.

Colonel T. H. **Goodwin**, R. A. M. C., wished very much that he could adequately express his appreciation of the honor given him in the invitation to be present as a guest of the Congress. The medical profession of America and of Great Britain had for many years past been closely united in ties of social and professional friendship. The two nations were in the fight side by side, with a common object, identical ideals, and with the certain expectation of a mutually attained victory in the future. When he came to America five or six months ago Great Britain was in straits owing to the scarcity of medical men necessary, and they owed an unending debt of gratitude to America for the way in which she had responded. Since that time 900 medical officers and nearly 500 nurses had gone across to help on the western front.

Colonel C. **Dircle**, of the French Medical Corps, received a very hearty welcome and said the manifestations of sympathy moved him more because he realized they were meant less for him than for France herself. He highly approved of everything he had seen in the training camps of America and was sure that every physician and surgeon was ready to do his war work when the hour struck.

This was largely due to the personal enthusiasm and activity of Surgeon General Gorgas, who was giving such wonderful encouragement to every one who worked in his service.

Sir Berkeley Moynihan, consulting surgeon to the British army, in a most soul stirring address stated that at midnight on August 4, 1914, England, to her lasting honor, declared war against Germany, and at 8 a. m., August 5, 1914, he became for the tenth successive generation a soldier of his sovereign. From that time until he stepped on board the boat at Liverpool he had practised military surgery, thought of military problems, and lived with military people. There were about 30,000 medical men in England, and one third of them were wearing the uniform of the king and his army and had seen actual service or foreign service. The government had the right to take every man of military age and compel him to serve, but compulsion had always been, and he was sure would always be, quite unnecessary. The medical profession in every country had undergone the most complete education and had had better and closer opportunity for broadening the mind of the individual practitioner, and if the aristocracy of the land did not rally to the flag we could not expect anybody else to do so.

He paid high tribute to Surgeon General Gorgas and Major Mayo for their work in connection with the Medical Reserve Corps and in preventive medicine. Ninety-eight per cent. of their soldiers had been voluntarily inoculated against typhoid fever, with the result that they had had only 298 deaths from that disease and only 6,022 cases altogether, whereas in the South African War they had 57,684 cases with over 8,000 deaths—a far less number of cases of typhoid in this enormously larger army living under infinitely more difficult circumstances than they had deaths from this disease in the South African War. He begged his auditors never to forget that Germany was a great and formidable nation with an implacable hatred of us, and said we might be sure that in this war with her reserves, which came up fresh at the rate of a million and a quarter every year, she would use against us every dirty device which she could think of. The question which he had been often asked since coming to America was when the war was going to end. He believed that America would find as England had found that for her the war would begin when every man of military age in the whole country had offered his service and was prepared to surrender his life to his country.

Major George W. Crile, of Cleveland, Ohio, said that during his service in France he had heard no one express the opinion that the enemy was wavering or starving; that he was short of munitions or no longer fought a hard fight, or that the mperial power was crumbling. He had talked with nany German prisoners and they were strong and vell nourished. On the other hand, he had heard rom British soldiers that when the Britain and he Teuton met face to face the Teuton threw up iis hands and surrendered, which showed that the euton had at least good judgment. He paid the ighest tribute to the British and the French who ad fought the great enemy machine over the crest of the hill. There were now six American hospitals in France serving with the British expeditionary forces. These units had taken over hospitals from 1,600 to 2,000 beds; there were also several hundred men in the field service and ambulance corps and serving in other capacities. These men were under fire frequently and often shook hands with Fate; they knew no fear, but stuck to their tasks bravely and were men of whom we should all be proud.

What had the British Army Medical Service accomplished in this war? They had kept their army more free from colds, typhoid, and infection than the civilian population of Chicago. Their medical organization was so perfect that their transport never failed. The death rate from wounds and infection in the French and British lines had been reduced to an incredible minimum and a vast army of soldiers had been returned to active service, wearing on their sleeves the insignia of having been wounded. The demands of surgery at the present time were felt by every one. A new set of problems had arisen, and if they were to be solved we must abandon our mere personal interests for the time being. Many surgeons must leave their practices and do for the wounded men what had been done for the disease. During battle the wounded came in flocks. If a surgeon was interested in any particular thing and said so, the stream was turned on him until he surrendered. More progress had been made in surgery of the chest and abdomen, in the treatment of wounds and infection and hemorrhage by the method of excision, and in the making of splints, in the three years of the war than in all time before. This was not a war of men but of ideas. It probably now costs more than $100,000 to kill a man. When thousands were to be saved, what greater gain could there be than to discover something in the way of preventive medicine that could be applied?

The Work of the Army Surgeon.—Surgeon General Gorgas said that his personal experience in military surgery was nil. He had been in the service for forty years, but during that time America had been involved only in the Spanish-American War, and since that time military surgery had been practically born again. This war had demonstrated the fact that we would have to add enormously to the procedures that would have to be adopted before victory came. The whole question turned upon sepsis. The endeavor of the military surgeon should be to get at the wound as quickly as possible and render it free from infection promptly. The principal rôle of the administrator was to get the men at the earliest possible time, and with this object in view we should have our hospitals as near the front line as possible and all plans should be bent toward this end.

The Work of the Navy Surgeon.—Surgeon General Braisted called attention to the great increase in the number of enlisted men in all departments of the navy, and to the fact that the Medical Department must also look out for all the men engaged in the construction work for the navy, which made the total between a fourth and a half million people for whom the navy was responsible. There were formerly 394 medical men in the navy and there were now 828 in the regular service either commissioned or awaiting commission, this being the full authorized strength of the corps. The men who had been appointed were a credit to every one. They were obtained through a campaign which was instituted in the Class A men of the large medical schools of the country, and the only candidates were those who were certified by their deans to be of high standard. It was impossible to put them through the naval medical school in one class, so courses of instruction were instituted in Philadelphia, New York, and San Francisco, as well as the regular naval school in Washington. Abundant bedside work was afforded by the naval hospitals connected with these institutions. In addition to the 828 men now ready for active detail there were over 700 in the naval reserve corps. The navy had twelve hospital units organized under and in conjunction with the Red Cross, and five small naval stations, the majority of which were rendering service. Four of the finest hospital corps training schools in the world were maintained by the navy, and there were sometimes a thousand men in training. Surgeon General Blue had lent fifteen of his best men to the inspection service and all naval stations would be inspected by members of this force. Efforts were being made to meet winter conditions by putting in force the required sanitary measures before cold weather. Two ships were now being converted into hospital ships, and one hospital ship was now being constructed for the navy that would be the finest hospital the world had ever seen. One of these ships would be available within the next two or three months, and the others were being rushed.

Training Camps for Medical Men.—Colonel E. L. Munson, M. C., spoke of the training camps that had been established for medical officers. There were approximately 500 medical men at the outbreak of the war who were capable of playing the medical game as it should be played. The law authorized seven medical men a thousand, but experience abroad had shown that ten a thousand was better. The corps had been increased until now the doctors and dental surgeons outnumbered the whole army of the United States when it went to war with Spain. The surgeon general was faced with the problem of training these men and at once secured authority to establish training camps for this purpose.

Military Laboratories.—Colonel F. F. Russell spoke of the need of having well equipped laboratories that could be operated on the same principles that were now carried out only in the larger cities. It was demonstrated some time ago that it was not sufficient to have a post laboratory department, and proper laboratories had been established from time to time with staffs of twenty-six men or more. In these laboratories they had done the Wassermann and other complement fixation tests since 1909, and they had done any kind of laboratory work that could be done with specimens sent through the mail. Much work had already been done in the new diseases of the war, trench fever, trench jaundice, and gas gangrene. Many research institutions had offered their services, and all who had worked under General Gorgas had come to have complete confidence in the future of the Medical Corps in his charge.

Gunshot Wounds and Their Treatment.—Sir Berkeley Moynihan, of Leeds, England, said that surgeons who were called upon at the outbreak of this war to treat gunshot wounds coming over from France were never likely to forget their experience. They had occasionally met with cases of suppuration, but never in the experience of medical men in our generation had cases of virulent infection like these been met with. By slow degrees it became realized that new circumstances had arisen and a gage had been thrown down to the profession. The surgeons were scoffed at and told they had never learned the lessons that Lister had spent his life in teaching, or having learned them had made haste to forget them. His first duty, after returning from his first visit to France, was to refresh himself with the work of Lister, and he found that in all his teachings Lister had carefully distinguished between the prophylactic work of antiseptics and their therapeutic value. The whole thing was based upon the knowledge that if we prevented the access of microorganisms to the wounds, we would show with a gratifying constancy a blameless healing of the wound. The original idea of the antiseptic system was the exclusion of all microbes from the wound, and during the operation to avoid the introducton into the wound of material capable of introducing sepsis into it.

The one thought should be to obtain complete closure of the wound at the earliest possible moment, either by primary or secondary closure. Primary closure was applicable to all cases where the wound had not involved a wide or deep destruction of tissues, provided one could have the collaboration of the patient and the operator at the earliest possible moment. This consisted in excising the wound as completely as possible and in one piece in order to avoid the reinfection of the new wound that one was making. Primary closure of the wound was capable of being carried out in a very large proportion of the cases if the surgeons had the courage to do it, probably in eighty or ninety per cent. of the suitable cases. The great fault of the Carrel method was that if it broke down it failed lamentably. Admirable as this method was in time of peace, it had never taken hold in a wide area in the French army, and in England had rarely been accepted as the method of choice. When every circumstance was in its favor it was almost a perfect method; unless all circumstances were in its favor it failed drastically.

Major George W. Crile said he had found practically all of his preconceptions concerning surgery to be wrong. The missiles produced the most extraordinary wounds, and the thing that surprised him was that the supermud acted as a missile in itself. He reflected the opinion of Sir Berkeley Moynihan that complete wound excision was not an easy thing to accomplish until one had had a great deal of experience, but considered it the proper procedure to follow. The wounds were made very much larger than he had ever expected to make, but the patients did remarkably well after complete cleansing. Concerning antiseptics, the

Lakeside unit took with it a complete outfit for carrying out the Carrel-Dakin technic, and used it now in their base hospital and had also put teams forward into the front area. He had never seen any wounds do better than those in which a perfect and typical Carrel technic was carried out, but his experience had been practically the same as Sir Berkeley Moynihan had intimated.

Antiseptic Treatment of Wounds.—Dr. Edward Martin, of Philadelphia, said that they had been advised by one member of the profession to take all the antiseptics and throw them into the sea, and another had advised them to raise a brood of tame maggots to take care of wounds. What Sir Berkeley Moynihan had done most of the profession could not do, and what they were after was what they could do best for the good of the army. The majority of the profession still believed that there was a germicide that killed the germs, and this was what they were after. They were still searching for the best and least injurious germicide, and Dakin thought he had found it. He urged that the outcome of the experiments of Doctor Furniss and Doctor Lee be awaited before throwing away all antiseptics and treating every wound with courage and the knife and nothing else.

Dr. Edward K. Dunham, of New York, stated that we were chiefly indebted to Dakin for our understanding of chlorine antiseptics and their mode of use. Bacteriological studies on antiseptics had shown that, even when apparently perfect contact was attained, all the bacteria present were not equally rapidly killed. The rate of disinfection varied with the nature of the disinfectant and the medium in which it acted. For successful disinfection three conditions must be met: Contact of antiseptic with infecting organisms, time during which this contact was maintained, and adequate mass, or concentration of the antiseptic at the points of contact. There were also three things of prime importance that should be known about an antiseptic before it was chosen as appropriate for a given purpose: the speed or rate of disinfection, the stability of the substance under the conditions of its use, and the permissible concentration. The speed of disinfection was enormously influenced by the medium in which the antiseptic acted, but even in identical mediums there was a wide divergence in the speed with which different antiseptics accomplished disinfection. As to stability, there were numerous forms of instability manifested by antiseptics when applied to wounds but the speaker confined himself to members of the chlorine group, explaining the action of the different members of the group. The germicidal action of chlorine antiseptics was not specific, but incidental to the high reactivity of this group of compounds, and for the best results provision must be made for an adequately frequent renewal of the antiseptic. The permissible concentration was governed chiefly by the degree of irritation occasioned by the solutions employed, especially upon the skin and mucous membrane. Chloramine-T was far less irritating than the hypochlorites and could be used in greater concentration. Dichloramine-T occupied an exceptional position. It was so slightly soluble in water that aqueous solutions must necessarily be ineffective, but solutions in oil could be used in great concentration, up to twenty per cent. if need be, thus introducing an extraordinary mass of antiseptic at a single application, and this abundant mass could become effective as experiments had shown.

Dr. W. Edsell Lee, of Philadelphia, reported 7,228 cases in which dichloramine-T had been used, and in many cases used in war wounds in France. From this clinical experience the conclusions offered in their first report had developed into firm convictions. Their experience had been in accord with many of the surgeons, that the chlorine preparations had proven superior to all other antiseptic preparations. However, if used for any length of time, they produced marked irritation of the skin, so various modifications were tried and the best was that suggested by Dakin. The original solution was very unstable and had to be prepared almost daily, and the 4.8 per cent. solution contained such a very small germicidal agent that it was necessary to have it at all times in direct contact with the wound.

It was necessary frequently to renew the solution every two hours night or day. Carrel and others had overcome most of these faults by the development of a complicated and beautiful technic, which consumed a great deal of time on the part of the surgeon and nurse and an unusual expense for both apparatus and dressing material. They had made a search for a new antiseptic and Doctor Dakin had requested them to try out the dichloramine-T. By using oil as a menstruum a large mass could be brought into contact with the infection in such a manner that it was slowly infused into the tissues, and during this period its action was in all respects equal to that of the chloramine compound. This eliminated at the start the necessity for the complicated Carrel technic. The results of these clinical tests had been the realization of Dakin's hopes. Doctor Lee illustrated his talk with lantern slides showing the method of applying the solution and the dressings and emphasized the economy in dressings required. By this means they were able to treat eighty cases an hour at their dispensary clinic and on some occasions had treated 100. They used less than one fourth the gauze formerly used, less than one tenth of the bandages, and had cut down the time of healing from fourteen days to ten days.

Dr. William O'Neill Sherman, of Pittsburgh, spoke in defense of the Carrel method and said if the impression was allowed to prevail that antiseptics had no use there was no use in going to France. We could simply let them put on a bandage over there and send the boys home. He had spent five months in France and England and every man over there was infected. Carrel's hospital was eight miles back from the lines but not a man was infected, there was not a drop of pus. He called attention to the work of Shutro who had 300 beds in Paris and was using this method with good results. There had been 60,000 amputations in France that were due to infection. Lantern slides of wounds before, during, and after treatment by the Carrel method were exhibited to show the splendid results obtained.

(*To be continued.*)

Letters to the Editors.

THE SEPTIC DENTIST.

Michigan City, Ind., *November 3, 1917.*

To the Editors:

With the Dental Corps endeavoring to secure legislation which will place them on an equal plane with the Medical Corps and the petitioning of the dentists in the States to become associate members of the state medical societies, it seems timely to question the qualifications of the dentists for such a selfextended invitation. Should this catastrophe take place, much speechmaking will have become a miserable waste when there has been such an earnest plea for the higher educational standards and attainments for the regular physician. There is no more reason for a dentist than there is for a chiropractor. If one is so devoted to his specialty, let him take the prescribed standard medical course required by law and pursue it with the same understanding as a regular practitioner. Dentistry is a specialty of medicine like ophthalmology, proctology, psychiatry, or any other ramification of general medicine or surgery. It is true that the optometrist is still allowed and encouraged to refract eyes, in spite of an unrecognized condition requiring treatment and that the pile doctors, now known as quacks, were the proctologists when the regular practitioner considered this region beneath him, and that the mentally sick were cared for in much the same manner as cattle because the science of medicine had not awakened to the immensity of human suffering occasioned by its neglect and ignorance of chemical dyscrasiæ.

The same is true in this age of the glaring deficiency manifested in the dental specialty. The practice of dentistry is not a profession but a trade. The preliminary of a dental student is most inadequate; he is required to go through the form of an entrance examination which is regarded even by the applicant as camouflage. It is well known that the majority of dentists have a very meagre preliminary education; in many instances the seventh grammar grade is the limit. The three year college course is well occupied in mechanics, with a trace of anatomy and lesser amounts of the other essentials. An orthopedic surgeon requires a skilled mechanic to perform the blacksmith's duties in connection with this specialty, yet the mechanic is not entitled to a degree of doctor unless qualified in the prescribed manner. Being a victim of the dentist's trade, and not an occasional visitor, I have yet to see an instrument sterilizer, a scrub brush for aseptic purposes, or disinfecting solutions for the hands, even after the treatment of a patient with pyorrhea. This septic process is too frequently the etiology of pyorrhea in our robust patients who have no other assignable reason for this dreaded malady. Neither have I seen a laboratory outfit for the occasional examination of a slide or a small x ray cabinet which is proving the handiwork of our septic dentists. It has been my embarrassing position to ask more than one dentist to wash his hands before examining my mouth, and yet how I wished that I might ask him to scrub and go through the solutions in the same manner as a surgeon. And why not? If it were not for the natural defense reaction of the oral secretions, the practice of dentistry would be as hopeless as was the practice of surgery before the day of Pasteur and Lister. Without thorough hand disinfection, the septic dentist can easily pass from one house to another the organisms of pneumonia, tuberculosis, pyorrhea, and typhoid, and the no less deadly specific infections.

Not only is there the gross lack of asepsis in the large majority of dentists' offices, but there is also a great necessity for the appreciation for minute microscopy. I have seen an occasional instrument run through some patent solution and then relieved of a bit of cotton or accidental dirt by a brush on the back of the septic hand, the instrument to be used later in possibly a sterile cavity. Not long ago I was entertained at a medical meeting by a professor in dentistry in a state dental college, who during the course of his lecture persistently spoke of "empyemia" and further enlightened the conference by explaining that a great deal too much was made of systemic infection due to pyorrhea, that the general practitioner was too much inclined to attribute gastritis to this source as well as the joint affections, and that the pyorrheal discharge was greatly maligned. So far as making a night call is concerned, many dentists feel almost outraged if asked to make a house visit or even open the office for an emergency case. This is particularly true on Sundays and holidays. When a general surgeon undertakes a case he stands ready to be responsible for the anesthetist and all assistants, but when a dentist undertakes a case in which a general anesthetic is required we all know that the operating dentist is not responsible for the work done by the anesthetist.

I have asked numerous dentists why they did not lay a foundation with a four year medical course which would especially fit them for bacteriological research and the great advantages to be gained with an acquaintanceship with surgical asepsis and diagnosis. Invariably the reply was that it would take too long before they could begin to practice and that they needed the money. Differential diagnosis and follow up treatment are as necessary to the practice of dentistry as they are to the general practice of medicine. Anemia preceding the extraction of teeth seems to be as inconsequential to the dental practitioner as is the anemia following a severe hemorrhage, whether due to hemophilia, scorbutus, or some other blood dyscrasia; this neglect is not intentional, but is due to absolute ignorance of allied metabolism. A word to a patient to see the family physician is not necessary to the well to do, while to a poor patient the advice is superfluous, for he has not the means to care for that which seems to him a trivial matter. If dentists understood more of general medicine a patient with a heart lesion would not be turned loose to wander home immediately following the use of cocaine or some similar drug. Not being able to diagnose heart lesions, they have no more right to be dispensing these chemicals than a nurse has administering an anesthetic. Hysterectomies are not performed by persons who have done no other medical or surgical work than just this specialty; the same is true of herniotomies, splenectomies, etc. No specialty is gained in the time spent at college acquiring the fundamentals, except the specialty of dentistry. The other specialties require a lifetime. It is for these reasons and many more too numerous to mention that the medical profession should hold high its noble domain and repel any intruder who would unlawfully accept any of its excellent benefits, even though they be thrust at him.

Rose Alexander Bowers, M.D.

OSTEOPATHIC TREATMENT OF SINGERS' TONSILS.

14 Central Park West, New York, N. Y.,
November 3, 1917.

To the Editors:

Recently the editor of a musical magazine sent me an article written by a singing teacher in a distant city decrying the activities of general surgeons and general practitioners in removing tonsils in singers and thereby ruining their voices. While, from a reading of the testimony as set down by this protagonist, there was some basis in fact for the charge of carelessness, unskilfulness, and "the performing of unnecessary operations," the entire article was evidently part of a propagandist movement induced by the cult—a movement which seems to be growing, unchecked, during the past few months, against the regular profession, and against the scientific study of medicine.

The following letter may be of interest to your readers:

October 18, 1917.

Dear Doctor Voorhees:

I have just received an article on the tonsils from a serious thinking and experienced teacher of singing, and I am going to send this to you, and take the liberty of asking you if you will glance through it and give me an opinion as to whether it is a fair presentation of the subject. I do not want to take up this matter of the excision of the tonsils from the viewpoint of the surgeon. About a year ago I made some extracts from a book on the subject by Doctor Faulkner, of Pittsburgh, and since that time, have had several letters on the subject, pro and con, mostly from teachers or singers. The suggestion of the writer of this manuscript in regard to osteopathic treatment interests me for two reasons. First, I have a friend who stands high in the osteopathic profession, who gives very frequent treatment to singers and actors to keep the vocal organs in good condition. In reading a recent work by Doctor ——— of New York, I noticed a statement—unfortunately I cannot locate the page at the present time—which would seem to indicate that he endorses the osteopathic treatment for certain throat troubles. However, if this question is one outside of your province, have no hesitation in so advising me, and return the article. Yours very truly,

Editor of a Musical Monthly.

The following reply was sent:

October 20, 1917.

My dear Mr. ————:

I have read the article in question and must say that I cannot recommend its publication. What Mr. F. has to say is based on some impressions merely and carries no conviction because it is not an impartial analysis of facts. Moreover, it is replete with bitterness which defeats its purpose. Upon a rereading it sounds very much as if it had been "inspired." No lay journal can afford to take sides with or against any "school" of medicine as such. The entire feeling against the osteopath is based on the fact that he will not recognize the importance of bacteriology or pathology, and that he, in some instances at least, refuses to accept the bacterial origin of certain diseases, proof of which has long since been established beyond question. He is also wide of the mark regarding the processes of immunity. Much of what he does is helpful; much of what he says is harmful, because it gives the layman false notions about those diseases the proper understanding of which might teach him to avoid them. It is just as reasonable to say that all disease can be cured by exercise in the gymnasium or out of doors as to teach and to constantly affirm that laying on of hands is the panacea for all human ills. The large minded physician is the man who believes in surgery when surgery is necessary and in manipulation and general "physical therapy" when such means are indicated. For instance, a child with a shoe button in the trachea is to be cured only by the introduction of a tube in the hands of a skilled laryngologist and removal of the button by forceps—unless, of course, he is fortunate enough to cough it out, a rare eventuality—and not by manipulation of the spine for two weeks, as was done by an osteopath in a case that came to my attention.

Indiscriminate removal of tonsils by those unfit to do this operation is a menace. As for the singer, none but a specialist who knows the voice problem from the singer's viewpoint should be allowed to do a tonsillectomy. Only diseased tonsils, the subject of chronic inflammation extending over some months, should be removed from the throats of singers, whatever the rule in other persons.

Doctor ————.

Doctor ——— of this city is my friend. I happen to know he uses the finger in the postnasal space to break up adhesions. That is about the extent of his endorsement of osteopathy.

Very truly yours,

I. W. Voorhees, M. D.

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Book Reviews.

[*We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.*]

The Diagnostics and Treatment of Tropical Diseases. By E. R. Stitt, A. B., Ph. G., M. D., Medical Director, U. S. Navy; Commanding Officer and Head of Department of Tropical Medicine; Professor of Tropical Medicine, Georgetown University, etc. Second Edition, revised and enlarged. With 117 illustrations. Philadelphia: P. Blakiston's Son & Co., 1917. Pp. xiii-534. (Price $2.00.)

The expansion of the interests of the United States to hot climates, the Philippines and the Panama Canal Zone especially, lends a heightened importance to tropical diseases, and necessarily widens the scope of medical diagnosis and practice. The second edition of Stitt's excellent work on tropical diseases is therefore to be heartily welcomed by all who are interested in the subject. Much new matter has been added, in particular, sections on typhus fever, Rocky Mountain spotted fever, and two additional chapters on diagnostic methods of tropical diseases. How complete is the revision of the book is shown by the fact that a description of trench fever is included. Throughout the entire work changes may be noted based upon the rapid expansion of our knowledge in recent years. Mechanically the book is very well put together, and in spite of the addition of so much new material, the volume has been kept well within the limits of a convenient handbook.

Le Paludisme macédonien. Caractères cliniques et hematologiques principes de thérapeutique. Par P. Armand-Delille, P. Abrami, G. Paisseau, et Henri Lemaire. Preface du Pr. Laveran, membre de l'institut. Collection horizon précis de medécine et de chirurgie de guerre. Paris: Masson et Cie, 1917. Pp. viii-109. (Price 4 fr.)

One of the byproducts of the European war is a renewed interest in tropical diseases as occurring in Greece and Mesopotamia. This recent volume of the Collection Horizon is devoted to the study of malaria among the troops in Macedonia. A large number of cases of the disease were observed, chiefly of the æstivoautumnal type, which formed about eighty-five per cent.; the tertian was about fifteen per cent., while only about a dozen cases of the quartan type were seen. The first part of the volume is taken up with the clinical symptoms observed in severe malarial infections, including recurrences. Some double infections are described with typhoid, dysentery, and the spirillum of relapsing fever. The section on treatment is very full, both for the acute attacks and chronic cases and for the relapses. When the disease has become chronic the authors recommend the return of the patient to a cool climate as an essential therapeutic measure. A part of the book is devoted to the microscopic identification of the parasites, the preparation of microscopic slides, and of the different stains which must be employed. The bieosinate method of Tribondeau, which is about the same as Wright's stain, is particularly recommended. The morphology of the parasites is well described and illustrated by excellent colored plates.

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After Office Hours.

MILITARY MEDICINE.

By Doctor Munchausen.

Among the new inventions which are being tried out on the western front the one which attracts perhaps the most attention is the antitetanus bullet. This is a hollow bullet filled with antitoxin. It is so devised that, after piercing the tissues for a depth of one or two inches, it falls apart, releasing the antitoxin. As particles of dirt, fragments of cloth, and so on, are usually carried into a wound in trench warfare, this bullet renders unnecessary the administration of tetanus antitoxin and thereby saves the hardworked military surgeon much trouble.

* * *

Heard at a Society meeting: "The patient was never able to keep anything on his stomach, even though we tried rectal feeding."

* * *

The time is past when the word syphilis was taboo. We shall expect sooner or later some adequate handling of the venereal problem by the public. As an example of the freedom of discussion now permitted we note, in the *New York Times* for October 28th, a thoughtful article on Barring Sex Disease from the American Army.

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In The Togbury Jool, a detective story by Ellis Parker Butler, published in the Sunday magazine of a number of metropolitan dailies for November 4th, the villain is made to stab himself, to give the impression that he has fought desperately to protect his master's property. He is in league with a quack doctor who, in the author's words, "bought a particularly sharp and thin style of knife and gave it a surgical instrument edge and *dipped it in cocaine to deaden the pain.*" (Italics ours.) Should Mr. Butler ever stab himself with a knife dipped in cocaine we predict a little surprise for him.

Meetings of Local Medical Societies.

Monday, *November 19th.*—New York Academy of Medicine (Section in Ophthalmology); Psychiatric Society of Ward's Island, New York; Yorkville Medical Society, New York; Medical Association of the Greater City of New York; Elmira Clinical Society.

Tuesday, *November 20th.*—New York Academy of Medicine (Section in Medicine); Federation of Medical Economic Leagues of New York; Tompkins County Medical Society; Medical Society of the County of Kings; Triprofessional Medical Society of New York; Binghamton Academy of Medicine; Syracuse Academy of Medicine; Ogdensburg Medical Association; Oswego Academy of Medicine; Medical Society of the County of Westchester (annual).

Wednesday, *November 21st.*—New York Academy of Medicine (Section in Genitourinary Diseases); Alumni Association of the City Hospital; Women's Medical Association of New York City (Academy of Medicine); Northwestern Medical and Surgical Society of New York; Schenectady Academy of Medicine; Medicolegal Society of New York; Buffalo Medical Club; Bronx County Medical Society; Dunkirk and Fredonia Medical Society; Buffalo Academy of Medicine (Section in Obstetrics and Gynecology).

Thursday, *November 22d.*—Hospital Graduates' Club, New York; New York Physicians' Association; Medical Union, Buffalo; Ex-Interne Society of Seney Hospital, Brooklyn.

Friday, *November 23d.*—New York Clinical Society; Manhattan Medical Society; Brooklyn Society of Internal Medicine; Italian Medical Society of New York; Society of German Physicians.

Saturday, *November 24th.*—New York Medical and Surgical Societly; West End Medical Society; Harvard Medical Society; Lenox Medical and Surgical Society.

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Official News.

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending November 7, 1917:

Carter, H R., Assistant Surgeon General. Directed to represent the Service at the meeting of the National Malaria Committee, at Memphis, Tenn., November 12-15, 1917.

Derivaux, R. C., Passed Assistant Surgeon. Directed to attend meeting of the National Malaria Committee, Memphis, Tenn., November 12, 1917.

Frank, L. C., Sanitary Engineer. Directed to proceed to Petersburg, Va., to secure data for an experimental sewage disposal plant.

Friedman, H. M., Acting Assistant Surgeon. Directed to proceed to Hot Springs, N. C., on special temporary duty.

Geer, L. P., Sanitary Bacteriologist. Directed to proceed to Columbia, S. C., on special temporary duty.

Kerr, J. W., Assistant Surgeon General. Directed to proceed to Spartanburg, S. C., Milledgeville, Ga., and other necessary places for the inspection of investigations of pellagra; directed to represent the Service at meetings of the Southern Medical Association and the National Malaria Committee, Memphis, Tenn., November 12-15, 1917.

Le Prince, J. A. A., Sanitary Engineer. Directed to proceed to points in the Southern States and in States north of the Ohio River, to make malaria surveys and studies and collect data; directed to attend meeting of the National Malaria Committee at Memphis, Tenn., November 12, 1917.

Lombard, M. S., Assistant Surgeon. Relieved at Tampico, Mexico. Directed to proceed to New Orleans, La., for duty in plague eradicative measures.

Mitzmain, M. B., Technical Assistant. Directed to attend meeting of the National Malaria Committee at Memphis, Tenn., November 12, 1917.

Pierce, C. C., Senior Surgeon. Directed to attend the meeting of the Southern Medical Association at Memphis, Tenn., November 12-15, 1917.

Preble, Paul, Passed Assistant Surgeon. Directed to proceed to Washington, D. C., for co-operation with the American Red Cross Association.

Rucker, W. C., Assistant Surgeon General. Directed to proceed to Newport News and Petersburg, Va., to inspect work in the sanitation of extra cantonment zones.

Saunders, Samuel, Scientific Assistant. Directed to proceed to Macon, Ga., on special temporary duty.

Schereschewsky, J. W., Surgeon. Directed to attend the Welfare and Efficiency Conference, at Harrisburg Pa., November 20-23, 1917.

Slaughter, W. H., Assistant Surgeon. Directed to proceed to Muskogee, Okla., to demonstrate milk pasteurization methods; directed to proceed to station at St. Louis, Mo., to complete report of studies of rural sanitation in Ocmulgee County, Okla.

Vardery, W. C., Scientific Assistant. Directed to proceed to Anniston, Ala., on special temporary duty.

Waller, C. E., Assistant Surgeon. Granted thirty-nine days' leave of absence on account of sickness, from September 13, 1917.

Webb, John B., Scientific Assistant. Directed to proceed to Atlanta, Ga., on special temporary duty.

Wynne, R. L., Assistant Surgeon. Relieved from duty at Leavenworth, Kan.; directed to rejoin station at St. Louis, Mo.

Yarbrough, H. C., Assistant Surgeon. Relieved from duty at Marine Hospital, Chicago, Ill.; directed to continue on special temporary duty at Little Rock, Ark.

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Births, Marriages, and Deaths.

Died.

Alexander.—In St. Louis, Mo., on Saturday, October 27th, Dr. William James Alexander, aged fifty-four years.

Alleman.—In Geneva, N. Y., on Saturday, November 3rd, Dr. Louis Arthur Welles Alleman, aged fifty-five years.

Bloom.—In New Waterford, Ohio, on Friday, October 26th, Dr. Daniel M. Bloom, aged seventy years.

Custis.—In Washington, D. C., on Monday, October 29th, Dr. George W. N. Custis, aged eighty-seven years.

Davis.—In Middletown, Conn., on Wednesday, November 7th, Dr. Charles H. S. Davis, of Meriden, Conn., aged seventy-seven years.

Davis.—In Kansas City, Kan., on Saturday, October 27th, Dr. Jefferson A. Davis, aged fifty-four years.

Davis.—In Kingman, Kan., on Friday, October 26th, Dr. Newton C. Davis, aged sixty-one years.

Elliott.—In Pittsburgh, Pa., on Sunday, November 4th, Dr. Frederick B. Elliott, aged forty-five years.

Foote.—In Marshall, Mich., on Sunday, October 28th, Dr. Frank M. Foote, aged fifty-six years.

Fraker.—In Kansas City, Mo., on Thursday, November 1st, Dr. George William Fraker, of Excelsior Springs, Mo., aged fifty-nine years.

Harrison.—In Loudon, Tenn., in October, Dr. Josiah Jackson Harrison, aged eighty-three years.

Martin.—In Peoria, Ill., on Thursday, November 1st, Dr. Leonidas B. Martin, aged seventy-two years.

Sinclair.—In Jacksonville, Fla., on Sunday, October 28th, Dr. George Law Sinclair, of Halifax, N. S., aged sixty-five years.

Tabler.—In Philadelphia, Pa., on Monday, October 29th, Dr. Jasper N. Tabler, of Atlanta, Ga., aged seventy-six years.

Winterson.—In Hanover, Md., on Sunday, October 27th, Dr. Charles R. Winterson, aged seventy years.

New York Medical Journal

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Original Communications

TUBERCULOSIS TREATED BY TUBERCULIN.*

A Preliminary Report Upon Some Ambulatory Cases.

BY RICHARD COLE NEWTON, M. D.,
Montclair, N. J.,
Consulting Physician, Mountainside Hospital, Montclair.

As we learn more of the true nature of chronic diseases, the remarkable clinical similarity between tuberculosis and syphilis becomes more and more apparent. Certain interesting cases of concealed or latent syphilis have been reported lately. Stoll (1) says: "There is scarcely an untoward symptom which may afflict mankind that may not be caused by Treponema pallidum." Certain clinicians have recognized for years that syphilis is a disease of the family rather than of the individual, but it was not until the more general application of the Wassermann test that it became known how frequent and extensive prenatal luetic infections might be. Any apparently healthy child may harbor the organism, and a subsequent development of neurasthenia, hysteria, epilepsy, persistent and apparently unrelievable headaches, as well as the varying forms of malnutrition, etc., may be the unfortunate lot of the child of luetic parents.

Head (2) relates a case of unfortunately too common a type, where a married woman of forty-five years had become a confirmed neurasthenic, having been well and strong up to her twenty-fifth year. She had sought help for a score of years in this country and abroad and, to quote Holy Writ, had "suffered many things of many physicians . . . and was nothing bettered but rather grew worse." Finally the Wassermann test gave a positive result, and in a twelvemonth an almost miraculous change had taken place in this patient after appropriate antispecific treatment. Head comments upon this case as follows: "Now here was a patient with lues, suffering from the infection but without a single recognized symptom or physical sign to be detected anywhere," and so she ran the gamut of neurasthenia, psychasthenia, and nervous exhaustion, although the patient in this case was "as surely syphilitic as though she had gummata in her liver or necrotic bone lesions." He goes on to relate a case in a young woman of twenty-three years which was almost similar except that the latter patient had never been robust. She had suffered, however, from nervous symptoms and malnutrition like the syphilitic patient just mentioned and had in addition a curvature of the spine. She also had suffered from physicians and surgeons. These had concluded a series of abdominal operations by a hysterectomy in 1912, for which no specific cause was assigned except that "it was considered best for the patient's general health." Nothing pathological was discovered at the operation. This patient struggled on for years under a succession of illnesses, recovering from one attack of exhaustion merely to slip into another. She was always tired and sometimes coughed, but raised no sputum. Many consultants had examined her chest with negative results. In the past year she had lost fifteen pounds and had dieted herself to such an extent that she could scarcely eat any solid food. She had gastroptosis and a displaced right kidney. The Wassermann test was negative. Koch's tuberculin, however, gave a positive reaction. The great similarity of the symptoms to those of the luetic case just cited is most instructive. Doctor Head has reported fifteen similar cases, which he terms "concealed tuberculosis." He is not ready yet to give the results of his treatment of these cases, which can hardly fail to be interesting.

I can give a case of my own, treated by gradually increased tuberculin injections, which, except that I was obliging enough to leave undisturbed all the patient's abdominal and other organs, closely resembles Doctor Head's case in kind if not in degree.

CASE I.—Mrs. J. V., age forty-seven years; married; housewife. I was called in May, 1916, to see patient's daughter, who was suffering from nervous dyspepsia. On examining the chest, I found a slight difference in the expiratory note at the right apex. The subcutaneous tuberculin test was tried and found positive. The symptoms were in some respects similar to those from which the mother had suffered for years. The subcutaneous tuberculin test was then tried upon the mother also and proved to be positive. The latter's history was as follows: Both parents were living and comparatively vigorous at an advanced age. No other cases of tuberculosis were known to exist in the family except patient's sister, who was probably tuberculous, and patient's daughter, as stated above.

On looking up the patient's cards in my office index I found as follows: August 6, 1902. Diagnosis, "anemia." Complained of scanty, tarry, and delayed menstrual flow, and had pain in her limbs and headache, especially on awakening. January 29, 1903. Complained of pain under shoulder blade and across chest; tongue coated; bowels

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*Read before the American Climatological and Clinical Association at Lakewood, May 30, 1917.

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confined. September 27, 1905. "Nervous"; dyspeptic; had trembling fits and pains in various places, etc. October 27, 1905. "Nervous"; anesthesia of buttocks; general nervous condition; constipated. November 13, 1905. Neurasthenia; prickings all over body. November 20, 1909. "Malaria"; frequent nausea. May 11, 1911. Had improved considerably after taking orthoform, soda, and codeine before meals and pepsin after meals, and stopping coffee. No movement of bowels in six days. February 9, 1916. Flatulent dyspepsia; bad breath; anorexia; some cephalalgia; lassitude, etc. Sight of one eye nearly gone since five years of age; vision now somewhat improved. Divergent squint at times. July 15, 1916. Since tuberculin treatment was instituted she could eat almost anything without distress. She astonished herself and her family by eating ham and eggs with great relish and no untoward results, immediate or remote. She could sweep without the pain in her chest which she had had for years after that exercise. She did not seem to herself "to be so old"; was still pallid. October 30, 1916. Still some dyspepsia and general malaise. November 6, 1916. Digestion was better. Pain on left flank after hard work had returned. January 9, 1917. She could eat cheese and digest it comfortably, a test of gastronomic ability entirely beyond her for many years. Felt "all right." January 16, 1917. Had carmine colored lips, a mark of beauty which she had not shown for a number of years. January 30th. Feverish from some unknown cause. February 6, 1917. Cough and cold still troublesome. No fever. February 13th. Felt very well. February 20th. No unpleasant symptoms. She was practically well and was constantly astounded at her own improvement. Her weight had remained about stationary. She never was emaciated.

Her daughter, who went to Chicago before completing her course of tuberculin under my care, was taken charge of by Doctor Kline, of that city, and the treatment continued. She writes home that she never felt so well in her life. This young lady was always tired. She would fall down from weakness in her knees after exercise. Although lithe and graceful in her carriage and markedly quick in her movements, she was never able to take part in esthetic dancing, like the other members of her class in college, because she was too weak. She was precocious mentally and studied very hard. She complained bitterly of the food provided in the college commons, saying that she had to depend on scanty supplies from outside or go hungry—and this at one of the leading women's colleges in America! The possible connection between the poor and insufficient food and the development of tuberculosis in this case is but too obvious. I will not go into her history in detail inasmuch as it so closely resembles her mother's. At last accounts she weighed 106 pounds, a gain of three pounds over her weight when treatment began.

I will recite another ambulant case which is interesting because of the length of its course and its resistance to the usual treatment.

Case II.—Miss R., aged forty-two years; single; stenographer; born in New York. Father died some years ago of aneurysm, hard arteries, and nephritis. Mother and two brothers were living and well. There was no history of tuberculosis in the family. She had so called "malaria" at sixteen years of age, which was "chronic" and so resistant to treatment that it lasted for years. Finally, the correct diagnosis having been made, a sojourn in a sanitarium was prescribed. This was followed by an "arrest" and then a relapse, which, in turn, was followed by further sanitarium treatment, and the same order of events repeated itself. After three such experiences of the "dietetic hygienic" treatment, my lady said she would die before she would undergo another. At one of the institutions she took tuberculin in a spasmodic way and invariably felt benefited after it. Yet as her digestion had always been of the well known so called pretuberculous type and as the food provided did not agree with her, she frequently had slight febrile rises which she herself thought were due to indigestion and not to tuberculin. Yet the latter was promptly stopped at any sign of fever, and the patient was sent to bed whenever the oral temperature was 100° F. or over. There she had to remain and no tuberculin was given her until the thermometer steadily showed a temperature below 100° F. The late Doctor Janeway examined her chest some years ago and told her mother that she had the scars of an old tuberculous process in her lungs. Whether there was any active tuberculous process there he could not tell without the use of tuberculin, which he was afraid to administer for fear that it might start up the disease afresh.

In 1902 she was treated for typhoid fever and was seen by several doctors. The case was finally reported to the Montclair Board of Health as tuberculosis. In 1910 she was again reported to the Montclair Board of Health as tuberculous. About two years ago she placed herself under the care of a well known specialist in New York and finally underwent what is known as a "diagnostic week" at the Presbyterian Hospital. A prominent diagnostician was in consultation; at the expiration of the week she was told there was nothing discoverable the matter with her. She naturally concluded that the doctors thought she was "hipped" and there was nothing more to be done. With her increasing bad symptoms and the alternative of another sanitarium tour or a probable long and hopeless illness, she was much discouraged. The history of this young woman for the past twenty-five or six years has become a succession of advances and remissions of a tuberculous infection. Finally her local medical adviser, Dr. Anna Smith, referred her to me for tuberculin treatment. On testing her with tuberculin, she reacted, and was immediately put upon the treatment. After the first hypodermic injection she had a severe local reaction and stated that her skin was so sensitive to iodine that she could not bear to have the site of the injection painted with it, as is usually done. After the reaction to the test dose of tuberculin, she had an attack of what was supposed was grippe of moderate severity, which precluded further tuberculin treatment for thirteen days. Since then she never had a marked constitutional reaction; but treatment was interrupted once or twice on account of a severe local reaction. She gained thirteen pounds. Her headaches and backaches, which formerly practically never left her, have been forgotten. Her lips were red and her skin lost its waxy pallor. Iodine no longer irritated the skin and cuts or abrasions healed rapidly, which never happened in the old days. During her course of treatment she accomplished a great deal of work, doing for a large part of the year her own work and her assistant's; and she felt well and happy. She declared that I could not use too strong language in describing her case. She asserted that the spring of 1917 was the only springtime in her life that she really enjoyed.

The following case of tuberculous peritonitis seems worthy of record:

Case III.—W. A., male; aged fifteen years; born in New York; residence, Bloomfield, N. J.; schoolboy and assistant in a grocery store. Family history was unimportant except that his half brother died of tuberculosis at thirty years of age. This brother had been "cured" of the disease with creosote when seventeen years old and was alleged to have had syphilis. Both parents were alive and well. I was called to this patient in August, 1916. He had fever, abdominal pain, vomiting, anorexia, and night sweats. He was in considerable distress. As there was a history of overindulgence of a normally powerful appetite, he was given something for summer diarrhea and not seen again for three days. As his symptoms persisted, I was recalled; I gave castor oil and quinine and pronounced the disease probably malaria. The bowels, however, remained painful and there was more or less distention and flatulence. A history of a similar attack a month previous was given, which had subsided after home treatment with castor oil. In two or three days a boggy mass was discovered in the lower right quadrant of the abdomen. This was not sensitive to the touch. There was some pain on micturition, but none on defecation. As it seemed about time to call in a surgeon, Dr. James T. Hanan, of Montclair, kindly saw the case in consultation. He advised that the boy be sent to the hospital; he believed that we were dealing with syphilis, tuberculosis, or cancer. The Wassermann test proved negative, while the subcutaneous tuberculin test was positive. Tuberculin treatment was instituted at once. In fact, the case had begun to improve from the test injections, and the mass in the abdomen, which had reached to the umbilicus on August 28, 1916, by the fourth day after the test doses of tuberculin had so far subsided, that it could not be palpated through the abdominal wall. On September 5th the patient was well enough to leave the hospital. His weight was 123¾ pounds, a loss of twenty pounds since his original attack six weeks before. A softening mass as large as a baseball could be felt per rectum in Douglas's cul de sac. The tuberculin was continued practically without interruption to the present time. The patient gained five pounds in weight from September 8th to September 11th, and this increase at a smaller ratio continued until now he weighs 145 pounds, two pounds more than when his sickness began. By December 11th he found that he could run without pain or stiffness practically as well as ever. As he expresses it, from August to December he had "forgotten how to run." He felt perfectly well and attended school regularly and worked in a grocery store afternoons and Saturdays since October 1st. On February 23, 1917, Dr. Hanan kindly examined the abdomen and found no trace of the former exudate.

One other case has recently come to my knowledge which is illustrative in its way and worth quoting. Although it is not an ambulant one, nor under my treatment, it has made such a strong impression upon my mind that I believe I should report it.

CASE IV.—A friend of mine, of about sixty-three years of age, consulted one of the leading genitourinary surgeons in the country, complaining of an enlarged prostate. This was supposed to be carcinomatous and an effort was made to excise it. When cut into, the condition was found to be tuberculous and was secondary to a tuberculous peritonitis. The incision necessitated the formation of an artificial anus through the perineum.

Whether the patient recovers or not, his condition has perhaps been very gravely aggravated by an operation that might not have been undertaken at all if the true nature of the morbid condition had been ascertained, as might easily have been done. If the subcutaneous tuberculin test as well as the Wassermann were tried in every chronic case before operation, much information of the greatest possible value to patient and operator might be elicited. In the writer's opinion, the failure to make use of both these diagnostic agents is, in the light of our present knowledge, entirely without excuse in cases such as the above mentioned.

It is gratifying to note that the routine use of the Wassermann test is increasing in hospital and private practice, and there is good ground for the assertion that the subcutaneous tuberculin test in chronic cases, similar to those which receive the Wassermann test, will increase in frequency just as the test for syphilitic infection has.

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Radiology in Abdominal Wounds.—Vittore Mragliano (*Gazzetta degli ospedali e delle cliniche*, May 24, 1917) from extensive study of the uses of the x ray in wounds of the abdomen concludes that in such cases radioscopy is of much greater value than radiography. The importance of a röntgenographic examination lies chiefly in the confirmation or exclusion of the presence of foreign bodies or penetration of the wound. This applies especially to war surgery at the front.

A CRITICISM OF THE STANDARDS OF DIAGNOSIS OF PULMONARY TUBERCULOSIS IN CHILDREN ISSUED BY THE NATIONAL ASSOCIATION FOR THE STUDY AND PREVENTION OF TUBERCULOSIS.

By MAURICE FISHBERG, M. D.,
New York.

For many years the writer has been at a loss to account for the frequency with which the diagnosis of pulmonary tuberculosis in children is made in the various clinics of this city, knowing well that this disease is exceedingly rare among children of school age in every city in the civilized world. Considering the number of children in the general population, it is noteworthy that very few are found sick with pulmonary tuberculosis so as to require institutional treatment. The number of children in sanatoriums is comparatively small. Moreover, it appears that as a cause of death pulmonary tuberculosis is rather infrequent in children between three and ten years of age, as can be seen from the mortality tables published by the census offices of any country or city. This would seem to indicate that even if pulmonary tuberculosis does occur in children of school age, it is a very mild disease, only exceptionally causing death. Indeed, numerous children brought to me by their parents after a diagnosis of pulmonary tuberculosis had been made in the clinics or after they had been excluded from school and advised to seek admission to sanatoriums or to day camps, were found either not to be tuberculous at all or to show symptoms and signs of glandular tuberculosis. The reason for the frequent diagnosis of tuberculosis in children has only now become clear to me after a committee of the National Association for the Study and Prevention of Tuberculosis has officially published its *Standards for Diagnosis of Tuberculosis in Children*, thus seeking to inculcate the proclivities of the tuberculosis clinics into the general profession. After reading this report, the writer thought it advisable to analyze certain points which are open to question, to say the least.

Can diagnostic methods be standardized?—The great teachers of medicine have always endeavored to convince the profession that the diagnosis and treatment of disease, to be successful, must be individualized. The standardization of the automobile has undoubtedly produced a good machine at a reasonable price; the standardization of the gun has produced a weapon which can be manufactured in large numbers at short notice and be very effective in destroying human lives; and the standardization of the steamship will unquestionably give us sufficient tonnage to carry the war in Europe to a successful conclusion. But not everything can be standardized. Warfare, for instance, cannot be thus reduced to a simple formula, and no general ever attempted to lay down laws or rules designed to hold under all circumstances. Nobody has yet devised a standard diet. Only in institutions, particularly penal institutions, will human beings submit to a standard diet. The same is true of practical medicine. We may standardize the manufacture of the hypodermic syringe, but we cannot standardize the indications for hypodermic medication nor our judgment of the effects of this form of therapeutics. Attempts at standardization of the dose of tuberculin therapy have met with dismal failure. In medicine, as in everything else in which the human element and complex vital phenomena play important rôles, individualization has been found the only feasible method.

We know of no disease in which the diagnosis has been standardized by authoritative observers. Pneumonia, typhoid, valvular heart disease, etc., are not diagnosed according to certain rules or dicta, but each individual case is judged by itself. The four cardinal symptoms of Graves's disease—tumor, exophthalmos, tachycardia, and tremor—are not all required to assure a diagnosis of this disease. Under certain conditions one alone is sufficient, while in other circumstances two will not be considered enough for a positive diagnosis. Why the diagnosis of pulmonary tuberculosis in children should constitute an exception in pathology is not clear. Even biochemical diagnostic methods have not been standardized, as is evidenced by the various ways in which the tuberculin test, the Wassermann reaction, and even the examination of urine are made. When exact biochemical reactions cannot be standardized, it would be too much to expect that the diagnosis of such a polymorphous pathological process as tuberculosis should be.

The standardized history of the case.—The committee first gives standards for the history of the case, and states that "no one of them will alone establish a diagnosis," but fails to state whether two will. Thus are mentioned: "The following points should be covered in obtaining the history. Some of them, as indicated by italics, are more important than others. Emphasis should be laid upon the combination of several of these conditions, it being understood that all of them are not essential and that no one of them alone establishes a diagnosis: *Intimate exposure to infection, especially if prolonged;* delayed convalescence from illness; *malnutrition indicated by underweight for height and age; loss of or failure to gain in weight, and pallor; cough;* expectoration; *hemorrhage;* pleurisy, dyspnea; night sweats; digestive disturbances; ear discharge." Is malnutrition in children only caused by tuberculosis? We know that the growth of the body in height and weight is influenced by complex extrinsic and intrinsic factors, especially by the activities of certain ductless glands. Even excellent food and a proper climatic environment with an exemplary home scientifically ventilated are impotent in correcting many physically defective children. Otherwise, the well to do would all be of excellent stature and weight. A child backward in growth because of defective activity of the thyroid will not thrive, though he is not tuberculous. The same child may cough, but this is usually due to enlarged tonsils and adenoids; focal infection of the upper respiratory passages may be responsible for fever, night sweats, dyspnea, digestive disturbances, and even an ear discharge. Here we have nearly all the symptoms enumerated above, yet the child is not tuberculous, and the treatment which may help the little patient is surely not the one recommended by those who see only tuberculosis in a sick child.

Another point: While pleurisy in adults is almost invariably tuberculous in character, it is not so in the case of children, as has been attested by nearly all authorities. Under the circumstances, if a child recovers from an attack of pleurisy, the parents should not be frightened by the bogy of tuberculosis. Hemoptysis is so rare as to be a medical curiosity in children. Children do not expectorate; they swallow their sputum if they bring up any at all. This fact is appreciated by the committee because tubercle bacilli in the sputum is not even mentioned as a requisite for the standardization. The fact is that hemoptysis in children is almost invariably due to inflammatory conditions of the nasopharynx and tonsils or to heart disease. Apparently, these symptoms, expectoration and hemoptysis, have been inserted as "fillers," to follow journalistic terminology.

Standardized constitutional symptoms.—After the history the constitutional symptoms are thus standardized: "In every physical examination, the possible occurrence of all of the following constitutional symptoms should be considered by the examiner. In considering their importance the same rule should be followed as noted under 'history': *Change in disposition, shown by lassitude and fretfulness; malnutrition; elevation of temperature, acceleration of the pulse, acceleration of the respiration; cough;* expectoration; *hemorrhage;* pain; dyspnea; night sweats; digestive disturbances." A "change in the disposition, shown by lassitude and fretfulness" is the usual symptoms of the lymphatic diathesis which is more frequent among children of all classes than pulmonary tuberculosis. Fever, acceleration of the pulse and respiration, and cough are constant symptoms of focal infection of the nasopharynx, which is by far more frequent than pulmonary tuberculosis in children of school age. Night sweats are often seen in physically healthy children and have been ascribed by many pediatrists of first rank to nervous disturbances. Moreover, as has been pointed out by the writer elsewhere, a large proportion of healthy children sweat as soon as they fall asleep. To be of significance, night sweats must occur in the early morning hours, but this is as rare as is tuberculosis among them. Even when due in tuberculous disease the lesion may be in the bones, joints or, more frequently, in the glands.

Every pediatrist will agree that the temperature in children is not as stable as that in adults. In the latter, an elevation in temperature of more than one degree is a sure indication of some serious or trifling pathological process. In children of school age this is not the fact. All who have carefully used the thermometer on large numbers of children found that temporary elevation of the temperature may occur after the least exercise, excitement, or without any discoverable cause.

Standardized physical signs.—"The following physical signs should be investigated by the usual method of physical investigation: Persistent and persistently localized râles, by which is meant: 1. Râles about the nipples; that is, anywhere between the fourth and sixth ribs, the border of the sternum and the anterior axillary line. 2. Râles anywhere along the border of the sternum, or in the region of the apices, as in adults. These, however, are infrequently found. These râles may be heard during inspiration or expiration, or after a cough. In many instances they can be elicited only by the cough. 3. Râles limited to a considerable part or the whole of any one lobe. If these are associated with a positive tuberculin test and persist over a considerable period of time, they should be regarded as tuberculous, despite the fact that in association with enlarged tonsils or adenoids similar signs may occur. However, in the absence of any means of definitely interpreting these signs, and particularly with a history presenting evidence of exposure to tuberculosis, it is wise to give children the benefit of the doubt and to keep them under observation until a definite diagnosis can be made. Additional abnormal signs may be elicited by the usual method of examination, such as changes in resonance and breath sounds. Any glandular, joint, bone, muscular, cutaneous, ocular, or aural abnormalities are of value as corroborative evidence of the pulmonary findings." We are not told in an official report which attempts to standardize diagnosis what sort of râles are of significance. Nor are we told that the adventitious sounds, to be of significance, must be localized in one lung. We are, however, told that in the apices and along the border of the sternum they are infrequently found. Indeed, they are as infrequent as is pulmonary tuberculosis in children. In the cases of pulmonary tuberculosis in children seen by the author in hospital and private practice, râles were always found in the apices. Moreover, it is acknowledged that "in association with enlarged tonsils or adenoids such signs may occur"; the fact that enlarged tonsils and adenoids are more frequent than tuberculosis in children does not deter the writers of this report, however, from urging that "in the absence of any means of definitely interpreting these signs," the "children should be given the benefit of the doubt and they should be kept under observation until a definite diagnosis can be made." But this benefit usually consists in sending the child to a sanatorium or a day camp or ordering that he should report frequently to the clinic for observation, thus missing school attendance and depriving him of an education which usually can never be retrieved. The association in the clinic with children suffering from other transmissible diseases must be borne in mind, and a child should not be asked to come to a dispensary unless absolutely necessary. The grief and terror of the parent when kept under suspense for months are also benefits which such diagnostic methods bestow. I need not emphasize that the period is past when a positive tuberculin reaction, even in a child with some of the above symptoms or signs, was sufficient to make a diagnosis of tuberculous disease. No experienced pediatrist is guilty of such rank recklessness at the present day, when we know that over seventy-five per cent. of children fourteen years of age have been infected with tubercle bacilli. In connection with glandular, osseous, and articular tuberculosis mentioned in the final paragraph, it may be stated unequivocally that it is exceedingly rare that pulmonary tuberculosis develops in an individual of any age suffering from any of these forms of the disease, excepting in an acute form usually following a surgical operation. In this observation orthopedic surgeons agree.

It is noteworthy that changes in the breath sounds and resonance of the chest are merely mentioned. Yet these are the only signs which reveal to us intrathoracic tuberculosis in children—enlarged tracheobronchial glands, which are quite frequently found, though not so dangerous as some would lead us to suppose. Indeed, it may be stated that tuberculous tracheobronchial adenopathy is hardly more dangerous than enlarged glands in the neck.

Standardized essentials for the diagnosis of pulmonary tuberculosis.—"1. Distinct, persistent, and persistently localized adventitious sounds—râles—in the chest. 2. Reaction to a tuberculin test. This reaction consists of a reaction of hyperemia not less than five millimetres in diameter occurring in forty-eight hours after the application of 100 per cent. Koch's Old Tuberculin by the cutaneous method of von Pirquet." Distinct, persistent, and persistently localized adventitious sounds are audible in the chest in children with unresolved pneumonia, bronchiectasis, pleural vomicæ, etc. Crepitation along the margins of the lungs is audible in many children in the morning soon after waking and in anemic children with flabby muscles throughout the day. These are not even mentioned in the "exceptions" which we will soon discuss. The tuberculin reaction is positive in tuberculosis of the glands and bones, and in the vast majority of children between five and fourteen years of age, who have been infected with tubercle bacilli, yet have not become sick as a result of the infection. These facts need no more be emphasized; they are common knowledge of the profession at present.

Exceptions to the standards.—"1. Given an unquestioned and otherwise unexplained hemoptysis with a positive tuberculin reaction and with or without a definitely positive radiograph, a diagnosis of pulmonary tuberculosis is to be made. 2. Given a radiograph which shows unmistakable mottling well into the pulmonic fields without any sharp outline suggestive of calcification with a positive tuberculin reaction in children under three or four years of age, even if constitutional symptoms are absent, and in older children who have frequent cough or rapid pulse or fever, a diagnosis of pulmonary tuberculosis is to be made." As was already stated, hemoptysis is exceedingly rare in children, but many older children with enlarged tonsils at times expectorate blood streaked sputum. Mothers who observe the blood report it. But no physician should make a diagnosis of tuberculosis, even if the cutaneous tuberculin test is positive. A radiogram of a child over four years of age showing no mottling or opacities in the region of the hilus is very rare. To urge that some mottlings in the pulmonic field of children with a positive von Pirquet reaction are an indication of tuberculous disease which should be diagnosed even in the absence of constitutional symptoms is a very dangerous procedure. The profession can ill afford it because there are many parents who do not take these diagnoses seriously and find to their satisfaction that the children get along very well, despite the opinion of the experts in the clinics. It is more dangerous to the children and their parents because many families are thus broken up; many a child is thus deprived of an education, while others are pauperized by being taken into institutions for treatment.

Pulmonary tuberculosis is very frequent in infants in the form of acute tuberculous bronchopneumonia; it is very rare in children over three years of age. When it occurs in children of school age, the symptomatology and physical signs are the same as those in the adult. In my experience of many years dealing with the tuberculous and their families I have not seen a dozen cases of pulmonary tuberculosis in children between four and twelve years of age. I have, however, seen numerous cases of tuberculous tracheobronchial adenopathy in children. This form of tuberculosis is not even touched upon in the standards laid down by the committee. Let us hope that the diagnosis of tracheobronchial gland disease was not standardized because it is a comparatively harmless pathological process, most of those affected with a recovering after a short vacation, or more frequently, without any treatment at all.

57 East Ninety-third Street.

PROPHYLAXIS IN SYPHILIS OF THE CENTRAL NERVOUS SYSTEM.*

By Isadore Rosen, M. D.,
New York,
Instructor in Syphilology, College of Physicians and Surgeons, Columbia University.

[From the Department of Dermatology and Syphilology, Vanderbilt Clinic, College of Physicians and Surgeons, Columbia University.]

The importance of the early recognition of syphilis of the nervous system is best appreciated when one visits a large institution for the treatment of the disease and its complications, and is brought face to face with an endless chain of hopeless and incurable cases of conditions which we now feel could have been prevented if our present diagnostic methods had been in vogue twenty years ago. Not until the medical profession in general recognizes the necessity of early lumbar puncture as a routine measure in all cases of syphilis shall we be able to prevent optic atrophy, tabes, and paresis, for it is only by anticipating the ravages of the spirochete during the early latent period that we can hope to eradicate the disease and prevent secondary degeneration.

Since it has been proved by Fordyce and others that involvement of the nervous system takes place in the secondary period of the infection, why wait until we are ready to discharge the patient as cured, as shown by repeated negative blood tests, before ascertaining the status of the spinal fluid? At the Vanderbilt Clinic it is our aim to puncture all secondary cases early, that is, after about the third month of their infection. In primary cases with a negative Wassermann there is less liability of involvement unless a later generalization of the organism should take place, as shown by a positive Wassermann, and puncture is not here insisted upon until after a regular course or courses of treatment. Up to a year ago we were content to defer lumbar puncture, unless clinical symptoms of neurosyphilis were present, until just before the dismissal of the patient as cured. We have come to the conclusion, however, from the study of a large number of cases that this involves unnecessary delay and that it is to the patient's interest to determine the findings in his fluid, whether he is without signs or is just beginning to show some pupillary abnormality or other neurological symptom, in order that we may prevent an advancing pathological condition by prompt and intensive treatment.

What is our present conception of prophylaxis in syphilis of the central nervous system? Does it imply that infection of the cerebrospinal axis is preventable? This must be answered in the negative except for cases of primary syphilis where early energetic treatment kills the spirochetes *in loco.* When the disease has become constitutional investigation has shown that the spinal fluid of the individual who is to become the victim of neurosyphilis is already infected. Regarding the factor which determines the invasion, we are still in the dark, although the views advanced by Nichols and Reasoner that it centres about a special strain have more than superficial plausibility in that they have the clinical support of conjugal and familial lues. As it is neither practicable nor possible to isolate the organisms in every case of syphilis to analyze their biological properties, the only criterion we have of their invasive powers is to determine after a reasonable length of time their presence in the nervous system as evidenced by a pathological fluid, for the latter antedates the clinical manifestations.

That infection of the nervous system occurs despite treatment is amply proved by the patients I have noted who have been faithful and regular in their treatment and have received during the early secondary period three or more courses of salvarsan, each consisting of six to eight injections, supplemented by several courses of mercury, but who nevertheless on puncture revealed an abnormal fluid without clinical signs or who developed symptoms during treatment and showed positive cytobiological findings. On the other hand, many cases are met with where little treatment has been administered and that over irregular periods, and yet on examination a perfectly normal fluid is found. This merely corroborates the contention that involvement of the nervous system dates from the time that the spirochetes are lodged in its tissues and it is the duty of the syphilologist to determine whether early changes are in process and to cope with them before irreparable damage has taken place. This is one of the most important phases of prophylaxis. Another is concerned with the early examination of the eyes of all luetic individuals, for very frequently, in the routine examination of patients complaining of no symptoms whatever referable to the ocular apparatus, one encounters anisocoria, irregularity of the pupils, or even disc changes. On puncturing these cases many show a pathological spinal fluid, and it is only by beginning intraspinal treatment at once that we can expect to inhibit the advancing process. Optic neuritis as a complication in the secondary stage is sometimes very obstinate in responding in spite of vigorous treatment.

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*Read before the Clinical Society of the Department of Dermatology and Syphilology, Vanderbilt Clinic, October 16, 1917.

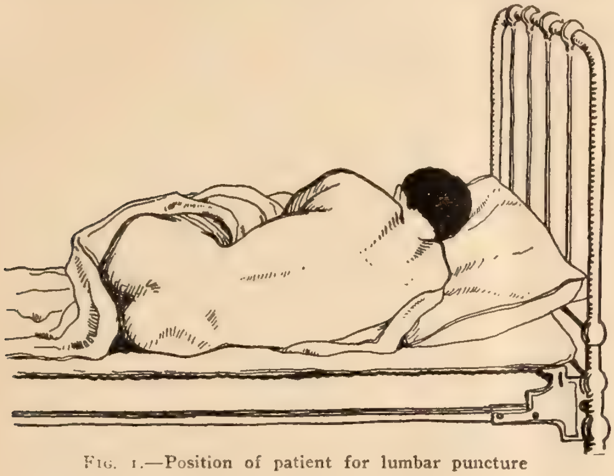

Fig. 1.—Position of patient for lumbar puncture

Many disappointments are met with in the treatment of syphilitic conditions of the eye, and the methods are criticized because of the failure to cure or retard a progressive process where the vision is all but gone. Here again we must emphasize the ounce of prevention. It is only by repeatedly examining the visual fields of all the patients in the secondary stage with the perimeter and the optic disc with the ophthalmoscope, in order that the slightest deviation from the normal can be detected at once and suitable measures taken before sclerosis has replaced the nerve fibres and seriously impaired vision, that we can hope to reduce to a minimum the number of cases of blindness from syphilis. In optic atrophy with a negative fluid, and this is found in the group designated as primary optic atrophy, there is of course no indication for intraspinal treatment, and our reliance for a therapeutic result must be placed on the intensive use of salvarsan intravenously, with mercurial injections and potassium iodide. Where optic atrophy occurs as a complication of tabes, taboparesis, or paresis and a positive fluid is present, the process may be attacked through both the venous channels and spinal canal, with at least an arrest of the condition if not complete restitution.

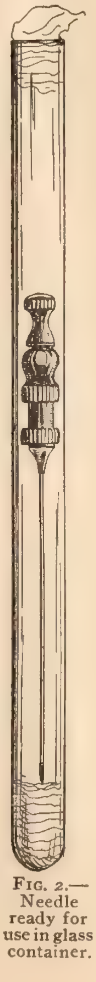

Fig. 2.—Needle ready for use in glass container.

While the technic of lumbar puncture is not difficult ordinarily, only one experienced in this particular field should perform it if a correct serological diagnosis is desired. The presence of blood in the withdrawn fluid may mislead the inexperienced in the cell count, globulin, Wassermann, and colloidal gold tests. In the performance of the puncture it is of the utmost importance to have the patient in the proper position. My choice is to have him lie on his side, with legs flexed on the knees, the latter on the thighs, bringing the body to the edge of the bed so that the hips extend a little beyond. The head is flexed so that the chin approximates the knees, and the upper shoulder is depressed toward the bed. A better conception of the position is obtained from the accompanying illustration (Fig. 1). The second and third or the third and fourth lumbar interspace is entered, directly in the median line, the point of ingress being previously marked with the finger nail and cleansed with green soap, alcohol, and ether. The needle employed is an eighteen gauge Quincke. This should be dry sterilized, and kept ready for use in a dry glass container (Fig. 2). For diagnostic purposes the fluid is collected in two sterile test tubes; in the first about two c. c. for the cell count and globulin test, and in the second six to seven c. c. for the Wassermann and colloidal gold tests.

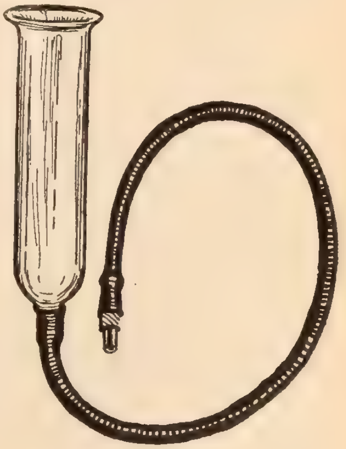

Fig. 3.—Gravity apparatus for intraspinal treatment.

Until a short time ago I had been very sceptical regarding "dry taps," as I had not encountered one in over 3,500 punctures. Recently I met with a so called dry tap in a male patient twenty-six years of age, with all the clinical symptons of paresis. I had previously punctured him and obtained about eight c. c. of fluid for serological examination. Two weeks later when he came for his first treatment, I introduced the needle in the usual way, felt confident that I entered the canal and removed the stilette, but no fluid appeared. I instructed him to cough a few times whereupon two drops of fluid flowed out. I removed the needle, tried the space above, and was again positive that I entered the canal, but obtained no result even on coughing. Once more I removed the needle and essayed the interspace lower than the original puncture with no better success. This time, however, I did not remove the needle as I wished to treat the patient, and therefore connected the apparatus (Fig. 3) with it and allowed seventeen c. c. of salvarsanized serum to run into the canal. The serum entered very rapidly, there being no counter pressure. Two weeks later the patient returned for another treatment. Once more I expected a dry tap but to my surprise there was a good flow of spinal fluid. Incidentally, the patient had improved quite remarkably from this one treatment. His facial expression and the whole bearing were so noticeably changed that it was commented upon by the members of the department. Several weeks later a patient in the tertiary stage was sent to the infirmary for a diagnostic puncture. Twice I punctured him in the recumbent and once in the sitting position, each time with a negative result. Remembering my experience with the previous case, I had the patient return for another puncture two weeks later, when I again failed to get fluid. This time I injected about twenty c. c. of serum which I had obtained from him an hour previously and inactivated. A week later he was once more punctured. This time there was a good flow of fluid, which on examination proved to be negative. The conclusion seems justifiable that a dry tap may be the result of adhesions in the lower portion of the spinal canal and not purely a matter of technic. Such adhesions may exist between the membranes causing pockets or a walling off of the fluid from the lower part of the canal. The rationale of the injection of serum would be the breaking up of such adhesions permitting the fluid to find a lower level.

Reactions from lumbar puncture are very common; in fact from sixty to seventy-five per cent. of our patients complain of headache, sometimes giddiness, and vomiting. These symptoms come on the next day when the patient gets up or after he has been about for several hours, and may persist from two to ten days or even longer. They are relieved by rest in bed, plenty of water, and a light diet. Patients with a pathological fluid are less apt to suffer from these aftereffects and are usually able to resume their occupation the next day. Our large percentage of reactions can be accounted for by the fact that all patients are punctured whether with or without clinical manifestations, and that the larger number have normal findings. These reactions cannot be avoided by any known procedure. We have attempted the slow removal of the fluid, the removal of but a small quantity, and the replacement of the fluid with saline solution or normal serum of an equal quantity, but without uniform results.

Ordinarily we adjudge a count of five cells in a cubic millimetre normal; above this number with other positive findings, pathological. A high cell count is an expression of the intensity of the meningeal participation, while a low lymphocytosis indicates a subacute or chronic inflammation. In some cases of cerebral lues of the vascular type it may be entirely lacking, the only abnormal element being the globulin with in certain instances a luetic curve. The meninges in such cases at autopsy, however, have been found thickened although during life no cell increase was present. Globulin indicates disease of the membranes, vascular apparatus, or parenchyma of the brain or cord. It occurs therefore in other conditions than syphilis and is not a specific finding in this disease, but the index of an abnormal organic process in contradistinction to functional disease.

The Wassermann reaction is the determining factor in the employment of intraspinal treatment not only for our early but for our late cases. In early cases with a weakly positive reaction, i. e., with two c. c. of fluid, the other findings being proportionately weak, the intraspinal method is deferred until the effects of intensive intravenous treatment combined with mercurial injections are ascertained. If the treatment exerts no influence then the combined method is resorted to. If on the other hand, the test is strongly positive with 0.4 or 0.2 c. c. of fluid, we have learned empirically that no matter how intensive our intravenous or intramuscular treatment may be little result is obtained in the majority of the cases so that the combination of intraspinal and intravenous medication is indicated.

The colloidal gold test renders valuable aid in the differential diagnosis of syphilis of the nervous system, and its prognosis. From a large number of cases now observed the conclusion may be drawn that the so called paretic curve is not only typical for paresis when that disease is fully developed clinically, but it is also characteristic of the preparetic stage before the clinical diagnosis can be made. The test not only furnishes an important clue as to the possible developments in the case but also emphasizes the need of intensive treatment. Further, it is a guide as to the management of the patient from an economic and social standpoint. When one recalls the reckless and irresponsible conduct of the paretic and the misfortunes which often ensue when such patients have large business interests or hold responsible positions, as that of a bank teller or railroad engineer, one is impressed with the idea that many tragedies might have been prevented if a word of warning had been issued to the family, firm, or business associates based on the information derived from a complete analysis of the spinal fluid.

The colloidal gold test is sometimes criticized because the paretic curve is not absolutely specific. While, as previously mentioned, it is pathognomonic of paresis, it may also occur in other conditions, as in brain abscess and multiple sclerosis. However, its occurrence in other diseases with destruction of parenchymatous tissue is negligible in the presence of a negative Wassermann in the fluid and blood or lack of other evidence of syphilis. The gold curve with decolorization in the paretic zone is obtained in severe syphilitic meningitis occurring most frequently in the early secondary stage but sometimes also in the tertiary. The early cases have a high lymphocytosis, that is, several hundred cells, marked globulin and strongly positive Wassermann reaction. In the late cases the cell count is more apt to be a moderate one. In these cases we are probably dealing with a meningoencephalitis with involvement of the superficial layers of the cortex. Both types subside both clinically and serologically under intensive treatment. A differential point here is that the curve as well as the other findings is more quickly influenced by medication than in true paresis. In the latter a positive Wassermann and paretic curve may be present for years in spite of treatment and pronounced clinical improvement.

A persistent positive serum reaction does not necessarily mean involvement of the neuraxis. I have seen many patients whose blood continued positive after intensive treatment for a year or more, who on puncture revealed a completely negative spinal fluid. Have these patients a focal lesion with active spirochetes elsewhere in the body which is not accessible to or influenced by medication? Careful examination often discloses an aortitis or hepatitis which may explain the nonreversal of the reaction. But even after all our clinical and laboratory diagnostic skill has been exhausted we are frequently no nearer the solution of a persistent reaction. Confronted with negative evidence only we must assume that the spirochetes are harbored by the lymph nodes or lead a saprophytic existence in one of the viscera or possibly the walls of the bloodvessels. Are such patients to be treated? The answer must be in the affirmative. We have demonstrated that after repeated courses of salvarsan and mercury given in a systematic manner reinforced or followed by courses of mixed treatment, the infection is eventually combated and a negative Wassermann obtained, but the procedure may have to be kept up for two years or longer.

With advance in serological diagnosis a new era in the treatment of syphilitic conditions of the nervous system has been opened. Tabes, paresis, and other types of syphilitic disease of the brain and cord have in the past been referred to the neurologist for treatment, and usually at a time when the condition has advanced to the stage where arrest or cure was impossible. It is to be hoped that with the propaganda now being carried on for the early detection through lumbar puncture of any such involvement, whether neurological symptoms are present or not, and the institution of systematic and intensive treatment early in the infection, these hopeless cases will each year grow progressively rarer. To our sceptical colleagues who have employed the intraspinal method of medication in syphilis of the central nervous system without beneficial results, taking for granted that the method employed was logical in regard to dosage, intensity, and regularity, I may say that I am in accord with many of their views, for when the patient reaches the neurologist he has already made the rounds of many physicians over a period of one or more years and lost valuable time. His condition has made progress, the inflammatory process has been replaced by degeneration or sclerosis, and in this stage little can be expected from any form of treatment, no matter how employed. But must these unfortunate patients be denied treatment because their condition is hopeless? Should they not at least be treated symptomatically?

To treat syphilis intelligently and scientifically in private practice the physician should have at his disposal all facilities for carrying out the various investigations outlined. In an outpatient department a properly equipped clinic should have an infirmary connected with it where the patient may be put to bed for a spinal puncture without waiting weeks before being admitted to a general hospital. If intraspinal medication is required he should be instructed as to the chronic nature of his treatment and he must be willing to return at stated intervals. At the Vanderbilt Clinic we book patients for a course of these treatments at intervals of from ten days to three weeks. The day before their admission to the infirmary they receive an intravenous injection of salvarsan from 0.4 to 0.6 gram. One half hour later fifty c. c. of blood are removed in a sterile tube and placed on ice over night. The next day it is centrifuged and the serum pipetted off into another sterile tube, the desired dose of salvarsan added and inactivated at 55° to 57° C. for thirty minutes, when it is ready for use. It should be used in from three to four hours. We usually begin with 0.125 mgm. and gradually increase the dose to 0.5 mgm. The rapidity with which the increase is made depends upon the pain, headache, or other discomfort that may follow the treatment.

CONCLUSIONS.

1. Since infection of the central nervous system takes place during the early secondary period, the spirochetes remaining dormant for months or years without producing signs or symptoms of a morbid process, it is imperative that a routine lumbar puncture should be carried out early in the secondary stage of all syphilitics if neurological complications are to be prevented. Spinal puncture properly performed is a harmless procedure and while the headache which follows in so many cases may incapacitate the patient for several days, the discomfort is well worth the information which can only be gleaned from cytobiological examination.
2. Early and repeated examination of the eyes and nervous system should be made in the case of every patient in order to detect any changes in their inception.
3. Careful serological observations should be employed as a guide for the indication or contraindication of intraspinal medication.
4. Systematic and intensive treatment, both intravenous and intraspinal, should be administered to patients with a strongly positive spinal fluid.
5. If tabes, paresis, optic atrophy, and other grave conditions are to be prevented we must interfere early, and by so doing the new school of syphilology which with its modern serological and therapeutic measures stands for progress and prophylaxis will soon be looked upon as a great blessing to mankind, notwithstanding the adverse criticisms of some of our colleagues.
6. Every clinic for the treatment of syphilis should have facilities for all the special examinations necessary and an infirmary where the proper therapy can be employed. It should be emphatically insisted upon that no clinic be allowed to treat the disease unless it can comply with the qualifications specified. In this way only can the secondary complications from syphilis be eradicated or reduced to a minimum.

I desire to express my appreciation to Doctor Fordyce for the guidance and kindly help given me in my work in his department. His broad conceptions of the problem of syphilis in all its phases are a constant stimulus and inspiration.

330 Park Avenue.

A STUDY OF DRUG ACTION.

Ninth Communication.

By Thomas J. Mays, M. D.,
Philadelphia.

CATHARTICS.

One of the earliest recorded observations in the history of medicinal action is that when certain substances are introduced into the human body by swallowing, they give rise to an increased discharge of fecal matter from the intestinal canal. Through such behavior these agents have acquired a well deserved reputation in the treatment of many important ailments.

In defining the action of cathartics, it must be borne in mind in the first place that the organ for which these agents have a selective affinity is a long hollow tube which is provided with circular and longitudinal muscle fibres, the contraction of which is enhanced by natural and artificial stimuli, both in a circular and a longitudinal direction. The circular coat, being thicker than the longitudinal one, is the more powerful of the two and thus takes a more important part in propelling the intestinal contents along its channel. Besides its muscular covering, the mucous membrane is abundantly supplied with secretory glands and absorbent vessels. For a long time it was a mooted point whether cathartics increased the number of stools by virtue of peristaltic stimulation only, by inviting a more profuse and free excretion, or by acting in both ways. Various experiments have been made and opposite conclusions have been reached on this point. Thus, M. Thiry divided the intestinal tract in two places, closed up one end of the piece thus detached, and sewed the other and open end to a wound in the abdominal wall, thus making a short pouch with its nerves, bloodvessels, glands, and muscular coverings intact, in which he could directly observe the action of different substances on the intestinal canal. At intervals he introduced into this sac magnesium sulphate, croton oil, and senna, none of which induced any secretory activity. Doctor Radziejewski repeated these experiments and confirmed them. These observations, combined with those of Schiff, rendered it probable that cathartics act chiefly, if not exclusively, by accelerating the peristalic movements of the bowels.

However, in 1870, Moreau made the following interesting investigation, which has since been confirmed by Vulpian and Brunton: Three isolated chambers were made in the small intestine, by tying around it, at different places, four ligatures a few inches from each other. In the middle of these spaces the cathartic was introduced hypodermically, the whole returned into the abdomen, left there for several hours, after which the animal was killed, and the contents of the middle chamber measured and compared with those of the other two. Invariably a copius watery secretion was found in the middle chamber, while the other two were empty or very nearly so. The substances experimented with were croton oil, elaterium, gamboge, jalap, and magnesium sulphate. The action of the last named agent was the most pronounced in this respect. It is evdent, therefore, that cathartics enhance muscular activity, increase secretion, and accelerate a watery flow from the bloodvessels of the intestinal canal. What is the nature of this action? From observation and experiment, we know that as long as nothing comes in contact with the internal surface of the bowel, or as long as it remains empty, it is comparatively motionless and its mucous membrane is pale and covered with a thin coat of mucus; but, as soon as food or any foreign substance is introduced into it, its pale surface becomes red and injected with blood, and peristaltic motion and secretion follow. These phenomena are succeeded by muscular relaxation and paleness of the mucous membrane and are repeated by the further addition of foreign material. This operation is a fair demonstration of the physical law that action and reaction are always equal. The engorgement, the increased peristaltic action, and the augmented secretion, are all manifestations that such a process is taking place in the surface structure of the bowel.

That the nerve supply of the alimentary canal also shares very prominently in this movement, is evident from the findings of Doctor H. C. Wood, Sr., which strongly indicate that after section of the right pneumogastric nerve in the cervical region, the most powerful cathartics like croton oil, calomel, podophyllin, jalap, etc., failed to produce any purgation, even in doses sufficiently large to cause death.

The essential feature which is common, then, in the action of all cathartics is the power to create more than ordinary physical or chemical activity in the wall of the alimentary canal, for any agent that is absorbed by the gastric or intestinal circulation is debarred from exercising such action. Substances like food, for example, which under normal conditions undergo absorption in the alimentary canal and furnish nutriment to the body, may for some reason become indigestible, remain as offending or irritating masses in the bowels, and give rise to catharsis and even emesis. It is this principle of excitation, which is called forth in the alimentary canal by indigestible food, which has just been hinted at, that foreshadows one of the fundamental phases of cathartic action. For after all is said and done, catharsis is at bottom nothing else than an exaggerated activity or a stimulation of the normal function of the bowel, and any action which goes beyond that point produces irritation and disease. In qualifying this statement, it must not be overlooked that that dose which is a stimulant to one body texture may be an irritant to another, for the quantity of reaction to an incidental force is dependent on the degree of sensitiveness or delicacy which obtains in the organ that is being acted on, and this in turn greatly depends on the crudity or refinement of the environment in which that organ habitually functions.

For practical purposes, the alimentary canal may be regarded as an outside organ, an analog of the skin, which, by virtue of its position and function, is subject to harsher and ruder exposure, perhaps, than any other organ in the body. Its contents are largely made up of fragments of muscular and vegetable fibres, residues of undigested, fermenting, and decomposing foods; chemical substances, like lime, magnesium and ammonium phosphates; gases, like carburetted and sulphuretted hydrogen, etc., all of which subject its lining surface to almost constant attrition of foreign material and bring about a state of callousness to milder impressions. Now, if we take into consideration what has just been said in regard to the varying susceptibility of different bodily organs when exposed to diversified external influences, we are constrained to believe that the ideal cathartic is that agent which by reason of its massive rather than by its molecular activity, has the property of arousing the function of the intestinal channel to its fullest capacity, without creating any pathological perturbation. This end is largely facilitated by the chemical constitution and the molecular weight of cathartics, as will appear from the following observations of these physical properties.

As a fundamental proposition, it must be accepted that the activity of a compound depends, in a measure at least, if not entirely, on the physical and chemical properties of its constituents, and by way of illustration it may be permissible to say in this connection that the contrast between the therapeutic behavior of castor oil and of croton oil serves as a fitting example of the validity of this principle. Both of these agents are of vegetable origin; the former owes its chief activity to ricinic acid, $C_{18} H_{24} O_{3}$, and the latter to that of crotonic acid, $C_4 H_6 O_2$. Now, in looking into the physiological action of castor oil and croton oil, it will be found that in moderate doses the former produces a number of fecal passages in the child or adult without any irritation or pain in the alimentary canal. Indeed, its action is regarded as so mild and soothing that it is frequently given in cases in which "foreign substances and indigestible food have irritated the intestinal passages and caused gastroenteritis." On the other hand, croton oil has a marked irritating effect on the mucous surfaces even in moderate doses. One drop causes a burning sensation in the mouth, and two drops when swallowed cause pain in the stomach, vomiting, and a number of thin stools. Three or four drops are followed by "choleralike vomiting and diarrhea," and severe inflammation of the stomach and intestines.

Now, if one thing stands out more prominently than another in this observation, it is that, although both agents are ternary compounds consisting of carbon, hydrogen, and oxygen, the carbon content of castor oil greatly exceeds that of croton oil, and there is reason for believing that the difference in this respect largely accounts for the diversity of action in these two remedies on the human body. This conviction is strengthened by the fact that physically carbon is a notoriously inert element, yet chemically it is active enough to unite with its own and with a limited number of dissimilar atoms and form stable groups which play the rôle of elementary radicals to compounds formed of more energetic elements. In other words, under these circumstances, carbon serves as an anchor to the other and more robust elements which enter into such compounds and reduces their vigor to a level of immobility similar to that of its own. According to this perspective then, the more drastic action of croton oil, as compared with the more moderate behavior of the castor oil, is due to the restraining power conferred on the latter by its possession of a much larger proportion of carbon. Indeed, in this respect croton oil stands alone among all the organic purgatives of our materia medica, and this proneness to create irritation and inflammation in the alimentary canal, through its lack of carbon restraint, takes it out of the sphere of safe and harmless evacuants. Further corroboration of the idea that catharsis is brought about by obtuse and massive, rather than by molecular, impaction on the walls of the alimentary canal, is furnished by the fact that practically all agents of this class possess a high molecular weight. Thus, the active principles of castor oil, calomel, rhubarb, gamboge, cascara sagrada, phenolphthalein, aloes, elaterium, podophyllum, jalap, scammony, and colocynth have a molecular weight ranging from 298 to 958; while the molecular weight of the saline cathartics, the principal ones of which are potassium sulphate, potassium bitartrate, magnesium sulphate, potassium and sodium tartrate, sodium sulphate, sodium phosphate, and magnesium carbonate, extends from 174 to 484.

From all that has been said here, the deduction may be drawn that, with few exceptions, the typical cathartic is either a ternary organic nonnitrogenous or a saline compound, which delivers a steady series of normal blunt mechanical impacts against the walls of the alimentary canal, an action which is roughly forestalled by the behavior of indigestible food, sulphur, bran, or brown bread, on the same structure with similar effect; and not those agents which prick it with sharp spurs and call forth violent irritation and possibly inflammation.

Having briefly defined the pharmacological properties of cathartics, it is in place to describe their clinical application. As a preliminary step in this direction, it is important to bear in mind that marked changes have been wrought in the alimentary canal and in its appendages, during the course of their biological history, that all evidence points to the fact that this metamorphosis has not yet completed itself, and that, therefore, the same process is going on, imperceptibly, perhaps, at the present time. We possess every evidence of such a change in the colon. At one time in its development, its head was very much larger than it is at present, and its appendix is so rudimentary now that the function which it once had or possesses at present is substantially unknown. In viewing the function of the alimentary canal as a whole, it is clear, too, that the digestive process is practically limited to the stomach and small intestines, while the colon acts as a storage house for the intestinal contents until they are periodically voided through the rectum.

Now, the employment of cathartics has two chief ends in view: 1, that of expelling transiently offending material that may be lodged in the alimentary tract, and, 2, that of correcting chronic functional defection that may reside in the contractility or excretory power of that organ. The indications of the first are fulfilled when, as in the case of a child, who is suffering from the effects of indiscreet feeding, one or two drams of castor oil is given to clear out the offending substances; or by giving a good dose of magnesium citrate solution to an adult who is suffering from the immediate effects of an overloaded stomach. In other conditions of the bowels in which a temporary evacuation is necessary or desirable, compound licorice powder, calomel, soda triturates, etc., may be resorted to.

It is not, however, as a remedy in transient disturbances of the alimentary tract that cathartics show their best therapeutic effects. These are seen in those disorders of the bowels which are in some way related to, or are contemperaneous with, certain affections of the ganglionic nervous system that coordinates the action of the heart and the circulatory organs. Whether or not these intestinal disorders on the one hand and the cardiovascular derangements on the other are related as cause and effect in the sense that the fecal matter which collects and is retained in abnormal quantities in the former undergoes decomposition and forms toxic products that impair the integrity of the latter, as is held in many quarters, the fact remains that these two ailments are frequently associated in certain age periods and produce a clinical picture so clear that it can scarcely escape ordinary observation. Indeed, the connection is so vital and so well made out that one is almost tempted to abandon the well seasoned slogan: "A man's life lasts as long as his arteries remain patent," and take up the belief that life remains intact just as long as the bowels perform their function of elimination in a normal and effective manner.

Effective evacuation of the bowels is a phrase that is variously defined. It is generally regarded that a single stool a day is sufficient for this purpose, and, while this is a correct assumption, so far as it relates to younger people, it does not hold true in the great majority of people who are over fifty-five or sixty years of age. It appears that at that time of life the contractility of the muscular coat of the lower bowel becomes impaired and this condition is followed by persistent impaction of fecal matter in that organ. It is rather singular that older people seek medical advice without having any definite suspicion that a defective activity of the bowels is in any way responsible for the ailment from which they suffer. What they do complain of chiefly consists of a feeling of weakness and nervousness, of an inability to walk at their wonted gait without experiencing some pain or heaviness in the left chest, or to go upstairs as quickly as they were accustomed to do, of a throbbing sensation in the chest which may be associated with an irregularity or intermittency of the heart's action, of some shortness of breath, of pain over the midsternal region which may radiate throughout the left arm and somewhat resemble a pseudoanginal attack. Disturbances of such a nature are most likely to come on at night or about bedtime or after prolonged worry or being tired out.

Such patients are generally good livers and have a large abdominal circumference. Their bowels, according to their own story, are not sluggish, but the fact that they feel better when their intestinal tract is free and open—a confession which is frequently brought out by inquiry—is sufficient proof that these organs perform their functions inadequately. Moreover, the blood pressure is inclined to be excessive and the heart's action irregular and apparently less free than normally, but valvular lesions are rare. Hypertrophy of the left ventricle may be present, and lesions of the cardiac valves may develop if the exciting cause of the disorder should be kept up for a long time.

Affections of this sort are much benefited by the administration of saline cathartics, the most useful of which are sulphate of magnesia and sulphate of soda, the latter of which is well known to have a marked action upon the function of the liver. These agents are best administered in the form of mineral water, such as Hunyadi, Kissingen, Pluto, Bedford Springs, etc., and taken before breakfast with a glass of hot water. Additionally, a grain of blue mass may be taken before retiring and a pill of medium doses of strychnine, aloin, extract of belladonna, and ipecacuanha are also useful when given two or three times a day. Bran meal mush for breakfast is a valuable adjunct in the treatment of this condition.

As a fitting conclusion, it may be stated that, if we consider the phenomenal quantities of evacuant mineral waters, the vast stores of organic and inorganic cathartic pharmaceutical products which are consumed, together with the multitude of people that flock to the innumerable spas of the world for the purpose of taking a course of purgation, it is safe to infer that costiveness is a widespread and formidable factor in the production of disease in modern civilized life, and that evacuants of the intestinal canal, in which magnesium sulphate and sodium sulphate constitute the main agents, play a prodigious rôle in the preservation and maintenance of human health.

1829 Spruce Street.

URINARY ANTISEPTICS.

By A. K. Detwiler, M. D.,

Omaha, Neb.

Many fallacies reduce the clinical value of laboratory work on urinary antiseptics. In the body, bacterial toxins are constantly removed and neutralized by the tissues, whereas in experiments they increase and tend to reduce or destroy the growth of bacteria. The bactericidal activities of living tissues cannot be reproduced, and even conditions of light and heat like those in the body are difficult to obtain. Large quantities of protein, such as pus and albumin in the urine, greatly reduce the efficacy of antiseptics and disinfection, most of which act by their affinity for the proteins of bacteria. In the diseased urinary tract bacteria are suspended in a protein rich medium and this combines more readily with the antiseptic than the protein of the bacteria themselves. Ehrlich has drawn attention to the effect of proteins in protecting bacteria from the action of bactericides.

What we want to know about a pharmaceutical preparation, especially about an antiseptic, is not its germicidal powers in an artificial culture medium but its disease destroying properties in the living body. A urinary antiseptic must pass through two selective organs, the intestine and the kidney, and for a time circulate in a powerful oxidizing agent, the blood, before appearing in a solution of uncertain concentration, the urine, at the seat of bacterial growth. The growth of bacteria is first estimated in normal urine and the effect of acidity and alkalinity tested. Then the bacteria are grown in the urine of persons taking the drugs to be tested and the effect of acidity and alkalinity again determined. The acidity is estimated by the number of c. c. of N/10 NaOH solution necessary to neutralize ten c. c. of a mixed specimen of urine with a specific gravity of 1020, using phenolphthalein as an indicator. It is determined by multiplying the number of c. c. of N/10 NaOH necessary to neutralize ten c. c. of urine by the fraction whose numerator is 20 and denominator the last two figures of specific gravity. Suppose the specific gravity is 1015 and 2.5 c. c. N/10 NaOH are required, the acidity $= 2.5 \times 20/15 = 3.3$. This gives the acidity in total solids rather than bulk of fluid. Such direct titration as this does not give the absolute acidity of such a mixture of acid salts as urine, but it is the only simple method and gives results valuable for comparison. Measured by this standard, the average acidity was found to be 3.9, usually between 3 and 5. By taking monobasic sodium phosphate (acid sodium phosphate), the acidity can be raised to 8.9. By taking potassium citrate the urine can be made alkaline to 2.5. N/10 HCl (methyl orange indicator). Urine of average acidity becomes alkaline in twenty-four hours and to stop completely ammoniacal putrefaction, the acidity must be raised to 80 or 90, that is, seven or eight times as high as it can be raised giving drugs by the mouth. The rapidity of putrefaction depends on the acidity.

Staphylococci grow readily in urine when planted from a fresh agar culture and cause the appearance of free NH_3. Growth is favored by alkalinity, delayed by acidity. Bacillus coli does not cause the formation of free NH_3 but grows readily in urine, causing a uniform turbidity. In urine made many times more acid or more alkaline than occurs in the body, Bacillus coli will grow, and in spite of reports to the contrary, no marked differences are observed in the rate of growth whether the urine is acid or alkaline. The following experiments of Anson Jordan definitely establish the value of urinary antiseptics and show their relative value:

	Reaction	*Staphylococcus growth and free NH_3*	*Bacillus coli*
Hexamethylene gr. x t. i. d.	Acidity 1.5	Both in 4 days	Growth slight
Hexamethylene gr. x t. i. d. and acid sodium phosphate gr. xxx t. i. d.	Acidity 7	None in 14 days	None in 14 days
Hexamethylene gr. x t. i. d. and potassium citrate gr. lx t. i. d.	Alkalinity 1.5	NH_3 in 3 days	Grows free

The effect of hexamethylenamine on the growth of bacteria varies with the acidity. Its antiseptic power in neutral or alkaline urine is nil, but rises rapidly as the acidity increases, and when it reaches four becomes absolute and the urine remains indefinitely sterile. There is no great difference in the organisms; all are affected in much the same way. If the urine is acid or is made so, in or out of the body, formaldehyde will be found when the patient takes hexamethylenamine. If the urine is alkaline or becomes so in or out of the body, formaldehyde even if present will disappear. One would expect very little antiseptic action from hexamethyltetramine in the other body fluids such as the cerebrospinal fluid, bile, nasal secretions, etc., as these are always faintly alkaline, but being ammonia free, the antiseptic effects are much more marked than in alkaline urine.

The effect of sandalwood oil, when given in twenty minim doses three times daily, was a great surprise. It is eliminated in the urine unchanged and as glycuronic acid. It has no effect on the gonococcus or Bacillus coli or on putrefaction, but upon the staphylococcus, whether in acid or alkaline urine, it exercises a powerful antiseptic effect and while it does not prevent, it tremendously inhibits, growth. Salicylic acid and the salicylates in twenty grain doses three times a day have no effect except upon the acidity. Benzoic acid and ammonium benzoate, like salicylic acid, are used as urinary antiseptics and to increase urinary acidity, for both of which their reputation is greater than salicylic acid. The increase in acidity is due in part to the elimination of hippuric acid and a dose of fifteen grains three times a day will raise not give a higher acidity than ammonium benzoate the acidity to between 5 and 6. Benzoic acid does and is less soluble. The benzoates are thus next to acid sodium phosphate in raising urinary acidity and one would suppose that by taking both salts together we could obtain a urine of an acidity equal to the sum of the two, but this is not true. The acidity is only equal to that of the acid sodium phosphate. Benzoic acid has no antiseptic value in alkaline urine and when the urine is acid, its antiseptic properties are perhaps a little greater than urine of equal acidity, made so by other substances.

Boric acid as a urinary antiseptic has largely passed out of use, but Freyer says that thirty grains four times a day are superior to urotropin. The urine of a patient taking this amount requires three or four days to decompose. Staphylococci require three to four days to produce free NH_3 and Bacilli coli grow with difficulty. Boric acid and potassium citrate given together so that the urine is alkaline to the extent of 2° caused no alteration in results. Bacilli coli grew badly, putrefaction took four days, and the staphylococcus required four days to liberate free NH_3. These results are very important for alkaline urine and show conclusively that alkalinity does not affect the antiseptic powers of boric acid. Thus, this drug differs from all others and is without doubt when taken in large doses, the most efficient urinary antiseptic when the urine is alkaline and cannot be made acid. It is of equal efficiency against the different microorganisms.

Infusion of uva ursi leaves is a very old remedy; it is diuretic and mildly antiseptic; it contains arbutin which is eliminated in the urine as hydroquinone. Now, hydroquinone is an antiseptic two or three times as strong as carbolic acid and the antiseptic action of uva ursi is said to be due to this active substance. When fifty grains of uva ursi leaves are given in infusion four times daily, the urine becomes dark brown on exposure to the air; putrefaction requires four days to one week to produce free ammonia; Bacilli coli grow readily in acid specimens, but very slightly in alkaline ones. The growth of staphylococcus is not affected. It is, therefore, about equal to salicylate in antiseptic value, and for Bacilli coli in alkaline urine it is equal to boric acid. Arbutin looks and tastes like quinine and is slightly diuretic. After a dose of twenty grains three times a day the urine becomes black on exposure to the air; but the organisms tested grew with readiness, so it is concluded that the antiseptic power of uva ursi is not wholly due to the arbutin it contains, and that it is not a substitute for the crude drug. Buchu, when administered in full doses, did not affect the reaction or antiseptic property of the urine although it does relieve bladder irritability.

CONCLUSIONS.

1. Acidity of the urine may be increased to more than double by NaH_2PO_4, and less by benzoic acid, and benzoates; citrates render the urine alkaline.

2. Putrefaction and staphylococcus growth are aided by alkalinity and delayed by acidity. The reverse is true to a slight extent for Bacillus coli, for its growth in both acid and alkaline urine is luxuriant.

3. Hexamethyl by itself is not antiseptic; it acts by producing formaldehyde in the urine; this only takes place in acid urine and is proportionate to the acidity.

4. Sandalwood oil is a poor antiseptic in general, but has a specific action on the staphylococcus when in alkaline urine.

5. Benzoic acid and salicylic acid are farily efficient antiseptics in acid urine, but are of litle use in alkaline urine.

6. Boric acid is an efficient antiseptic and not affected by alkalinity, so that it is the most efficient drug we possess for alkaline urine.

7. Uva ursi is a good antiseptic and its action is not due entirely to the arbutin it contains.

Clinical conclusions.—1. Hexamethylene tetramine with NaH_2PO_4 should always be given as a prophylactic before any operation where the urine may become infected and is of the greatest value, since if the urine is clear and highly acid and sufficient hexamethyl is given to keep formaldehyde constantly present, the urine becomes a powerful antiseptic fluid. Hexamethyl is also elminated in the bile and nasal secretions and in the cerebrospinal fluid, but its antiseptic value as hexamethyl is slight compared with formaldehyde, into which it is changed in acid mediums.

2. Hexamethyl should be given only when the urine can be made acid, otherwise it is of little value. It should not be given with potassium citrate in Bacillus coli infections. If it is desired to try the effect of making the urine alkaline in these conditions, use boric acid and uva ursi infusion with potassium citrate.

3. Where the urine is undergoing ammoniacal fermentation in the bladder, irrigation or some operative procedure will always be the most important part of the treatment; and the best drugs are boric acid in large doses and uva ursi.

4. Sandalwood oil is worth trying in cystitis due to staphylococcus infection.

5. When acid sodium phophate is prescribed, estimate the acidity of the urine, for unless it is kept above 4 or 5 it will not act efficiently, and a high acidity is of more value than a large dose of hexamethyl.

Nicholas Senn Hospital.

The Wassermann Reaction.—Graham E. Henson (*Southern Medical Journal,* October, 1917) maintains that it is advisable for the serologist to abstain from going into the clinical features of a case. He should be guarded in submitting borderline reactions without commenting upon the significance of such reactions. Borderline reactions should not be accepted by the clinician as diagnostic of syphilitic infection unless supported by clinical symptoms. A single negative reaction should never be allowed to exclude a diagnosis of syphilis. The Wassermann test should be applied from time to time during the course of the disease to note the effect of the therapeutic measures employed, and a case of syphilis should not be discharged until several negative reactions have been obtained, the last one to be at least eighteen months, preferably two years, after treatment has been discontinued.

STATE EXAMINATIONS AND TREATMENT FOR EYE DISEASE IN SCHOOL CHILDREN.

By Alexander Rovinsky, M. D.,
New York,
Physician, Eye Clinic, New York Post-Graduate School and Hospital.

Let us start with the premises that the State, having recognized compulsory elementary education as a social necessity, should logically conserve in the most efficient way possible the health of the school child on the principle that public education and public health are indissolubly connected and practically interdependent, and that it is only the healthy child who profits fully by the advantages of free education. The contention that the State should not be permitted to abrogate to itself duties and offices which lie presumably beyond its province and are not in harmony with the times, can be easily refuted by the noticeable tendency toward enlargement of the function of the State, toward widening of the scope of its manifold activities at what would frequently seem the expense of the individual's rights, wherever the welfare of a certain class of the community is vitally concerned. Whatever its name, "class legislation," "Marxian or state socialism," "meddlesome paternalism," or what not, the tendency is gradually but persistently crystallizing into definite shape. We are confronted no more with abstruse theories, but with hard, live facts. In the various aspects of public health, this tendency began to make itself felt some twenty-odd years ago, when laws regulating the practice of medicine began to be gradually introduced into the various State legislatures, until at the present time every State of the Union has adopted some sort of medical practice licensure act. This was the death knell of the *laissez faire* attitude, as far, at least, as this special feature of public health was concerned, so beloved of dyed in the wool individualists, who in their zeal to prevent the invasion of their personal, quasi inviolable rights would not hesitate to sacrifice what is of undoubted benefit to the community at large. Need I mention, as another example, the recently passed Workmen's Compensation Law, now adjudged constitutional by the Supreme Court of the United States, and the pending compulsory health insurance act, that has excited such controversies in the various medical organizations, and that is bound sooner or later, *medici volentes nollentes,* to become incorporated in the statute books of the State laws?

Medical school inspection is but a further manifestation of the same spirit of the enlarged activity of the State on behalf of the growing generation, the very basis of our social fabric, and though barely fifteen or twenty years old, and as yet not mandatory by law either in part or as a whole in many a State (1), it bids fair to become possibly the most important integral part of the subject of general school hygiene. It may indeed be predicted with a fair degree of certainty that within the day of even the older generation every State will fall in line, and that every community, large and small, city, town, and village, will have some sort of medical school inspection. "It is worthy of notice that the initiation of medical inspection has not anywhere waited upon specific enabling legislation. School medical inspection was practised in every State having now a medical inspection law prior to the enactment of such a law. Likewise it is practised today in every State not having a specific enabling law" (2). This is certainly an incontestable indication that there is a growing consciousness in every community of the necessity of this sort of civic activity, the more significant, as it precedes the enactment of the law in its favor (3).

While originally the chief and only aim of medical school inspection was—and is in so many localities even now—the detection and prevention of communicable diseases to control their spread to other school children, the field was gradually enlarged, until it embraces now, in addition to the above, the detection of preventable illness due to any remediable physical defect by complete physical examination of the school child, as far as it can be made amid school surroundings, and notification to the parents of the discovered defects, with urgent advice to institute treatment. As succinctly summarized by Dr. S. J. Baker, director of the Bureau of Child Hygiene, New York Department of Health (4), the following are the objects pursued by the present procedure of medical school examination: 1. The repeated and systematic inspection of all school children for the purpose of early recognition of contagious diseases. 2. Exclusion from school attendance of all children affected with an acute contagious disease. 3. Subsequent control of the case with isolation of the patient and disinfection of the living apartment after termination of the illness. 4. Control and enforced treatment of contagious eye and skin diseases with the purpose of diminishing the number of children excluded from school attendance. 5. Knowledge of unreported cases of contagious disease among school children at home. 6. Complete physical examination of each child during his first, third, and sixth school year is made, unless the child is examined by a private physician in conformity with Section 200 on the Sanitary Code. 7. Education of the parents as to the necessity of obtaining proper care for untreated physical defects. 8. Provision of facilities for the treatment of contagious eye and skin disease and noncontagious physical defects occurring in school children.

The broad basis of this work is the conservation of child life, a single, though immeasurably important manifestation of that great conservation movement that is making itself felt as a predominating issue in every domain of our industrial, political, and educational activities. Moreover, the school child and the school nurse who follows up the case carry to the home a lesson in preventive hygiene, and thus spread the teaching of personal as well as of public hygiene an education of inestimable value to a great portion of our population. To be sure, the ideal state of affairs would be "medical supervision when parents of tomorrow shall have been taught the principles of hygiene and right living as they should be taught in our schools, and when schoolrooms, school curricula, and the home itself no longer act as predisposing causes of disease and physical inefficiency" (5). But we are as yet far from this ideal, especially with the heterogeneous and constantly changing population of our large cities, and we can but bend all our efforts toward reaching that ideal in the not distant future.

It might be observed, à propos, that medical school inspection has also awakened the medical profession to the importance of this work. The average practitioner interests himself but little in the health of children as affected by school conditions, as his duties bring him in contact with the child only amid home surroundings. He is thus apt to overlook or underestimate the influence of school in the development of the child, leaving the entire subject in the hands of the educational authorities. However, the rapid strides that public hygiene has been making of late can not but attract the attention of the profession, and the subject is gradually occupying a place among the specialties that its importance deserves, requiring as thorough a preparation as any other special branch of medicine. However, in instituting examinations of school children for the detection of physical defects, the State goes but half way. Notwithstanding the admonitions of the school physician, by circular and by personal consultation, assisted by the cooperation of the school authorities, and the frequent visits of the school nurse, a great many cases are not subjected to treatment. The time and energy of the doctor and the money of the State are thus little less than wasted; the real criterion of the value of this work is the result of the treatment obtained by the children.

Every school physician has watched, at times with despair, frequently with disgust, how his repeated advice as to the necessity of correcting the child's defects, has met with obstinate, unreasoning indifference, and in many cases with downright opposition. Thus, the "early New York physicians found that ninety-four per cent. of their notifications failed of results" (6), a condition observed in other cities and countries. This opposition, which runs from mild reluctance to open and frank resentment, is to be ascribed to poverty, apathy, ignorance, a perverted sense of one's parental rights —as if the child had none!—an exalted notion of the individuality of the citizen and of his constitutional rights, which he thinks are unwarrantedly invaded, and what not. One pious mother met the argument for a tonsillectomy with the incontrovertible assertion that God placed the tonsils in the child's throat and no mere doctor had a right to remove them! Such causes and arguments which have been advanced also against universal compulsory education are to be overcome by education of the public mind and by State aid when necessary. By this aid, though we do not strike at the root of poverty —ours is not a sociological study—we assist parents who are willing but unable to subject their children to the necessary treatment. To do this properly a school clinic as an integral part of the school system —whether under the health or school authorities, or under combined rule, does not concern us here— should be established to remove from this method the stigma of charity, which keeps many a poor deserving person from applying for treatment at many dispensaries. Such a clinic is a necessity even in large centres like New York or Philadelphia that are well supplied with eye clinics.

It is unfortunate that the anarchy that is so characteristic of all our dispensary work—overworked assistants, crowds of patients, lack of system and order, enormous waste of clinical material—leads invariably to slipshod work that is especially unproductive when applied to refraction, a rather exacting, painstaking, and time consuming procedure. Surely opticians and optometrists, whose training hardly fits them for the examination of the children's eyes, can not be expected to refract them properly; or shall we leave the child to the street pedlar, or the grandfather who will often saddle the child with his own spectacles, as was proudly exhibited by several children at school? Though the majority of children who need glasses and are unable to get them, obtain them through various relief organizations of the city, "there are a considerable number of cases where the child presents a certificate from private physicians or dispensaries stating that the child is under treatment for defective vision, but no evidence other than some form of 'eye lotion' or 'eye drops' has been prescribed. . . . The department has no legal authority to demand that glasses should be provided in these cases; it accepts only at its face value the evidence that the other treatment has been obtained" (7). Such a clinic, which is both a diagnosis and a treatment clinic, may either be a separate clinic by itself, a part of the school building, or by arrangement with a hospital, a part of the outpatient department of the same. In this clinic a definite diagnosis of the eye defect as first pointed out by the school physician or the teacher is made, and proper treatment instituted.

The chief value of the school eye clinic lies in its diagnosis and treatment of the errors of refraction as found in school children, namely, the prescribing and supplying of glasses to children who are unable to obtain them for themselves. While the establishment of such clinics may encounter opposition on the part of the public as well as of a certain element of the profession, it cannot be too often repeated that it is little less than a crime to permit a neglected curable defect in a child to interfere with his education and practically with his entire future efficiency; the State supplies the school child with free textbooks, why not with free glasses? Assuming that most of the parents will resort to the free treatment—which, by the way, is far from the case—the selfrespecting poor will in the majority of cases scrape together enough to pay the nominal cost of glasses, while the absolutely indigent will be aided in the only place and manner where such an and can be given them as their social due. Besides, as Dr. Lewis Williams says: "Inasmuch as those very diseases which chiefly affect school children and play such havoc with school efficiency and school attendance are the very ones most neglected by parents in spite of medical inspection, the school clinic plainly becomes the only method of dealing with the difficulty" (9). After all, our chief aim in this matter is the improvement in the child's condition, the laying of the foundation of a healthy life, liberty, and the pursuit of happiness. Is this not a goal for the striving and attainment of which every honorable means is fully justified?

A short survey of the various eye affections occurring among school children will bring out the necessity for the school clinic. I classify these affections into the three following groups: 1, the noncontagious eye affections; 2, the contagious eye diseases; 3, the refractive errors. This classification is purely arbitrary and is made from the point of view of diagnosis and treatment only.

Varieties of blepharitis and hordeolum demand the attention of the school physician only in so far as they, especially blepharitis, are too frequently local manifestations of a systemic disorder, such as general debility, or are due to exposure to wind or dust or indulgence in late hours, a not infrequent occurrence in school children in the large cities. Very often the condition is due to uncorrected refractive errors and chronic conjunctivitis. Treatment is directed to the underlying cause as well as to the local condition. A much more serious condition, happily not met with so frequently, is phlyctenular conjunctivitis, or ceratoconjunctivitis. Here again, while the condition is a sign of scrofulous—tuberculous?—taint, the consequences of the lack of treatment, whether local or constitutional, may become serious enough to reduce greatly the acuity of vision. It is in such conditions that we must employ special aid in treating the school child, and it is here that the treatment clinic becomes important, for simple but properly directed treatment will safeguard the child's vision from any baneful sequelæ. This is the more important as the disease has a tendency to recur, and unless combated with proper means is apt to injure vision permanently. Another and a most important member of this group is the so called follicular conjunctivitis, or "folliculosis of school children" (Roemer, 10). This comparatively innocent condition is often mistaken for trachoma, and while the differentiation between the two affections is frequently difficult, it is not impossible. The difficulty is the greater as follicular conjunctivitis is apt to be found in a number of children in the same class, thus simulating contagiousness. As a matter of fact it is not at all contagious, its prevalence being due, in addition to some predisposition on the part of the child, to vitiated air in defectively ventilated school rooms, to overexertion, general as well as ocular, and so on. This differentiation, however, is a matter of great importance in a school child, for once taken for trachoma the child is greatly inconvenienced by the treatment for this condition. Once recognized the condition is readily controlled. The untreated cases are apt to become chronic, but are never followed by the sequelæ so characteristic of trachoma. The school physician, if not an eye man himself, should refer the child for a definite diagnosis to the treatment clinic. The different varieties of ceratitis, especially the interstitial, and of corneal ulcers are rather infrequent and usually present such distinct symptoms that their recognition is not difficult, and treatment more or less satisfactory.

The two principal contagious eye diseases of school children are the acute epidemic conjunctivitis, "pink eye" (Koch-Weeks), and trachoma. We occasionally run across a pneumococcus conjunctivitis, the chronic Morax-Axenfeld type, or rarely the diphtheritic or gonorrheal type, but these are all comparatively rare. It is possible that if smears were made from every suspicious case we would find more of them than we find now. In epidemic conjunctivitis corroborative diagnosis by an eye man and treatment at a clinic are necessary, provided the parents are unable to procure private medical aid. It is frequently apt to be mistaken by the school physician who may overlook its contagious nature, put it down as an ordinary catarrhal conjunctivitis, and thus, instead of checking, assists in spreading its prevalence. In view of the general angry appearance of the eye—vivid, red, congested conjunctiva, swollen lids, mucopurulent secretion, etc.—the school physician may be inclined to atropinize it unnecessarily, even in the absence of any corneal invasion, thus adding to the trouble. A couple of weeks of proper treatment at the clinic will cure the condition, and on account of the connection between the clinic and the school, the situation will be controlled as far as the child's return to school is concerned. This is a matter of vital importance as regards school attendance, for we have seen many cases of children absenting themselves from school for prolonged periods because they were not informed as to when they might be safely readmitted.

As regards trachoma, the second and more important member of the contagious group, the experience of the Department of Health of the City of New York—a pioneer of the work in this country—is of sufficient importance to the point at issue, to dwell upon at some length. The department has combated trachoma and other conjunctival affections by establishing special "ophthalmia" classes and eye clinics where the children "may be kept under control, segregated, treated, and taught prophylactic hygiene." In New York in 1912 there were 700,000 school children, of whom 33,860 suffered from acute contagious conjunctivitis, and 15,245 from so called trachoma, or granular lids. These children, most of whom were not excluded from school attendance, reported to the school nurse with a stamped note either from a doctor or from a clinic. As was to be expected, the children were not attended to properly for many and various reasons and those who were excluded, being permitted to roam about freely, would carry infection to all who came in contact with them, all the precautionary instructions notwithstanding. In October, 1912, two experimental eye classes for children with contagious eye diseases were opened in connection with a health department eye clinic. During the three clinic days held in this building, children from sixty adjoining public and parochial schools are being instructed and when necessary treated and supplied with diagnosis cards for the information of the school nurse. Those retained in the special classes are treated according to the prescribed directions of the clinic doctor by the special nurse assigned to duty at the ophthalmia school; she also "teaches the children personal, family, and social hygiene by talks, demonstrations, and quizzes; demonstration on domestic hygiene and the care of the eyes is given to the mothers."

The clinic is conducted on aseptic and antiseptic principles, and all precautions are taken to avoid carrying infection from patient to patient. The nurse visits the homes of the children in attendance, and gives instruction to the mothers. In the school the children's eyes are protected from strain, all work as far as possible is oral, and reading and writing are of very short duration or omitted in severe cases. More stress is laid upon hygiene and the care of their health than on the three R's. Among the 312 pupils treated at the ophthalmia school for the school year 1912, there were cases of acute conjunctivitis, including acute contagious conjunctivitis, or "pink eye," and phlyctenular conjunctivitis; chronic conjunctivitis; "trachoma"; follicular conjunctivitis; syphilitic, tuberculous and phylctenular ceratitis, and neglected protracted cases of blepharitis. Only three during the year returned to the class after discharge with a recurrence of the disease. The shortest stay in the class was two days; the longest stay among those with postoperative and cicatricial trachoma, and pannus or ulcers, was the entire school year of nine months. "From the point of view of educational authorities the child loses no school attendance, the principal is still in control, since the child is not excluded, the arm of the truant officer is still powerful, school discipline is not relaxed, and the child is not thrust out into the streets to become more familiar with bad company and bad habits. From the health point of view the disease is attacked early and prevented from becoming chronic, kept under persistent treatment so that the cure is shortened, and at the same time both child and parent taught how to avoid reinfection and spreading the disease to others."

At the same time an infectious eye disease clinic, of which the department has at present eight, was opened. This clinic is held twice a week, and children in groups come from neighboring schools to receive a certain line of prescribed treatment; if they show secretion "they are placed in a regular classroom at a desk somewhat apart from the other children. Directions are given to the child and the teacher how to avoid spreading the contagion. The chair and the desk which the child occupies are washed with antiseptic solutions after school. The banisters leading to the clinic room are washed daily with an antiseptic after each clinic is held. In spite of the fact that the school takes care of about 2,500 children and is not kept any cleaner than the average public school in New York, with the exception of the clinic room which is mopped up daily, we have had very few acute cases during the past two years. We have never traced an infection carried from one child to another in the classroom" (11). During 1914 13,301 cases were registered in the refraction service, on 24,722 refractions were performed, and 10,465 contagious eye disease cases received 69,260 treatments.

By far the largest number of ocular defects met with in school children is made up of the various refractive errors—hyperopia, myopia, and astigmatism—running from ten to thirty per cent. of children examined. Thus W. B. Drummond (12) finds ten per cent. in Scotland; the New York City Department of Health *Bulletin* (13) states that out of

240,000 school children examined during 1916, 23,432 were found to have defective vision; Terman (14) gives 19.1 per cent. in Worcester, 20.7 per cent. in Cleveland, 22.3 per cent. in Massachusetts, thirty per cent. in Minneapolis, thirty per cent. in Minnesota.

This is neither the place nor the time to enter into a full discussion of the etiology of refractive errors in school children and the far reaching consequences resulting from neglect of their treatment. This subject has been exploited by prominent scientists, especially since the day when Herman Cohn, in 1867, and later Risley, in 1881, published the results of his epoch making examinations of 10,000 school children's eyes, wherein he proved beyond doubt not only that a hitherto unsuspected great number of cases of myopia exists in school children, but that their number tends to grow as they advance with higher classes, and are to be found in greater number in city schools, as compared with the country. It has been conclusively established that the child on entering school is usually hyperopic; in fact, hyperopia is practically the normal condition at birth. This changes to emmetropia in some cases and then under the stress of school conditions into myopia, or directly, as some think, through astigmatism. The compilation made by Randal, which covers 200,000 eyes, shows hypermetropia to be by far the prevailing refraction in childhood and in early youth. His table illustrates the law of decreasing hyperopia as the eye evolves:

RESULT FROM THE GYMNASIUM AT ALTOONA.

Age.	*Percentage of hyperopes*
9-11	18.93
12-14	7.14
15-17	6.88
18-20	4.5
21-22	0.0

Myopia, on the other hand, is almost unknown in the early days of school life, becomes more frequent in the course of school days, and reaches a deplorable height in higher schools. The following table (15) shows the increase of myopia:

Age.	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*20*
Erisman	10.2	14	13	20.6	21.2	28.6	32.6	43.2	40.4	47.2	50
Derby	3.55	..	5	....	10	....	....	15	....	....	..

While hyperopia, meaning the astigmatic varieties of the error as well as the simple hyperopia, is prevalent among school children and is followed by the usual train of asthenopic symptoms, such as headache, pain in the orbits, congested eyelids, blepharitis, and so on, by far the more important refractive error is myopia. Myopia has been found among those who have never attended school or engaged in any near work, such as agricultural workers; nor is the school considered by some as the only or the chief cause of myopia. Some even believe in a hereditary tendency in myopia, such as conformation of bony orbit or a low orbit predisposing to that refractive error. Again, there is a tendency to place high myopia, with its distinct pathological changes, in a class by itself, as distinguished from low, or functional, myopia. Though a change has been noted of late in the view of the causation and prevalence of myopia, the prevailing opinion is today as it was forty or fifty years ago, that school myopia is not only a refractive error, but often a disease and a very serious one. In the medium and especially in the high degrees it is attended by a long train of symptoms from eye fatigue, orbital pain, and *muscae volitantes* to divergent squint, sclerochoroiditis myopica, detachment of the retina, and eventual loss of vision. It is now believed that the conditions of school life, such as insufficient and badly placed lighting, bad seating, poor type in books, excessive home work, a certain style of writing—in short, all causes that tend to induce fatigue of the accommodative, as well as the external ocular, muscles, accentuate its development, and perpetuate its existence and increase. What is probably most important of all, an increase of myopia in the older child is undoubtedly due to the failure to detect and correct it in earlier life. This is where the school clinic comes so prominently into play. No parent, however opposed to reason, would not recognize the necessity of refracting his child's eyes, especially if myopic, and of fitting him with the proper glasses, if all the consequences of a neglected myopia are fully explained to him. A myopic eye is literally a stretched eye, and it requires no special knowledge to appreciate the fact that a tissue, particularly that of a growing child, when stretched becomes weaker than it was before, and with the increase of myopia, this stretching process goes on more and more, until tears and breaks in the envelope of the eye cause irreparable damage, to be followed in many cases by incurable blindness. That the early effective correction of myopia in a specially conducted school clinic has contributed to the diminution of myopia has been proved by many investigators. Among them we can cite S. D. Risley and his assistants, who reviewed 195,000 prescriptions for glasses written over the period from 1874 to 1893. There was found to be a steady decline in the number of prescriptions written for the correction of myopia. Quoting briefly (16) without fractional exactness, in the year 1877 twenty-seven per cent. of all prescriptions were for myopia; twenty per cent. in 1885, and sixteen per cent. in 1893.

I would here call attention to the fact that while examination of the acuity of vision in school children may be entrusted to the teacher who has mastered the simple technic of the Snellen test card, the results are to be taken guardedly. This refers especially to cases of low hyperopic astigmatism, where the children may have 20/20 or even 20/15 vision, and still suffer from pronounced asthenopic symptoms such as headache, blurred near vision, general indisposition, etc. It is just these cases of low refractive error where normal vision is obtained at the expense of considerable nervous tension, in which the correction of the error, always under atropine, yields such brilliant results. The teacher should be instructed to be on guard to differentiate between cases of normal vision with or without symptoms of latent hypermetropia. It will be noticed that such children hold the head too near the book, less than twelve or fourteen inches, will frequently complain of headache, and will show signs of temporary deviation. As is well known, neglected hyperopia is the basis of internal, or convergent, squint, which constitutes ninety to ninety-five per cent. of all squints; the rest are due to external strabismus, usually caused by myopia. We are considering here the nonparalytic, or concomitant, variety only and are omitting cases due to acquired amblyopia as due to corneal opacities, and other causes, as well as the rather rare cases of upward and downward squint. The strong effort of accommodation combined with the act of convergence made by the defective hyperopic eye, causes fatigue of the ocular muscles until the stronger overpowers the weaker muscle, and the eye turns in the direction of the stronger muscle. The early resulting diplopia is gradually overcome by the suppression of the indistinct image. The tendency to squint appears as early as the third or fourth year, and if detected its correction with glasses can be effected early enough to avoid prolonged atropinization or occluding the fixing eye or training the fusion sense, a long and tedious process under the best of circumstances, and eventually an operation, the child meanwhile suffering from a gradual impairment of vision, not to speak of the disfigurement. According to Doctor Hoag (17) squint can be detected in about two per cent. of school enrollment by means of ordinary observation. Cornell estimates that it is present in from three to six per cent., while Butterworth finds that it ranges around two per cent. Thus the careful examiner can detect the condition even in the early stages, when the correction of the refractive error will result in a cure. Once the condition becomes firmly established, the impairment of vision is marked and frequently irreparable, and operation has often to be resorted to for cosmetic reasons only. It is here that the school clinic looms up as the agency whereby early and successful interference will be attended by preservation of the child's vision.

CONCLUSIONS.

1. The rôle of the eye in the human economy is so great and its importance in the earning capacity of the individual is so essential that no means should be spared by the State to conserve vision from the earliest childhood.

2. As irreparable deterioration of vision is apt to result from ocular affections that may not appear serious even to the medical man not specially trained in ophthalmology, such as maculæ or leucomata centrally located consequent upon the several varieties of ceratitis, corneal ulcers, etc., the early recognition of such conditions in school children is most imperative, and it devolves upon the State to render proper and timely aid in detecting and treating such affections whenever the parents are unable to obtain such aid themselves.

3. The establishment of school eye clinics should be considered as a part of the system of medical school inspection, their number to conform to the needs of the surrounding neighborhood.

4. As regards contagious eye diseases, it should be made obligatory upon the parents of public, parochial, and private school children to resort to these school clinics for diagnosis and treatment until cured and the child be readmitted to school, unless they present sufficient evidence that their children are being treated by private physicians.

5. Instead of resorting to private charitable agencies to procure eye glasses for children who need them but are unable to obtain them, it should be the business of the clinic to supply the children with glasses either at nominal cost by arrangement with competent opticians, or free of charge.

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257 EAST BROADWAY.

COLORED PHOTOMICROGRAPHIC SLIDES OF SECTIONS.

By EDWIN A. HUNGER,
Rochester, N. Y.

Physicians are frequently called upon to give illustrated lectures and if lantern slides are made from photomicrographs it is very useful to have the lantern slides in the same colors as the cross sections from which the photomicrographs are made. This is particularly true if the lectures are given to students who are accustomed to stained sections under the microscope and who may therefore find it difficult to recognize sections when projected by means of ordinary black and white slides. To provide equally good results the only alternatives are the projection of the slide itself by a projection microscope, a difficult operation at best, or the use of a number of sections and microscopes so that the students can examine the sections during or after the lecture.

A simple process has been developed for making stained photomicrographic slides. For sections of one color only one negative is used which is printed by a process described below and stained either with the same stain as that used for the section or with a suitable dye of the same color. Most sections, however, are stained with two different stains; in this case two negatives are made, each with the proper light or color filter so that on one negative part of the section of one color is recorded and on the other the part of the other color is recorded. Filters are chosen which absorb one of the colors as much as possible and transmit the other, the two filters being of colors necessarily complementary to the colors used for the stains. From the negatives two slides or prints are prepared in bichromated gelatin and each stained with a color matching one of those of the section. These slides are then registered face to face. As an example of a two color process, suppose a section stained red and green. Two negatives then are made on panchromatic plates, one with a red filter, which will cause the green parts to appear as clear spaces and will not record the red, and the other with a green filter, which will cause the red to record and not the green. From these, two prints are made in bichromated gelatin, the print from the red negative being stained with the original green stain and that from the green negative with the original red stain. The prints are then superposed. In very difficult subjects presenting a number of different colors it may be necessary to make three negatives, each with its proper filter, thereby obtaining a three color process. From the negatives in this case three positives are printed which are then registered together. In practice, however, the one color or two color process is sufficient for good results, on almost any subject.

In making the negatives considerable care must be exercised in the choice of filters, which is best decided by visual trial under the microscope, the filters chosen being those which most nearly absorb one color and transmit the other. In the research laboratory of the manufacturer the filters required are taken from the set of M Wratten filters which can be obtained either as gelatin film, in which case they should be protected from damage by the fingers by binding them up between two pieces of glass, or cemented between two sheets of white optical glass by means of Canada balsam, the cementing both protecting the filters and rendering them more transparent. The M filters are colored scarlet, green, blue violet, purple, orange, pure red, strong yellow, blue, and pale yellow. By using these filters in pairs the spectrum can be divided up into approximately monochromatic proportions.

Wratten panchromatic plates are used for this work, the exposures when using the filters being determined by trial or calculation. In color work such as that described it is highly essential that the illumination be as even as possible and that it should not vary from exposure to exposure. The Nernst lamp has been found to be more satisfactory than an arc lamp, though if the arc lamp is carefully regulated its crater can be used with good results. Any unevenness between the two plates will result in a patchy appearance in the color slide. The ratio of exposure for the two filters must also be correct so that the two negatives show the same detail in the shadows of neutral portions of the section. The exposure must be kept on the short side in order to secure the transparent negatives. A much softer negative is required for the printing of positive slides than for printing on paper or on lantern plates so that the time of development should not be more than two thirds of that for ordinary plates.

In the course of much experimental work on printing, a number of different methods of preparing color pictures have been tried and the most satisfactory method was found to be printing on bichromated gelatin by arc light. In this process lantern plates are sensitized by bathing for five minutes in a 2.5 per cent. solution of ammonium bichromate containing five c. c. of 0.88 ammonia to the litre. The sensitizing may be done by artificial light, as the plates are practically insensitive when wet. The temperature of the bath must not be above 65° F. or reticulation of the gelatin is very likely to occur. The bath may be used repeatedly but should be filtered before use. The plates as they come from the sensitizing bath are rinsed for two or three seconds in clean water to remove superfluous bichromate solution and are then carefully drained in a rack until the whole surface is free from streaks, after which the backs are cleaned and drying hastened by a gentle current of dust free air from a fan. The current of air must not be violent, otherwise streaks of uneven sensitiveness will occur. A gentle current of air which will dry the plates in about an hour is very satisfactory. Drying must take place in darkness or in a safe orange light. The plates will remain good for several days if stored face to face in plate boxes.

The plates are exposed through the glass under a negative to the light of an arc lamp, the average exposure being about three minutes at eighteen inches distance. It is sometimes convenient to use the arc in a projection lantern, removing the projection lens and exposing through the condenser, which must be clean. Either this or the naked arc is satisfactory, but the printing cannot be done by daylight as when printing through the glass there will be too much diffusion to give sharp images. The plates are developed by rocking in trays of water at about 120° F. until all soluble gelatin is removed. Underexposure is indicated by the high light detail washing away, and overexposure by the film being insoluble to too great a depth. The plates are next rinsed in cold water, fixed in acid hypo and washed free from the hypo. They are then ready for staining. Throughout the operations described above the delicate film must not be touched with anything other than liquids. For staining, a one per cent. solution of dye is used containing one per cent. of acetic acid, the dye being selected to simulate most closely the original stain of the section. The time of dyeing is not important but must be long enough to saturate the gelatin reliefs. Some of the dyes that may be used are pinatype blue F (Hoechst) for aniline blue stain; naphthol red for Congo red; eosine or naphthol red for eosine; water soluble nigrosine for Delafield's hematoxylin; fast red B for basic fuchsin; water soluble nigrosine for Leishman; toluidin blue for methylene blue, and chrysoidine S for picric acid. If necessary a dye can be washed completely out in dilute ammonia and another dye tried.

In printing two color slides from double negatives one of the negatives must be reversed so that the film is toward the light. Arranged then for printing, the negative film comes first, then the negative glass, then the glass of the lantern plate, and finally the positive bichromatized emulsion. The reversal is necessary so that the dyed plates can be mounted film to film to make the slide. In the three color process the three negatives are made with scarlet, green, and blue violet filters and positives from these dyed, the one from the red filter negative being stained with neptune green, the one from the green filter negative with erytheosine and the one from the blue filter negative with any yellow dye such as acid yellow, or if the pinatype dyes are available pinatype red, blue, and yellow may be used. In mounting, the blue and red prints are mounted face to face so that that they are in contact, and the yellow print is mounted outside with its film in so that the yellow film is separated from the red and blue films by one thickness of glass.

THE ASSASSINATION AND AUTOPSY OF KING HENRY III OF FRANCE.

By Charles Greene Cumston, M.D.,
Geneva, Switzerland,
Privat-docent at the University of Geneva; Fellow of the Royal Society of Medicine of London; Honorary Member of the Surgical Society of Belgium; Member of the Surgical Society of Switzerland, etc.

According to the historian De Thou, Henry III was born a healthy infant, and this health continued although it became somewhat impaired by excesses indulged in during early life. The nature of the royal diet caused the king to become obese but as he indulged in moderate exercise his health remained excellent. No issue resulted from the union of Henry III and Louise of Lorraine. He contracted lues in Italy upon his return from Pologne which caused him to shun the female sex and it is from this epoch that the relations between the king and his courtiers ceased to be platonic. Such is, briefly, the pathological history of this monarch up to the time of his death. In the month of July, 1589, the king was at the camp of St. Cloud near Paris, which city he was besieging against the leaguers and here the assassination took place. The stab wound was inflicted in the abdomen just below the umbilicus. The monarch cried out and himself withdrew the knife and struck his assailant over the eyebrow. This occurred on August 1, 1589. After the first dressings had been applied, the surgeons administered a "remedy" to their august patient and as the king did not show any external evidence of hemorrhage his medical advisers assumed that the state of general weakness of the monarch was due to syncope, that the intestine was not injured and the wound benign. They went so far in this belief that they assured the court that his majesty would be able to ride his horse after ten days. The king passed the day in great prostration, but toward evening a severe fever became declared, accompanied by frequent syncope, nausea, cold sweats, severe thirst, and violent pain. The monarch expired after eighteen hours of great suffering.

The autopsy was performed the following day and I here transcribe the exact text as given by Guillemeau in his *Oeuvres de chirugie*, first edition, in folio, Paris, 1598.

Nous soussiguez, conseillers, médecins et chirurgiens du Roi, certifions que, le jour d'hier, mercredi 2 de ce présent mois d'aoust, 1589, *environ les dix heures de nuit, suivant l'ordonnance de monsieur le grand prévost de France et Hostel du Roi, nous avons veu et diligeamment visité le corps mort de défunt de très heureuse mémoire et très chrétienne Henri III, vivant Roy de France et de Poullogne; lequel estoit décédé le même jour, environ les trois heures après minuit, à cause de la playe qu'il receut de la pointe d'un couteau au ventre inférieur, au dessous du nombril, partie dextre, le mardy précédent, sur les huit ou neuf heures du matin et à raison des accidents qui survinrent à Sa Majesté très chrétienne, tost aprez icelle playe recue, de laquelle et accidents sus dits nous avons fait plus ample rapport à justice.*

Et pour avoir plus ample cognoissance de la profondeur de ladite playe et des parties inférieures offenéez, nous avons fait ouverture dudit ventre inférieur avec la poitrine et teste. Après diligente visitation de toutes les parties contenues au ventre inférieur, nous avons trouvé une portion de l'intestin grèle nommé iléon percée outre en outre de la largeur du couteau, de la grandeur d'un pied, qui nous a été représenté saigneux plus de quatre doigts, revenant à l'endroit de la playe extérieure et profondant plus avant, ayant vuidé une très grande quantité de sang épandu par cette capacité, avec gros thrombus ou caillots de sang; nous avons aussi veu le mésentère percé en deux divers lieux avec incision des veins et artères.

Toutes les parties nobles, les naturelles et animales contenues en la poitrine bien disposées et, suivant l'âge, bien tempérées et sans aulcune lésion, ni vice, excepté que toutes les susdites parties (comme aussy les veins et artères tant grosses que petites) éstoient exsangues et vuides de sang, lequel éstoit très abondamment sorti hors par ces playes internes, principalement du mésentère, et retenu dedans la dite capacité comme en un lieu étrange et contre nature: en raison dequoy, la mort de nécessité et en l'espace d'environ dix-huit heures est survenue à sa Majesté très chrétienne, étant précédée de très frequentes faiblesses et douleurs extrêmes, suffocations, nausées, fiebvre continue, altération, soif inaltérable, avec très grandes inquiétudes: lesquelles indispositions commencèrent un peu après le coup donné et continuèrent ordinairement jusqu'au parfaict et final syncope de la mort, laquelle pour les raisons et accidents sus-dits, quelque diligence qu'on y eut pu apporter, éstoit inévitable.

Faict sous nos seings manuels, au camp de Saint Cloud, près Paris, le jeudy matin troisième d'aoust 1589.

(*Signed*) *Lefèvre, Dortoman, Regnard, Heroard.* [1]

(*Signed*) *Sortal, Lavernot, d'Amboise, Vaudelon, Legendre.* [2]

For those who may not be familiar with sixteenth century French, I herewith append a free English version of the above document:

"We the undersigned, councillors, physicians and surgeons to the King, certify that on yesterday, Wednesday the second of this month of August, 1589, at about ten in the evening, upon the receipt of an order from the grand Prevost of France and Royal Household, arrived on the spot and carefully examined the body of the deceased, Henry III, in life King of France and Pologne, of happy and Christian memory, who died that same day at about three o'clock in the morning, from a wound received from the point of a knife in the lower abdomen on the right, just below the umbilicus, on the preceding Tuesday between eight and nine o'clock in the morning and on account of the complications which later arose, after the receipt of the injury to his most Christian majesty, we have made a detailed legal report.

"And that we might have full knowledge of the depth of the said wound and the underlying injured structures, we opened the lower portion of the abdomen, likewise the thorax and cranium. After a careful examination of the abdominal contents, we found that the ileum was completely transpierced by the knife and incised in length to the extent of one foot, the track (followed by the knife) being four fingers' breadth in length from the point of entrance in the abdominal parietes, causing considerable hemorrhage resulting in many clots. The mesentery was cut at two places and the veins and arteries severed at these points.

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[1] The names of the four physicians present.

[2] The names of the five surgeons who performed the post mortem.

"All the thoracic viscera were normal and free from any pathological change other than that they were exsanguineous, as were all the bloodvessels, the loss of blood having been particularly marked from the mesenteric vessels. The blood was retained within the abdominal cavity. Death of his most Christian majesty occurring in eighteen hours was due to the above cause, being preceded by frequent faintness, and violent pain, paroxysms of suffocation, nausea, continued fever, ardent thirst, and great restlessness. All which symptoms arose shortly after the receipt of the injury and continued without interruption until the final syncope of death, and which could not have been recovered from by any form of treatment, no matter how thoroughly applied."

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Abstracts and Reviews.

CURRENT FOOD PROBLEMS.*

By CARL L. ALSBERG, M. D.,

U. S. Department of Agriculture.

The lecturer said that his title gave him the widest latitude in the choice of the phase of the problem which he would discuss and taking advantage of this he planned to consider what might be called the philosophy of agriculture in war time. In time of peace much work had been done in the field of food requirements for man, but practically all of it dealt with the needs of the individual, except in restricted cases in which the feeding of institutional inmates or other considerable groups was considered. These studies had given much valuable information of a fundamental nature which could be applied to the larger problems of food requirements and production. The present food problem was, however, vastly more comprehensive than any which had so far been approached in this country or in any other for it was concerned, not with the feeding of one or more large groups of people or with the feeding of a single nation, but rather with providing for the food requirements of a large group of nations.

In the past the agricultural problem had been concerned mainly with the question of the economy of production and the monetary yield to the farmer and has involved almost exclusively the matter of financial return. The farmer had cared little about the question of supply and demand and the needs of the community, except in so far as they influenced his chances of gain. In time of war the withdrawal of men had always led to a reduction in the agricultural output owing to the relative shortage of man power necessary for the raising and harvesting of the crops. In the present great war this shortage had become more acute than ever before and the crop production of the whole world had been affected. The development of machinery in the arts and industries had been such that woman power had been able to replace largely the loss of man power, but such was not the case to anything like a proportional extent in agriculture. It was true that farm machinery had been highly developed, but its work was less complete and much remained to be done by hand. The lack of man power in this country had been noticeable even in peace times and it was not surprising that it should be felt even more acutely now that we were actively in the war. It had, therefore, become most important to consider what type of agriculture was now the most valuable to the nation and its allies as well as the general principles which underlay war time food production. The narrower problem was that of the foods best able to meet the needs of the nations and those most efficiently produced under the conditions. This problem must be viewed from several aspects.

It might be considered on the basis of the yield of an acre in terms of bushels and calories. From this aspect both white and sweet potatoes were seen to be apparently more valuable than the small grains such as corn, wheat, rye, and oats, but the enormous water content of both types of potatoes and their greater liability to rapid decomposition, as well as other factors shortly to be mentioned, must be evaluated before deciding on their superior value as war crops. If the problem were considered from the yield in bushels or calories for a day's work a man the small grains far surpassed the potatoes, but here it must be remembered that man power was needed only at certain stages in the production and harvesting of those crops. To be economical from this point of view there should be a variation of the crops raised to provide continuous employment for the men. Such diversification also enhanced the fertility of the soil and was an advantage in this respect.

The soil conditions and demand for fertilizer also played important rôles and a study of this showed that only certain special types of soil were suited to the raising of potatoes and that the nitrogenous fertilizers were chiefly employed in the raising of crops such as cotton, tobacco, etc., while the small grains demanded extremely little nitrogenous fertilizer. The war would be won on ammonium nitrate as the chief source of explosives and every pound of available nitrogen must be saved for that purpose. From this point of view the small grains were preeminently the economical ones to raise in war time, as they required the addition of an amount of nitrogenous fertilizer equal to only about three per cent. of the total nitrogen which they returned.

When all of the facts were balanced, and specially when the nitrogen yield of the several crops was considered, the small grains were seen to be the crops upon which agricultural efforts must be concentrated in war times. Of these, wheat was the most important because of its relatively high yield of available nitrogen. The small grains might be considered as the primary agricultural products, for from them, in large measure, came the meats and dairy produce. The raising of meat and dairy products was a form of conversion of the grains into other types of foods and demanded consideration from the point of view of its economy. The following table showed the returns from feeding grains for the production of these secondary foodstuffs:

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*Summary of a lecture delivered before the Harvey Society at the New York Academy of Medicine, New York, November 10, 1917.

Pounds of starch equivalent.	*Required to produce 1000 calories.*
2.9	milk
3.0	pork
4.7	veal
5.3	mutton
7.0	eggs
7.0	"baby" beef
9.0	steer beef
15.0	poultry, cornfed
3.3	poultry, fed on corn, distillers' grains, and buttermilk

It was evident from this table that the feeding of grains to animals was not economical and that meat production was not an economic form of food production unless the cattle were fed on materials which were not directly available as human foods. At the present time less than seven per cent. of the entire corn crop was eaten directly by man, the remainder being used for the feeding of draught animals and for fattening cattle and hogs. Certain radical economies could be practised in the conversion of cereals into meat products, among which were the killing of animals at a younger age; placing a rising head tax on all male calves at the age of six months; penalizing by taxation the raising of hogs of over 150 pounds in weight; penalizing the raising of the bacon type in favor of the lard type of hogs; and the protection of all female calves, especially when of good dairy stock. This would free large amounts of feed grain for the increase of milk production, which was seen in the preceding table to be economical. Although the hog seemed equally economical it was not because its caloric yield was so largely in fat which could be equally well obtained from vegetable sources. The cow was the best converter of proteins, yielding them in their best and most economical form in milk. With the increase in milk production which might be brought about by such measures as just suggested there should go a greater efficiency in the utilization of this valuable product. This was especially true in the matter of butter production and the utilization of skim milk. Of the total solids contained in the annual milk production over one fourth was in the form of skim milk which contained practically all of the food material of milk except the butter fat. This skim milk was very little used as human food, the great bulk of it going to hogs. It should be converted into cheese and used directly by man. This would effect a saving in protein about equal to the total protein now produced in the form of beef.

The war had brought out an unsuspected phase of the food problem which was second to none. It was the question of the fat supply. In Germany the lack of available fats was quite as great a hardship as the lack of grains and greater than the lack of protein of animal origin. There the fat supply was derived almost wholly from animal sources, but in America the problem was not related to animal production for we had a number of available vegetable sources of fat which yielded an abundance on a very economic basis. Cotton seed, the peanut, and to a lesser extent corn supplied all the fat that was required for us and our allies, and if necessary the culture of the soy bean could be increased at very little expense with an enormous increase in the yield of fat. Just what the rôle of fat was that made it indispensable in the dietary was hard to state, but it was possible that one of the most important rôles which it played was as an adjunct to the culinary art. Without an adequate supply of fat it was not possible to render palatable a large amount of food which could otherwise be substituted for the meats, but with an adequate supply meat could be reduced to near the vanishing point without any great hardship.

Many other phases of the food problem could have been taken up, the lecturer stated, but he would have to leave them without discussion except to point out that the raising of garden truck should be done on small farms and in home gardens. The canning of vegetables and fruits on an industrial basis presented many problems, but it was enough to call attention to the large amount of water in vegetables and the low food value of such products as well as to mention the demands they made upon the steel industry to provide the cans, the waste of available nickel, and the enormous consumption of coal both in the production of the cans and the canning of the produce. These problems should be studied from many aspects before conclusions were reached as to the economical value of extensive canning. It should be stated, in conclusion, that if the bread and milk supplies were safeguarded the major part of the food problem would be solved.

The Turning Test in Appendicitis.—S. C. Blaisdell (*Archives of Diagnosis,* July, 1917) notes that in suspected appendicular trouble, acute or otherwise, the patient will nearly always be found lying either on the back or the right side, pain being experienced when he turns on the left side. This holds good in ninety per cent. of all cases. Even if other symptoms are absent the author believes that turning on the left side is a positive test. In making the test the abdomen must not be allowed to touch the bed, lest the support thus given to the viscera prevent the additional pain which results from the dragging on the sensitive appendix. In operating, the writer starts the incision two fingerbreadths away from and one fingerbreadth below the umbilicus. The incision runs downward and from right to left, the skin, fascia, and anterior rectal sheath being all cut in this direction. The knife handle then splits through the uncut rectus muscle, nicks are made in the transversalis fascia and peritoneum, the omentum pushed out of the way with a stick sponge, two fingers inserted, and the cecum lifted up. After removal of the appendix, a circular stitch including all the layers is used to close the wound, the writer preferring to avoid additional rows of sutures because they constitute nuclei of infection.

VENEREAL DISEASES IN THE ARMY.*

Work of the British Commission.—Preventive Measures in the United States Army.—Social Aspects of the Question.

At a meeting of the College of Physicians of Philadelphia, held on October 3, 1917, which Major E. deSchweinitz presided, there was a discussion of venereal diseases in the army from various viewpoints. Colonel T. H. Goodwin, C. M. G., D. S. O., who represents the British Army Medical Service at the office of the Surgeon General of the United States Army, opened the discussion, and was followed by Mr. George W. Braden, of the central Y. M. C. A., of Philadelphia, who spoke of the work of the Commission on Training Camp Activities. Colonel Frederick F. Russell, M. C., chief of the division of infectious diseases and laboratories in the Surgeon General's Office told what was being done by the Surgeon General to combat the spread of infectious diseases, while Major W. F. Snow, M. R. C., chief of the section on the prevention of venereal diseases at the Surgeon General's Office, discussed the matter from the sociological, educational, and prophylactic point of view.

VENEREAL DISEASES IN GREAT BRITAIN.

By Colonel T. H. Goodwin, C. M. G., D. S. O., R. A. M. C.

From the estimates made by the Royal Commission on Venereal Diseases, said Colonel T. H. Goodwin, R. A. M. C., it would appear that in the larger towns in England at least ten per cent. of the total number of inhabitants were infected with syphilis and that gonorrhea is even more prevalent. This would mean that in London alone there are 450,000 syphilitics. Sir William Osler placed this disease third on the list of what he termed "killing diseases." That venereal diseases had not been adequately grappled with as had other infectious diseases was due to the mistaken policy of silence. In the army, notwithstanding that the best methods of treatment were in practice and that the incidence of the disease had been diminishing, we found that in 1912 the average number of men incapacitated was 593 which with an army of 107,000 men represented a loss of over 216,000 working days in the year. The rate of the incidence of the disease in the army in 1913 was 5.3 per cent. per annum; for 1916 it was 2.1 per cent. per annum. We must not be too optimistic, however, but bear in mind that during active service the disease was more adequately dealt with than during peace. Improved methods of educating the soldier on this matter, the provision of greater facilities for recreations in cantonments, and the decrease of alcoholism had had a very considerable effect in decreasing the incidence of venereal diseases. The National Council for Combating Venereal Disease, with Lord Sydenham as president, embraced many leaders of the medical profession, representatives of the churches, and many women social and philanthropic workers in close cooperation. The aims of the council are briefly: provision for education and enlightenment; provision of greater facilities for treatment; provision of increased opportunities for study of these diseases on the part of medical practitioners and students; promotion of legislative, social, and administrative reforms.

Up to June of last year more than 600,000 soldiers had attended the lectures given. The point of view taken by the Royal Commission was that it was both the duty and the advantage of the state to see that venereal disease was promptly cured. Facilities for diagnosis were organized as far as possible in connection with existing laboratories in universities and in general and county hospitals. Wards in general hospitals for indoor patients were assigned for venereal patients. For outdoor patients evening clinics were provided. The objection to the provision of special hospitals lay in the resulting publicity. It was recommended that salvarsan should be provided gratuitously under proper safeguards to private practitioners for use among poor patients. Sir Malcolm Morris believed that under present conditions compulsory notification and treatment were impracticable. Sir William Osler would welcome notification. The conclusion of the Royal Commission was against this measure. Personally, Colonel Goodwin was strongly in favor of the adoption of compulsory notification and believed that with the advance of education and the recognition of the gravity of the matter this would be enacted. The commission emphatically recommended the prohibition of all advertisements of remedies for venereal diseases and favored the legal prohibition of treatment by unqualified persons. Some difficulty obtained, however, in securing such a law at present. He believed that unauthorized treatment of these diseases should constitute a penal offense. He also thought that it should be the duty of a medical man to inform the parents of any girl who contemplated marriage with a man whom he was treating for venereal disease, and that such communication should be recognized as privileged. The wilful communication of venereal disease should in his opinion constitute a legal crime. While the proof of knowledge might be difficult the measure would tend to the good of the community. This present worldwide war, apparently productive of nothing but evil, was teaching us to regard life and death as less important than the future welfare of mankind, and if such matters as adequate control of venereal diseases, worldwide prohibition of alcohol, and an increasing, instead of a decreasing, birth rate resulted, it might possibly be found that, terrible as it was, the war was not without some good results.

MORAL STANDARDS AND THE PREVALENCE OF THE DISEASES.

By George W. Braden,

Central Y. M. C. A., Philadelphia.

Mr. George W. Braden, of the Central Y. M. C. A., Philadelphia, stated that early in 1914 and in 1915 a great volume of material was sent to the United States from the various camps of Europe and Canada in reference to the spread of venereal disease attending the activity of the army. The moral standards maintained in a military camp greatly affected the venereal disease ratio. A study of the Mexican border situation made by Mr. Max Exner, of the Y. M. C. A. International Committee and a member of the Fosdick Commission on Training Camp Activities, states that where men were kept busy with wholesome games and amusements, proper educational service was rendered, and temptation removed as far as possible in nearby towns, the number of men applying for prophylactic treatment was very low. In one camp of this type there were 0.0566 per cent. of applicants. In another camp where conditions were favorable to low standards of conduct the applications were twenty per cent.

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*Abstracts of addresses presented at a meeting of the College of Physicians of Philadelphia, October 3, 1917.

VENEREAL DISEASE IN THE UNITED STATES ARMY.

By Colonel Frederick F. Russell, M. C.,

Chief of the Division of Infectious Diseases and Laboratories, Surgeon General's Office.

The medical profession of the United States had an opportunity to attack social disease on a nation wide basis, said Colonel Frederick F. Russell. The world population would be interested in the welfare of our army and the public was interested in providing a suitable environment for the soldiers. Syphilis and gonorrhea could now be placed with other infectious diseases and not classed merely as moral and social problems. If physicians failed to take advantage of this changed public opinion, no condemnation could be too severe. The army surgeon in the United States had absolute control of the soldier inside the reservation. In time the new citizen soldier would learn that he was a part of the great world machine and his ideal would be to keep himself in the pink of condition. There were a large number among recruits who immediately became patients. In the old days most army posts were surrounded with evil places over which the army had no control. At the present time the law gave control of a zone surrounding each camp where the commanding officer had almost complete police power. We shall have to contend with more venereal disease in the regular army this winter than ever before. The third week that the National Army had been in encampment showed an astonishing increase in the number of cases of venereal disease. Whether this meant that these diseases were much more common among young men of military age in civil population than we ever supposed, Colonel Russell did not know. Certain it was, however, that we had almost 400 a thousand, whereas the highest rate in the last twenty years in the army was 162. Treatment began from the first day the men began to assemble and now the hospitals were full of draft men with venereal disease which they contracted before joining. While military medicine was much the same as the practice of medicine in civil life there was a difference in the point of view from which the medical officer regarded his patient. The most interesting point was not of recovery, but of how many days it would be before the patient was returned to his military duty. In order the commonest diseases in the service were venereal disease, tonsillitis, influenza, bronchitis, diarrhea, and enteritis. The surgeon general had had prepared a small manual on the present day methods of diagnosis and treatment of venereal diseases. We hoped by means of this manual and the service of qualified specialists as consultants to standardize and develop this field of medicine and bring home to every physician the great value of modern scientific treatment. We should make every effort to prevent venereal disease by every means that sociologists could suggest in providing healthful amusements. We should institute early treatment of venereal infection by all the so called prophylactic methods if possible within a few hours of exposure. We should make frequent inspection of the troops to discover concealed cases. We should penalize a man who acquired venereal disease by taking away his pay and his liberty until he was cured. If he acquired venereal disease and did not avail himself of the facilities of treatment he would in addition be court martialed and if found guilty he would be placed in confinement at hard labor. If in spite of these requirements he acquired disease he would be sent to the hospital, put to bed, and be given a course of intensive treatment until he was no longer a source of contagion to others and well on the road to recovery. Specialists had come forward and in all the large camps were men qualified to put the care of these patients upon a high plane. Without the cooperation of the civil practitioner, the help of the social worker, and of the public as represented by the civil and state authorities the army surgeon could not accomplish more than had been done in the past. The problem was not quite clear as to the quantity of work. We, however, knew what to do. The question was one of putting into daily life methods which were known to be adequate. Cooperation with the civil authorities in each district had been provided for. Success depended upon the earnest support of the entire medical profession of the country.

EFFECT OF ENVIRONMENT UPON VENEREAL DISEASE IN THE ARMY.

By Major William F. Snow, M. R. C.,

Chief of Division of Venereal Diseases, Surgeon General's Office.

Major William F. Snow's part in this symposium was to emphasize the practical details which the army was carrying out in the prevention of venereal diseases. In this work the army expected the active cooperation of the medical profession as a whole. Benjamin Rush made the statement more than a hundred years before we knew how to deal with yellow fever that the people were not in danger of each other, but that there was something in the air causing the sickness which must be looked for. With the present problem we were in much the same situation, but in a reversed state. We had all the facts. We were still looking askance at certain individuals known to be carriers and had not been willing to apply our knowledge. As a medical profession we had not quite become convinced that the venereal diseases were amenable to the same methods of attack which were applied to the other communicable diseases. We were, however. on the eve of carrying this application into effect. In venereal disease there was the problem of the human carrier, and therein lay the difficulty because the carriers spread the disease through the development of habits opposed to the moral standards of the community. The circumstances connected with the control of these individuals was such that we either had to legalize their immorality or interfere with the liberty of large numbers of persons. Controlled prostitution had been found inadequate in the epidemiology of venereal diseases, to say nothing of the opposition of the public to this method. It had taken this war with the ten or fifteen years of effort and education to bring about a crystallization of public opinion to try other methods of controlling venereal diseases. Colonel Russell had outlined what the army was going to do for the soldier. Colonel Goodwin had outlined very clearly what Great Britain was attempting in its program. Major Snow said he could only repeat the steps. It was only fair to the young men and women of this country that they should know what these diseases are, how they spread, and what was known about the possibilities of their control. Recreation had been mentioned as one of the instruments for combating prostitution. The control of alcohol had been put forward by almost all persons interested in this problem as one of the most important factors in the control of prostitution and therefore in the control of these diseases. The government combined these agencies in two major groups, the group dealing with education, recreation, and entertainment and the group dealing with police power, control of alcohol, and repression of prostitution. Congress had given the President and the Secretary of War authority over zones around all our military camps. The Secretary of War had created the Commission on Training Camp Activities which was developing voluntary cooperation along these lines. When the soldier went out from the cantonment in the search of recreation and entertainment we had an opportunity to treat him as an honored guest, giving him the best in the city. In so far as we succeeded in returning him without exposure to infection we had done a patriotic act. In the case of soldiers who failed to be turned back to the cantonment by such efforts on our part, the question of police power in the repression of prostitution and alcohol arose, and as far as the soldier might be protected by these means we had done a service and saved him from venereal disease. The various commanders in the army were finding groups in the communities who were interested in the stimulation of this effort. There would be some soldiers, however, who would expose themselves, and stations were being established for treatment and the army was making a special effort to render the treatment station an educational matter. Some would fail to receive treatment in time and would acquire the disease. The genitourinary men attached to the surgeon general's staff would make every effort to obtain the social facts from the soldiers to make it possible to trace the carriers. In Canada the cooperation of the soldiers in tracing the carriers in civil life was very encouraging. In order to combine all these efforts the surgeon general had created under Colonel Russell a department that would be devoted primarily to this preventive phase of the venereal diseases. Inside the camp certain officials would work with the regimental surgeons in studying the cases. Sergeants especially trained would work with the officials in ascertaining the facts without embarrassing the soldiers or making the matter appear as a disciplinary measure. In order that such information might be used wisely officials were being appointed to work in extracantonment areas whose chief business would be to know the attitude of the community toward the problem and the health official and the other forces that might be counted upon to carry through any effort to find carriers in the civil community. Major Snow believed that much could be accomplished provided the medical profession saw the vision of what could be done in attacking these diseases as other communicable diseases had been attacked. In the recent meeting of the Pennsylvania State Medical Society certain resolutions were passed about the reporting of these diseases and the importance of the medical profession taking hold of the problem in a scientific manner. All over the United States the most encouraging suggestions were being brought forward. Scientific facts were at hand making it possible to deal with the matter with much more certainty than, for instance, with poliomyelitis, and other conditions in which certain scientific data were missing.

DISCUSSION.

Dr. Edward Martin said that the venereal diseases were the commonest, the deadliest, the most crippling, and the most easily controlled of all the diseases. They were not controlled, however, because their efficient repression implies publicity in regard to man's dereliction which would be irksome to twenty per cent. of the community. Colonel Goodwin, Colonel Russell, and Major Snow had described the admirable system which the War Department had evolved. It would fail of its full purpose unless civil practitioners helped. We meant to have health officials treat the man with gonorrhea and syphilis or both, who could not be kept under medical control, with as little respect as to his rights as they would treat one suffering from smallpox. The Pennsylvania State committee would recommend to the legislature that places be provided for the treatment of such patients. There was no reason why hospitals receiving State aid should not care for these patients and keep them until they were no longer a source of danger, except in institutions in which girl babies were cared for. Here gonorrhea should be excluded. In every county of each State there was a subcommittee of the Council of National Defense and before the war was over we hoped to have a law by which diseases under national restriction must be reported by which a person conveying them knowingly or otherwise might be liable for criminal prosecution or damages. We hoped to have such hospital provision that those afflicted with syphilis and gonorrhea might be adequately treated, and the community protected as in the case of other contagious diseases.

Major E. H. Siter said that the fact that there was only one hospital in Philadelphia to which an individual with venereal disease might go and be treated was a commentary upon the prevalence of the disease. When the war was over and the men in the army had known the ravages made in the ranks and had seen the efficient treatment instituted, the great etiological factor would be corrected. It was not the professional prostitute who did the damage, but the casual prostitute hanging about the cantonment. The disease must be treated intensively. This could not be done except in a hospital. The British sailors were treated sufficiently to get them back into the fighting with the idea of curing them after the war was over. The same should be true of the civilian patient. Get him into the condition in which he would infect no one and then have him given intensive treatment in a hospital.

In June of this year at Cincinnati, said Dr. Jay F. Schamberg, the American Society for the Control of Syphilis was formed. The membership included specialists who would develop the activities along medical, legislative, and educational lines, coöperating as far as possible with the American Society of Social Hygiene. Colonel Russell had well said that we must get hold of the carriers of the disease. Since the cleaning up of the city adjacent to League Island greatly increased number of cases of syphilis were brought to the Polyclinic, chiefly young women arrested on the streets and placed under the control of the Court Aid Society. We were giving fifty salvarsan injections a week without charge for drug or service. Until recently a dose of salvarsan cost $4.50 an ampule, which prohibited its adequate use with all the indigent sick. It had been impossible for those making salvarsan or its equivalent in this country to supply the drug directly to the profession because of the patent laws. The Adamson bill, however, which had just passed House and Senate, authorized the President to license American citizens to prepare and market products patented by alien enemies, and provided for the payment of five per cent. on the gross receipts to be deposited in the United States Treasury until the end of the war. The dermatological laboratories had made application for license to distribute arsenobenzol. Over 125,000 doses of this drug had been used already in the United States. It was our purpose to lower its price that it might be freely available for the indigent sick. We proposed as soon as licensed to place arsenobenzol on the market at $1.50 to physicians and to supply hospitals with larger sized ampules at such a price that an individual dose may be administered for about eighty cents. The adequate use of salvarsan upon the ambulatory dispensary patients was of vital importance in the stamping out of contagious syphilis.

Dr. H. M. Christian said that there had been much discussion of the question of making men moral. You cannot make the soldier moral any more than you can make any other thousands of men moral who were gathered together in a body. The thing to do was to protect the man in the army from the result of his own immorality; this for the benefit of the service and his associates. Prophylaxis was of vital importance. Doctor Christian regretted that more emphasis was not placed upon the prophylactic treatment of men upon return to camp. Statistics showed that where prophylaxis was carried out as routine measure the incidence of venereal disease had been very small. Prophylaxis was not a compromise with evil, as so many regarded it. Doctors had no discussion here of morals; they were interested in the safeguarding of the health of the army. It was all very well to give men instruction and entertainment, but it was far better to his mind to safeguard them by enforced prophylaxis.

Dr. Louis Jurist believed that it was the duty of the civil authorities to clear up the communities adjacent to the army camps. The greatest danger, he had been told, was from girls of fourteen to sixteen years of age who were encountered at every turn about the camps. The problem of overcoming syphilis and gonorrhea was not alone legislative or preventive, but may be made an economic question.

Dr. Paul A. Lewis in a semiofficial capacity was called upon at the Pennsylvania Hospital to supervise the administration of salvarsan. Through this connection he was indirectly able to have the managers adopt a somewhat different attitude toward the treatment of syphilis. They have come to acknowledge this treatment as their duty. They did not, however, as far as he knew, admit open syphilis to the wards, but allowed the use of the dispensary in a way which he regarded as encouraging. He was interested to see whether syphilis might not be handled through the social worker as a respectable disease, so to speak, as tuberculosis had been handled. In the three and a half years that the clinic had been thus managed it had been shown that in many aspects the disease could be handled to much advantage. The prejudice in connection with the treatment of this disease would surely disappear under the enlightenment which the nation was about to receive through its navy and army and with the guidance of such men as have spoken at this symposium.

Colonel Goodwin, closing the discussion, wished to say a word for the soldier. He did not think the soldier was more immoral than the same class in civil life. We could, however, do much to keep him away from the opportunity of getting venereal disease, and the measure which had helped more than anything else in the army to carry this out was the increased facilities for amusement. In this connection the Y. M. C. A. was of utmost importance.

Major Snow, in closing, said that he believed that the whole machinery which had been found effective in dealing with the human carrier of tuberculosis could be adapted to this class of cases if we went about it in the right manner. So far as the program to be carried out in dealing with these diseases, mentioned by Doctor Martin, was concerned, the matter could be summed up by emphasizing that it was the duty of the medical profession to provide for diagnosis, treatment, and follow up service and to educate the public fully in regard to the problem.

MEDICAL NOTES FROM THE FRONT.

Venereal Prophylaxis in the French Army.—Venereal Diseases and Their Treatment in the Army.

GENEVA, *October 10, 1917.*

A few brief remarks on venereal prophylaxis in the French army may be of practical interest as the subject is of utmost importance. If a systematic search is made for the origin of contamination for each individual case—a search which is not without difficulty and requires considerable experience—it at once becomes manifest that the proportion of infections occurring in the rear is very much more considerable than in the war zone. Thus to mention but one service, that of Doctor Salamo, out of a total of 168 cases, there were 109 contracted at the rear, as against fifty-nine infections in the war zone, which gives a proportion in favor of the former of approximately sixty-five per cent. Doctor Carle, who has gone into this question carefully, has found practically about the same percentage, because out of a total of 291 cases, 178 were contracted at the rear and 113 in the war zone; in other words a little over sixty-one per cent. in favor of the rear. Therefore, it is after his exit from a hospital at the rear or during leave, that the soldier is more likely to contract his venereal infection. It has been found that the greater number of cases are derived from the professional prostitute, i. e., girls living by themselves or in brothels, while, quite on the contrary, in the war zone it is usually the nonprofessional women, married women, shop girls, etc., who are the source of contamination. These interesting facts immediately point to the proper respective measures of prophylaxis to be employed at the rear and in the war zone.

In the war zone a marked advance has been made by the establishment of venereal services, to which I shall refer in a moment, where soldiers afflicted with contagious venereal accidents are energetically treated and cured, or if not, they are at least quickly "bleached," as the expression is in the medical corps. On the other hand, the inspector general of the army, under the date of January 15, 1916, ordered the following rules to be strictly carried out in all the army corps, and they have already borne good fruit: 1, bimonthly sanitary visits; 2, monthly lectures to the troops on venereal diseases and their prophylaxis; 3, a medical visit at the time of leave and the return of each soldier; 4, suspension of leave for all men afflicted with contagious venereal accidents; 5, obligatory statement of the circumstances of the contamination, with the indication of the female; this is followed by a confidential statement of the facts of each individual case to the military authorities. These measures are completed by a careful control and regulation of both recognized and clandestine prostitutes. It is the latter that must be particularly looked after in the war zone and for this reason it is the military authorities, rather than the civil authorities, upon whom it is incumbent to take the proper measures with all requisite energy and without any regard to private considerations, because otherwise the danger might become considerable. In the rear the question resolves itself to the usual prophylaxis of venereal diseases employed in times of peace, but its importance is far greater during the war on account of the rapid increase of these affections and likewise from the fact that the larger proportion of infections are derived at the rear.

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Interesting data have been collected relative to the localization of the initial hard sore as well as its manner of contagion and concomitant associations. Not a few unmerited cases of syphilis, with extragenital chancres have been observed, some due to an infected barber's razor, others to tattooing. Some perfectly distinct cases of syphilitic chancre have been met with in hereditary syphilitics. Congenial malformations, such as phimosis and epispadias, seem to favor syphilitic infection to quite a high degree and a fair number of cases of association of the syphilitic chancre and ulcus molle —mixed chancre—gonorrhea, herpes, scabies, and erosions and ulcerations of varied nature, have been encountered. The secondary accidents observed have been roseola, mucous patches, papular syphilides, cephalalgia and alopecia in patches nearly all of which disappeared rapidly with ordinary specific treatment. The tertiary manifestations have been more particularly cutaneous, nasal and buccopharyngeal, ocular, aural, and muscular.

As to treatment, it has naturally varied according to the case and nature of the lesions. The opinion prevails that the arsenobenzol preparations, although "bleaching" the patient quickly, should be given in small doses prudently increased, but that the soluble salts of mercury, when properly handled, are quite as satisfactory. In nearly all cases twenty injections of one centigram biniodide of mercury have been found sufficient to clear up the case and relapses do not appear to have been more frequent than with the arsenical preparations. It seems certain that they are less serious and are not inclined to be elective for the nervous system when they do take place. Before submitting to treatment with 606 the soldier is obliged to fill out the following: *I respectfully request the physician in chief to admit me in order to follow a treatment with 606, and I assume all responsibility myself.* Analysis of the urine and frequent examination of the mouth indicate if the mercury is well tolerated. All patients are obliged to rinse the mouth several times daily with a solution of potassium chlorate at two per cent.

Simple acute gonorrhea is the commonest of all venereal diseases met with in the army. The principal complications observed have been balanitis, cystitis, epididymitis, arthritis, and stricture. Simple antigonococcic treatment has been sufficient in the vast majority of cases, this consisting of an appropriate diet and local care. Capsules of santol are given from the beginning and when the inflammatory urethral reaction allows, permanganate irrigations are begun at 1:5000 and slowly increased in strength. During the period of decline the following injection is ordered:

℞	Zinci sulph.,	4.0;
	Acid, citric,	4.0;
	Liq. Van Swieten,	60.0;
	Aq. dest.,	1000.0.

In stubborn cases, as well as in long standing ones, instillations of silver nitrate are given and an average of three weeks has been found sufficient to stop the discharge. The army surgeons do not hold that when the discharge ceases an absolute cure has been obtained. but it seems to me clear that the results are excellent considering the circumstances and that treatment as outlined, using the older methods, has proved itself quite potent and perhaps equal to our more modern treatments. For the complications local tepid baths are used for balanitis and phymosis; capsules of turpentine or cachets of salol for cysitis, rest in bed with the testicles elevated and resting on a thin board, and mercurial ointment locally has been the treatment of epididymitis. Three weeks have been the average time for recovery to take place.

There have been quite a goodly number of cases of ulcus molle, some being complicated with bubo, while many have been phagedenic. Treatment varies according to the appearance and site of the lesion. The use of antiseptics, singly or combined, have usually been sufficient to bring about cicatrization. Our old friend iodoform, banished for years in civil practice, has regained all its former favor during the war and in ulcus molle it has unquestionably maintained its former high reputation. In some few cases cauterization is required. For inguinal lymph node infection an incision, or more accurately puncture, followed by an injection of iodoform ether has been successfully used when suppuration has taken place.

Along with the increase of venereal disease has come scabies, showing its probable venereal etiology. It is frequently accompanied by complications, namely, eczema or pyodermitides—ecthyma, furunculosis, folliculitis, impetigo—due to scratching and rudimentary uncleanliness. The treatment is a bath with black soap, a friction with Helmerich's ointment and another bath and friction two days later if necessary. Duration of treatment averages six days. If pruritus continues this is not a sign that the lesion has not been cured as a certain amount of cutaneous irritation may subsist after the treatment and when pruritus continues it can be differentiated from a return of the scabies by lesions of dermatitis which do not increase and subside within a week or so.

To give an idea of the respective proportion of the various venereal diseases, take as example the results of one year in a certain army corps: Simple gonorrhea, 322 cases; gonorrhea with complications, 300 cases; ulcus molle, 170 cases; syphilis, 188 cases.

MEDICAL NEWS FROM WASHINGTON.

Military Surgeons Report on Italian War Hospitals.—Position in Regard to Further Commissions and Promotion in the Medical Department.—Medical Personnel with the British and French Forces.—$544,270 to Be Spent on Quarantine Stations.—Dental Corps News.

WASHINGTON, *November 14, 1917.*

The military surgeons who recently have returned from visits to the front in France and Italy have brought back some information that is a surprise to their associates. One of the unexpected revelations is that the Italian medical service far surpasses the British and French in many particulars in the care of the wounded. In the first place, the Italians have been able to maintain hospitals so near the trenches that it requires only a period of about ten minutes after a man is wounded to get him to an operating table, whereas on the western front the British and French hospitals sometimes are as much as ten miles distant, with the result that an immense amount of ambulance transportation is required, which, with transportation for other purposes, creates congestion on the roads. This feature is avoided by the Italians, not only by having the hospitals nearer the trenches, but also by using the motor trucks that have taken forward ammunition and other supplies to carry back the wounded, thus lessening the demands upon the roads.

The Italians also have constructed quite elaborate hospital accommodations under ground, digging tunnels and large compartments forty feet below the surface. These places are lined with linoleum and equipped with the most modern of appliances, constituting a perfected subterranean institution amply protected from attack. Of course, these places must have been built with the idea of somewhat permanent occupation, since the Italians established themselves after a hard campaign of two years in the positions from which they were ousted by the enemy almost over night. One of the reasons that the British and French have not been able to maintain hospitals so near the firing line as have the Italians is due to the fact that the British and French positions have been changing constantly, making it difficult to transfer the hospital outfits to keep up with the advance of the line. The demonstration of Italian fitness in this direction is the more remarkable, say the observers, because prior to the war that country was almost entirely dependent upon German sources of supply, and the present equipment is the result of domestic development within a comparatively short period. Special commendation is applied to the x ray equipment, in which the Italians appear to have made remarkable progress.

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There is some disturbance in the military establishment over the decision of the Secretary of War not to commission any more officers, for the time being, in the reserve corps of the staff departments, not only on account of the fact that the sources of supply of additional personnel are shut off, but also because the decision carries with it delay in the promotion of those now in the reserve corps. The situation is particularly critical as it concerns the Medical Department. Surgeon General Gorgas has been particularly desirous of having a number of the members of the Medical, Dental, and Veterinary Reserve Corps and of the Sanitary Corps, who have shown exceptional qualifications and who are performing work of more than ordinary moment advanced in rank, and a large number of recommendations for such advancements are held up in the War Department. The officers of the Medical Reserve Corps recommended for advancement are of the grades of captain and first lieutenant, who have been designated for advancement on account of services rendered. The situation has reached such a stage that, unless Secretary Baker recedes from his position, it is likely that the reservists, who are influential all over the country, will take the matter to Congress when it convenes in December, with prospects that legislation favorable to them will be enacted. As an example of the effect of the decision on promotions, a medical reserve officer of the rank of first lieutenant some time ago was recommended for advancement to the rank of major in recognition of his achievements in the service. Through a clerical error, the commission was made out as a captain. In the period of delay incurred in having the error corrected, the announcement as to curtail in the appointments of reserve officers, with its resulting band on promotion, was made. The officer in the meantime remains a first lieutenant.

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There are 3,180 medical officers, nurses, and members of the ambulance sections of our army now attached to the British and French forces. This total is made up of 870 medical officers and 470 nurses with the British forces and forty ambulance sections, each of forty-six officers and men, a total of 1,840, with the French forces. All of this American personnel is lent to the British and French forces. It is subject to recall, and it can, if the War Department so decides, be assigned to duty with the American forces. All of them wear the uniform of the United States Army. The plans contemplate the replacement of some of these officers and ambulance sections from time to time by fresh units from the United States and the assignment of the officers and sections that have had experience with the British and French to the American expeditionary forces. Thus the medical personnel, before going with our troops, will gain experience along side of the foreign personnel that has longer served in the work of caring for the sick and wounded. Considerable additions to the number of American ambulance sections attached to the French Army are in prospect. Provision has been made for the formation and training of 120 more sections at Allentown, Pa., all for eventful service with the French army.

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The comptroller of the treasury has rendered a decision to the effect that the sum of $544,270 appropriated by the act of October 6, 1917, for the construction of barracks and quarters, miscellaneous furnishing and equipments, etc., for quarantine stations at Boston, Reedy Island, Cape Charles, and Savannah are available until expended. This will enable the projects to be carried on without regard to any particular time of placing the contracts and completing them.

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An examination began on November 12th of candidates to fill about 100 vacancies in the Dental Corps of the regular army. They were held at various places, and it is expected that the results will be made known in about a month. The War Department still has under consideration the promotion of members of the regular Dental Corps in accordance with the provisions of the act of October 6, 1917. The present indications are that the reorganized corps will consist of nine colonels, sixteen lieutenant colonels, seventy-one majors, and 203 captains and first lieutenants.

CAMP GREENLEAF SCHOOL OF MILITARY HYGIENE.

HEADQUARTERS CAMP GREENLEAF, M. O. T. C.,
FORT OGLETHORPE, GA., *November 12, 1917.*

The principal event of interest during the past week at the Medical Officers' Training Camp, Fort Oglethorpe, Ga., was the formal announcement of the Camp Greenleaf School of Military Hygiene. This school has been in operation since the beginning of the camp, but not as a distinct organization. The new school is directed by Major Alexander C. Abbott, M. R. C., professor of bacteriology and hygiene in the University of Pennsylvania and a sanitarian of international reputation.

Those present at the opening of the school were astonished at what the sanitarians have been able to accomplish with a stable, for it is a fact that this pedagogic infant is housed in an old cavalry stable. A careful inspection of these quarters reveals the fact that there are few homes boasting the same flawless neatness and actual comforts. It is a wonderful demonstration in what can be done in the line of improvising ideal quarters from any sort of building available; this being a problem frequently confronting the sanitary personnel of an army in the field. To mention living in a stable to the uninitiated will usually arouse the feeling of repulsion that is ever associated with foolish sentiment; to visit this stable can only arouse admiration for what real ingenuity and labor can accomplish.

The student officers in this school must take the regular basic course of instruction for the production of medical officers. In addition there are given sanitary clinics, covering theory of camp inspection, theory of police duty, care and construction of grease traps and incinerators, care and construction of latrines and soak pits and lavatories, care of picket lines, manure disposal, fly and mosquito destruction, septic tanks, and kitchen technic. The field work consists of problems assigned in drainage ditching, subsoiling and use of blasting powder, road building and grading, inspection of heat and light and ventilation of barracks, map work—reading and contour sketching, mounted and on foot with instruments—levels with and without the use of instruments, rat proofing and fumigation of buildings, selection of suitable stone and gravel for roads and incinerators and filters, etc., plumbing inspection and isolation of plumbing against freezing, boards of investigation and field surveys, care and use of motor truck engines. Also there are held nightly symposiums, covering subjects germane to a sanitarian's duty. Many other interesting and instructive lectures are given by the students of this school who have had an opportunity to gain information along special lines of sanitation or hygiene, some of whom come from civil life as specialists.

A careful consideration of the above will bring more forcibly to the attention of the lay physician the enormity of the task imposed by this great war upon the Medical Department of the army in the rapid development of the average civil doctor into the efficient Medical Officer.

E. S. SLEDGE, CAPTAIN, MEDICAL RESERVE CORPS.

Editorial Notes and Comments

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A Weekly Review of Medicine

EDITORS
CHARLES E. DE M. SAJOUS, M.D., LL.D., Sc.D.,
Philadelphia,
SMITH ELY JELLIFFE, A.M., M.D., Ph.D.,
New York.

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DOING THE SPLIT IN ONTARIO.

Within recent years men have risen in the ranks of medicine who have resolved that there is undue severity in an ethical doctrine which they maintain has been bequeathed to us from the harsh past of the fee splitters. Modern day medicine has tended more and more towards commercialism, and the reason has rested in the gradual and ever increasing high cost of living. The average physician, so long as he could finance himself for immediate satisfaction, cared not for much wealth, providing he could lay by a little for the time honored rainy day. What cared he for uncollected accounts so long as he could gamble a little on the stock market and take a chance with Dame Fortune? The creed and the ethics of his forbears were good enough for him, until the shoe began to pinch; or the easy money of the specialist goose fleshed his spine when he compared his hard, irregular, night and day work as a general practitioner with that of the favored, big feed surgeon or specialist. He longed for the flesh pots of Egypt.

Had medical men been better business men, had they looked with a keener sense after the man who could pay and wouldn't pay, had they refused absolutely to barter their knowledge, skill, and ability for the mess of pottage, the hospital appointment, charity work which the community or state should pay for would never have been so outrageously prostituted, and medical men would never have been so outrageously exploited by the niggardliness of states and municipalities. Chickens come home to roost. The truth is the public like to be Barnumed; and the medical profession has humbugged them so much with the idea that hospital appointments have a great material value in the way of experience, prestige, and other practice, that that value is simply beyond price. Every man is entitled to the dollar which he earns. Get your money in war time is a bit of wisdom from an industrial worker; but it would be far better to get your money in all time. The credit system is an abomination and anathema. With the physician—and he is the last man many people think of paying—it works double, yea, treble, hardship. A conscientious man generally, he hates to owe and equally hates to be owed. Surely there is enough anxiety for him to have the care and responsibility of life upon his hands, or rather his mind. Can the public expect of him as good service when he has not been paid for past services? Little wonder there has crept into the medical profession a little more egoism and that altruism has grown somewhat stale!

That this natural, or unnatural, law—take your choice!—had wedged itself into the medical life of Ontario was pretty well known before the war—it has been said that some surgeons or specialists parted with as much as sixty per cent. of their fee—but the medical mind as well as the community mind had become so engrossed with European affairs, that fee splitting had all but been forgotten, and there was not much thought as to whether it existed to any great extent in their community life, until attention was again attracted to it by the presidential address of Doctor D. J. Gibb Wishart, himself a specialist in ear, nose, and throat, before the Toronto Academy of Medicine. He attacks it from the viewpoint of the man who has been asked to disgorge: "To mention it is to condemn it. It is a frankly dishonest transaction which stamps as a fraud the practitioner who demands his pound of flesh." Some, he states, in Toronto have approached the general practitioner upon the fifty fifty basis, so it appears that specialists and surgeons on the one hand and general practitioners on the other are tarred with the same stick.

There is surely an honorable way out of this difficulty, or worse than difficulty, professional nefariousness. There are only three lines of conduct in medical life as in other vocations—good, bad, and indifferent. This does not appear to be good to many; some say it is bad, very bad; others—and they may not be much concerned—treat it indifferently. Medicine often implies cooperation. We cannot expect to get the best out of the profession of medicine so long as there are aggressions of practitioner upon practitioner within the pale. We have enough to do to hold our own and obtain our rights from a public which is often very disinterested.

FRANCE'S DECLINING BIRTH RATE.

While France's birth rate has had the attention of all civilized countries for many years, none has been more active in investigations along this line than France herself. Several months ago, a special committee made an exhaustive report to the French Academy of Medicine. This report, drawn up by Professor Charles Richet, contains much exceedingly interesting information bearing upon this problem and, what is most important in the interest of science and constructive comment, disposes of various explanations of the state of affairs which have seemed for a long time to be feasible, if not actually accepted by less profound investigators.

As far as figures are concerned, Professor Richet states that a graph representing the number of births in France from 1876 to 1913 practically follows the regular parabola described by a stone falling to the earth. A summary of the statistics presented shows that nearly one sixth of the married couples in France are childless, that there are only one or two children in half of the families, and that only a third of the families have three or more. Of the theories advanced in explanation of the situation, one of the favorites is the effect of France's inheritance law which compels division of property among a man's children. Professor Richet argues that this law has been operative since 1801 and that the heavy decline in the birth rate has been conspicuous only since 1878, and that it has been as low in the families of workmen who have no property to bequeath as among farmers and the upper classes. He believes that Church influence has little to do with the problem, as the rate is as low in districts where religious sentiment is high as in districts in which the people are reputed to be indifferent. That migration from country to town has brought about the conditions he disproves with the statement that the decline is evenly distributed in industrial and rural districts and that it is even greater in some rural parts. Alcoholism tends to cause a poorer physique in the offspring rather than a diminution in numbers, as everyone knows. We quote a point upon which the *British Medical Journal* criticizes Richet's study: "It seems to us a defect in Professor Richet's report that he did not examine fully the influence of venereal diseases on sterility and infecundity. He included it among the causes of complete sterility in the fifteen per cent., of sterile marriages, but made only a passing and not very lucid reference to the effect of venereal disease contracted after marriage in preventing the birth of more children after the first one or two."

Making all allowances for actual sterility from physiological and pathological reasons, there still remains, according to Professor Richet's conclusions, fifty per cent. of marriages in which, assuming that the woman married at twenty-two years of age, families of ten children, at the rate of one every two years until the woman is forty-four years old, should be common. Finally, from the woman's point of view, this investigator believes that the declining birth rate in France is due to a desire for a higher standard in social comfort, disinclination to spend so much of their lives in the discomforts incidental to pregnancy and the anxieties of child raising, and a desire to share in the political and other privileges of men. From the point of view of both parents, Professor Richet maintains that the cost of rearing children is a very potent factor in the limitation of offspring, since it is estimated that a child in the working classes costs, up to the age of fifteen years, one sixth of the father's earnings. The only recommendation he makes to the Academy in the face of this serious problem is the awarding to the parents of an equivalent contribution by the State.

APROPOS OF THE UNCONSCIOUS.

Frequently one finds in the criticisms of psychanalytic literature satirical remarks about the extraordinary ingenuity of the unconscious. Critics, both medical and lay, find it quite absurd that the unconscious should display a cunning in effecting its purposes that is often quite beyond the possibilities of the most accomplished consciousness. They are in consequence inclined to believe that not the unconscious but the analysts are the authors of the strange and fantastic purposes that the latter attribute to the former and that it is not in fact the unconscious but the mind of the analyst that is revealed in the analysis. The practical results of the analysis are easily discounted in the same way in which people habitually discount the results obtained by palm readers, horoscopists, and other people who so characteristically seem to hit it rather close at times. In the case of the analysts it would seem further that their procedure was similar to that of writers of detective stories who frequently begin a story in the middle and then work it out in both directions. Then of course to prove it plausible you need merely repeat it from the beginning through to the end and it justifies itself.

The analysts are themselves in large part responsible for the suspicion under which their "unconscious" rests because of their habitual method of saying that the unconscious does this or that or the other thing. Of course this usage is not justified. The unconscious is not something that does things and it is meaningless to say that it does anything. Since we, however, cannot say what does the things attributed to the unconscious, it is difficult to avoid this usage.

The habit is readily intelligible by comparison with what has happened in the other sciences, which also passed through stages where their determinants were endowed with volitional character. There was a time when Nature "did" things, when the elements could be restrained, as it were, with bridles. We still hear people say that Nature abhors a vacuum, that the wind bloweth where it listeth, while it is a commonplace to be told of the miraculous things that electricity and lightning and earthquakes can do. In the same way the amazing selective action of the chemical elements, their marvellous accommodation to the presence of each other and to changes in temperature of electrical condition make the activities of the elements in the unconscious processes seem comparatively restricted in their range. Indeed there are those who believe that the determinants of unconscious processes and conscious ones as well are just those elementary physical agents that are so readily accepted. In fact when analytical interpretation is questioned, not some particular interpretation, but the whole notion of anything so fantastically unplausible, the analyst is inclined to answer, "Yes, but that is nothing compared with the things one may read in an encyclopedia where it is stated, for instance, that the hardest steel is not a solid, stable substance as it appears, but is made up of tiny particles in rapid motion." "That is true," it will be answered, "but some people have proved that this is really so," to which it may be answered that though analytic results are not proved, neither their lack of obvious plausibility nor the unfortunate language in which they are expressed should be counted as important evidence against them.

The time may come when psychological language will be so far developed that we shall be able to dispense with a volitional vocabulary, but until that time comes we shall have to remember that the volitional aspect of psychological terms, apart from the cases where the will is under discussion, is an accident and quite irrelevant, that the unconscious doing something has the same kind of meaning as Nature doing something, and that what "happens" is the important matter under discussion, and not what "makes" it happen.

SANITARY CONDITIONS IN SHELLFISH AREAS.

"Think you our oysters here unworthy of our praise?" There is no reason that they should be so either from a culinary point of view or from the more serious one of health and sanitation. Here as in other fields it is largely a matter of the awakening of public opinion to the public's own danger and responsibility toward selfprotection and its own advantage in the matter of supply.

The United States Public Health Service issues in its *Public Health Bulletin No. 86*, August, 1917, a report of a survey of the conditions of shellfish production among the tidal waters of New Jersey New York, and Delaware. The investigation concerns itself with the sanitary condition of these waters and their tributaries. This includes a detailed study of the sanitary conditions prevailing in the surrounding territory both of the shellfish beds and of the waters in which they are located. It also examines character and amounts of sewage and wastes which enter these waters from the population inhabiting these watersheds. Stress is laid upon the direction and velocity of currents and tides since these factors have a distinct bearing upon the pollution or purification of these areas. Samples of oysters were subjected to bacteriological examination, as were also samples of the water and of the sewage discharged. The amount of dissolved oxygen and other elements which might influence the condition of the shellfish was submitted to chemical tests. Special attention was given to the presence of typhoid fever in adjacent communities, its possible relation to these waters and contracted by man either from bathing in them or from eating of the shellfish. A careful examination of this report reveals many interesting facts in regard to the gradual extension of increased activity of public opinion on the subject of better sewage disposal and sewage treatment, and the effect of this upon what is so large a source of food supply and a matter of such great economic interest. There is that same personal disregard of sources of danger which can often be explained only on the ground of the innate indolence of humanity and the propensity to follow the easiest course. There are also facts of value for any one wishing to study the course of the shellfish industry, its methods, and its particular development in certain places.

The final summary includes the economic importance of proper sanitary conditions since the shellfish industry is a great financial asset, particularly of the State of New Jersey, and since its market is widespread. The examinations led to the conclusion that the waters in which the shellfish are grown are, with the exception of certain designated areas, free from pollution. The sanitary condition of oysters depends upon the final "drinking" places in the small creeks and rivers, where they are freshened before marketing. Some of these have been found unwholesome. In the summer season, when there is more opportunity for pollution, it is a popular custom of persons on a day's outing to dig clams for a picnic luncheon or even to procure them for commercial purposes without any consideration of the proximity of sewage outlets. The Department of Health of the State of New Jersey has been actively and efficiently engaged upon these problems of sewage and waste, and warnings have even been posted in behalf of these individual offenders against their own health. This adds another danger signpost with which the citizens' highway of life is being more and more profusely besprinkled. It is still a matter where there must be more intelligent knowledge of possibilities of danger and of means of eliminating it, for there is enormous opportunity here to spread disease far and wide or to extend an industry which involves the present most important question of supply of a desirable and nutritious form of food.

HUMOROUS OBSTETRICS.

Mrs. Grace Humiston, a lawyer of New York, who has obtained considerable notoriety in a recent murder case, is credited with having made a wholesale condemnation of the moral conditions surrounding some of the National Army cantonments. Among other statements, credited to her in the daily press is one to the effect that six hundred young women were about to become mothers at one of the camps. In view of the fact that these camps received their first quota of troops only about two months ago it would seem desirable for Mrs. Humiston to revise her obstetrics. If the remainder of her charges are no more accurate than this the general public will be inclined to believe the denials of General Franklin Bell and of Miss Schaefer of the Y. W. C. A. rather than the charges brought by Mrs. Humiston. In view of the unusual pains taken to build up a moral sentiment among the young men in the encampments in the present war and of the careful policing of the immediate vicinity of the camp, we can safely assume that Mrs. Humiston is no nearer right in her general statements than she is in the specific statements that these young women are about to become mothers within less than three months of the arrival of troops at camp.

Obituary

MAJOR RICHARD WEIL, M. D., M. R. C., U. S. A.,

New York.

Dr. Richard Weil, major in the Medical Officers' Reserve Corps and chief of the medical staff at Camp Joseph Wheeler, Macon, Ga., died at the camp on Monday, November 19, of pneumonia. At the outbreak of the war Doctor Weil was commissioned as captain in the Reserve Corps and trained at Fort Benjamin Harrison, Ind., and from there was placed in charge of the base hospital at Camp Joseph Wheeler. Doctor Weil was born in this city forty-one years ago and was graduated from Columbia in 1896, and from the College of Physicians and Surgeons in 1900. After serving as intern in the German Hospital in this city, he studied for two years in the universities of Vienna and Leipzig. In 1903 he was appointed as instructor in experimental medicine at Cornell Medical School and was soon advanced to a full professorship. He was the editor of the *Cancer Research Journal,* pathologist at the German Hospital, associate visiting physician at Mount Sinai Hospital, assistant director of cancer research at the General Memorial Hospital, and a member of the board of directors of the Loomis Laboratory. Doctor Weil was a member of the County Medical Society, the Academy of Medicine, the New York Medical Society, the American Medical Association, the New York Pathological Society, the Association of American Physicians, the American Association of Pathologists and Bacteriologists, and the American Association for Cancer Research. Doctor Weil was one of the most active workers in cancer research and was considered an authority on the subject.

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News Items.

Michigan Physicians in the Army.—Dr. Reuben Peterson, a member of the medical staff of the University of Michigan, who is chairman of the council of the Michigan State Medical Society, announces that 621 physicians living in Michigan have joined the Medical Department of the Army and are now engaged in active service. This is 21 more than the number required by the government.

In Honor of the Memory of Doctor Stimson.—Exercises in honor of the memory of the late Dr. Lewis Atterbury Stimson, professor of surgery of the Cornell University Medical College, were held recently in the auditorium of the college, at Twenty-eighth Street and First Avenue. Tributes to his memory were paid in speeches by Dr. Jacob Gould Schurman, president of the university; Elihu Root, a lifelong friend of Doctor Stimson; Dr. W. Gilman Thompson; President Howard Townsend, of the board of governors of New York Hospital, and Dr. Edward L. Keyes.

Free Cancer Diagnosis Service in Massachusetts.—Through the generous offer of the Cancer Commission of Harvard University a free diagnosis service was established in Massachusetts on October 1, 1917. This service offers to the registered physicians of the State opportunity for the free diagnosis of pathological material removed at operation. Restrictions upon the employment of the exploratory incision in cancer tissue have been announced in connection with this service. It is largely in response to the recommendation of the American Society for the Control of Cancer, and of the Committee on Cancer of the Massachusetts Medical Society, that this work has been undertaken in Massachusetts.

Personal.—Sir Robert W. Philip has been elected to the newly created chair of tuberculosis in the University of Edinburgh. This is said to be the first professorship of tuberculosis to be established in Great Britain.

Dr. Lewellys F. Barker, of Baltimore, was elected president of the Southern Medical Association, held recently in Memphis, Tenn.

Dr. Grover C. Robertson, of Wheeling, W. Va., has been elected superintendent of the State Hospital for the Insane at Spencer, to succeed Dr. C. A. Barlow, who resigned recently.

Dr. Evander M. Sanders, of Nashville, has been elected president of the State board of health, to succeed Dr. R. E. Hart, of Nashville.

Health Officers Needed in Alabama.—The Department of Health of the City of New York has received a letter from the Alabama State Board of Health calling attention to the fact that a number of vacancies exist in the health service of that State. There are at present three vacancies which pay $150 a month, with $75 a month additional expense fund for rural sanitation work. On the first of January these salaries will be increased to $175 a month, with the same fund for expenses in rural work. There are also two vacancies for full time health officers. One of these will pay $3,000 a year, with expenses, with a prospect of advancement, and the other will pay $2,500, with $400 for expenses. Any one who is interested in these positions should write direct to Doctor S. H. Welch, Alabama State Board of Health, Birmingham.

Fellowships Conferred by the American College of Surgeons.—In addition to the 313 regular fellowships conferred by the American College of Surgeons during the year, at the recent annual meeting held in Chicago, honorary fellowships were awarded to Surgeon General Braisted, of the Navy; Surgeon General Blue, of the Public Health Service; Colonel T. H. Goodwin, British Attaché of Surgeon General Gorgas's office; Colonel C. U. Dercle, French representative, and Sir Berkeley Moynihan, British representative to the Congress. The Board of Regents of the American College for the coming year was chosen as follows: Dr. Robert E. McKechnie, Vancouver, B. C.; Dr. William D. Haggard, Nashville, Tenn.; Dr. George E. Brewer, New York; Dr. Franklin H. Martin, Chicago; Surgeon General William C. Gorgas.

Meetings of Medical Societies to Be Held in New York During the Coming Week.—Monday, November 26th, Medical Society of the County of New York (annual); Tuesday, November 27th, New York Academy of Medicine (Section in Obstetrics and Gynecology), New York Psychoanalytic Society, New York Dermatological Society, Metropolitan Medical Society of New York City, New York Medical Union, New York Otological Society (annual), New York City Riverside Practioners' Society, Valentine Mott Medical Society, New York, Washington Heights Medical Society, New York (annual); Therapeutic Club; Wednesday, November 28th, New York Academy of Medicine (Section in Laryngology and Rhinology), New York Surgical Society, New York Society of Internal Medicine; Friday, November 20th, Academy of Pathological Science, New York, Hospital Graduates' Club; Saturday, December 30th, Benjamin Rush Medical Society, New York.

Life Insurance Company Places Vital Statistics at Disposal of Medical Profession.—The Metropolitan Life Insurance Company invites physicians and public health and social workers to make use of its valuable collection of mortality statistics. These statistics present the principal causes of death among white and colored wage earners in the United States and Canada, the material covering over ten million individuals for each of the six years, 1911 to 1916. Death rates are available for each race, by sex and by age period. The company hopes in this way to aid in the study of disease and disability among wage earners. It desires to stimulate medical investigation and research. By offering these statistics to the medical profession and to public health and social workers, the company expresses also its appreciation of the cooperation which it has received from physicians and others who have replied to inquiries and have given detailed information in thousands of cases. This assistance has helped to make the statistics more accurate and valuable. All inquiries should be addressed to Statistical Bureau, Metropolitan Life Insurance Company, 1 Madison avenue, New York.

Meetings of Medical Societies to Be Held in Philadelphia During the Coming Week.—Monday, November 26th, North Branch of the County Medical Society; Tuesday, November 27th, Academy of Stomatology, Jewish Hospital Clinical Society, West Philadelphia Medical Association; Wednesday, November 28th, County Medical Society; Friday, November 30th, Medical Club (directors).

Civil Service Examination for Resident Physician.—The Municipal Civil Service Commission announces an examination for resident physician, male, Grade 2, for which applications will be received at Room 1400, Municipal Building, Manhattan, until November 30th, at 4 p. m. The incumbents of this position are assigned to the medical examination and the routine medical and surgical care and treatment of hospital or institutional inmates and the supervision of internes, in the Department of Correction. Candidates must be at least 21 years of age, citizens of the United States. They must present a license to practice medicine in the State of New York. The position pays a salary of $1,380 per annum and maintenance. For further particulars apply to the Municipal Civil Service Commission, New York.

Philadelphia Medical Society to Discuss Orthopedic Surgery.—At a meeting of the Philadelphia County Medical Society, to be held Wednesday, November 28, 1917, an interesting program has been arranged. Major David Silver who is professor of orthopedic surgery in the University of Pittsburgh and is assistant director of the Division of Military Orthopedic Surgery, Surgeon General's Office, will discuss the surgical aspects of orthopedic surgery in the war, and will detail what has been accomplished, and what his branch intends to do for the service. The civic aspects will be discussed by Major Henry R. Hayes, of the Sanitary Corps. The discussion will be opened by Dr. G. G. Davis, professor of orthopedic surgery in the University of Pennsylvania, and a member of the Orthopedic Advisory Council.

Physicians Needed to Fill Positions in Philadelphia Institutions.—The Pennsylvania State Committee of the Council of National Defense, Medical Section, announces that the committee has applications at this time pending to fill the following positions in hospitals and institutions in or near Philadelphia: Medical, medical superintendent of hospital, salary, $1,500 per annum; two clinical assistantships, psychopathic, salary $600 per annum; assistant bacteriologist, salary $1,000 per annum; anesthetizer, salary $30 per month; visiting physician, tuberculosis; two assistants, contract practice; two demonstrators in anatomy, salary $100 per annum. Surgical, assistant surgeon, salary $3,000 per annum; visiting surgeon, dispensary, no salary; visiting ophthalmologist, no salary; visiting laryngologist, no salary. Internships, general internships; resident physicians in special hospitals, etc. Applicants for these positions should communicate with the secretary by mail, giving school and year of graduation, qualifications, credentials, etc., and salary desired. Dr. Charles A. E. Codman, chairman, Dr. Charles Scott Miller, secretary, 515 City Hall, Philadelphia.

Kentucky State Medical Association.—The sixty-seventh annual meeting of this association, held in Louisville on November 8th and 9th, under the presidency of Dr. Milton Board, of Louisville ,was said to be the most successful in the history of the organization. Interesting features of the program were addresses by Major Henry D. Jump, representing the Surgeon General's office, who gave a talk on the Management of Military Hospital in France, illustrated by motion pictures, and an address on War Wounds, by Dr. George L. Lowey, assistant to Doctor Carrel at the Rockefeller Demonstration Hospital, New York. Surgeon L. D. Fricks, of the United States Public Health Service, who directed the sanitary work of Camp Zachary Taylor during the process of construction, spoke on Sanitation in the Neighborhood of Military Camps. Dr. J. S. Lock, of Maysville, was elected president to serve for the ensuing year, and other officers were selected as follows: First vice-president, Dr. J. L. Barker, of Pembroke; second vice-president, Dr. H. H. Stallard, of Pikeville; third vice-president, Dr. J. C. Douglas, of Franklin; orator in medicine, Dr. Philip Barbour, of Louisville; orator in surgery, Major Dr. B. F. Van Meter M. R. C.; delegates to the American Medical Association, Dr. W. W. Richmond, of Clinton, and Dr. C. L. Wheeler, of Lexington.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

Cancer of the Skin.—A. Rovogli (*Urologic and Cutaneous Review,* October, 1917) advises the destruction of the growth by any possible means. Excision is apparently the best method, but it is not applicable in all cases. The edges of the wound, after resection, may be washed with a solution of bichloride of mercury or chloride of zinc or burned with the actual cautery. Acids, caustics, pastes, plasters, and the galvanocautery have been used as escharotics. Nitric and carbolic acids are of no benefit because they are too irritating. Trichloracetic acid may be used with great benefit in very superficial cancers. It is necessary to protect the surrounding skin with collodion or with adhesive plaster. The acid should be neutralized with bicarbonate of sodium. Chloride of zinc and nitrate of mercury as caustics give good results in small cancers. Carbon dioxide has been used with variable success. Arsenic has been used in the form of pastes and also in alcoholic solution:

Arsenic acid,	1.0;
Alcohol, Aqua dest.,	āā 0.75.

Bougard's paste, consisting of arsenic, cinnabar, corrosive sublimate, zinc chloride, and two other ingredients, has been praised by some authors. The thermocautery and galvanocautery when applied to the point of complete destruction are also of value. X rays, when given by an expert, usually give good results. The author uses a mixture which is prepared at the moment of using and consists of

Formaldehyde,	2 parts;
Lysol,	2 parts;
Ferric perchloride,	1 part.

It forms a thick, greenish mixture which can be applied on a piece of cotton. The healthy skin should not be touched and when it is used near the eyes, nose, or mouth, pads of cotton should be used to prevent the fumes of formaldehyde reaching the mucous membranes. When exposed to the air it turns dark brown and loses its efficacy. The technic of its use is as follows: The surface of the epithelium is first cleansed with soap and water and all crusts and secretions are removed. A five per cent. solution of cocaine or ethyl chloride is applied to prevent pain. The cancer is scraped with a sharp curette and then painted again with five per cent. cocaine. The surface is dried with a sponge and the tampon saturated with lysol, formaldehyde, and iron applied. Five minutes is usually sufficient, but in cases where the cancer has grown deep the cotton saturated with the mixture is left on until the following day. The next day the surface of the wound is covered with an abundant yellowish necrotic mass. This remains from eight to fourteen days, gradually sloughing off from the periphery towards the centre, while the surface is healing up. At times the application is repeated after eight to ten days. For dressing the resulting wound a salve made of one dram of ichthyol and one ounce of unguentine diachylon hebra is employed.

Infantile Diarrhea.—Milton Hahn (*Journal of the Kansas Medical Society,* May, 1917) regards the diarrheas of infancy as disturbances of the digestive functions and of the general metabolism rather than as organic diseases of the gastrointestinal tract. The repeated use of purges, irrigations, starvation, and the so called intestinal antiseptics leads to harm in many cases. The most satisfactory plan is to give an initial period of rest through starvation, allowing only water or weak tea for twelve to twenty-four hours and then to begin with feedings of Finkelstein's albumin milk with the addition of three per cent. of sugar. When the stools become formed the sugar may be increased to as high as ten per cent. if necessary. The use of albumin milk checks fermentation in the intestines, increases the bowel's tolerance for sugar and antagonizes the tendency to acidosis. As soon as the diarrhea is controlled the food should be increased as rapidly as the condition of the stools will permit. When adding carbohydrates they should be selected with reference to their ease of fermentation and to the tendency for the occurrence of fermentation in a given case. Dextrimaltose is the best carbohydrates to use in diarrhea; lactose, the worst. In order from the most easily to the least readily fermented carbohydrates they are lactose, saccharose, dextrin, and maltose mixtures, and starch flour.

Early Treatment of Malaria.—P. Abrami (*Bulletins et mémoires de la société médicale des hôpitaux de Paris,* March 22, 1917) asserts that malaria due to the Plasmodium falciparum, constituting eighty-five per cent. of the cases of fresh infection in Macedonia, can be aborted if treated at the outset. If the treatment fails or is not applied, and the disease becomes chronic, it can in the majority of cases only be cured very slowly, because of the cystlike crescent bodies, which are resistant to quinine. The abortive treatment, aimed toward sterilization of the system before the formation of crescents, is successful in two thirds of the cases, and consists in giving three grams of quinine hydrochloride a day until the temperature returns to normal. The drug acts best when given subcutaneously in an isotonic solution, viz., one made up of ten grams of the quinine salt, three grams of ethyl carbamate, and 200 grams of distilled water. Adrenalin is with advantage combined with the quinine. Thirty mils of the solution, containing 1.5 grams of quinine, to which has been extemporaneously added 0.001 gram of adrenalin, are injected at 8 a. m. and 6 p. m. The injections must be made precisely in the subcutaneous cellular tissue and only in certain regions, viz., on the lateral aspects of the chest and abdomen and on the posterior thoracic surface. If the abortive treatment fails, the treatment consists in a series of courses of quinine limited strictly to the febrile attacks, alternating with tonic measures in the intervals, as iron, arsenic, generous feeding, and absolute rest, together with protection from further inoculation by mosquito netting. At each recurring febrile attack the daily dose of quinine should, as a rule, not to be less than three grams; but as soon as the fever leaves off the drug is discontinued. Even under such treatment, however, the chronic malarial patient with Plasmodium falciparum infection will only exceptionally recover in a malarial country. His early return to a nonmalarial region seems an absolute therapeutic necessity. The author's conclusions are based on experience with 1,980 cases. In algid cases he recommends intravenous injection of one half to one litre of saline solution containing 0.002 gram of adrenalin. By this means, combined with artificial respiration, the lives of four patients were saved; in two of these the apparent signs of death had already been present five minutes.

Breadless Diet in Dermatology.—R. Sabouraud (*Presse médicale,* February 15, 1917) calls attention to the frequency of certain skin disturbances among stout or obese subjects, thin persons, on the contrary, almost never suffering from them. Among these conditions is the chronic furunculous acne of the back of the neck, almost a specialty of the "bull necked" individual. Also included, after the age of forty years, are chronic intertrigo and circinate eczema of the middle of the chest or back or of the scalp or its margins, and even affections known to be parasitic, such as erythrasma. Congestive and weeping eczema of the legs, extremely obstinate and serious in the obese, may also be mentioned. Exclusive of the necessary local treatment, treatment of the underlying obesity is essential in such cases. In many cases, however, inquiry reveals little as regards the diet which might cause obesity, save when the subject of bread is touched upon, when the careful observer soon realizes that a grossly excessive amount of this staple is taken. Many subjects seem to think that excessive eating of bread is an impossibility, and the physician has been prone to overlook this factor in obesity and skin affections, especially since dermatological textbooks fail to mention bread exclusion among the numerous dietetic recommendations. Not only may excessive bread eating be a cause of obesity, but when insufficiently cooked, its central starchy portions are a frequent cause of digestive disturbances which may react on the skin. Such digestive disturbances, which disappear upon ceasing the use of bread, may awaken such gastric attacks or colicky pain as to simulate hepatic colic and require the use of morphine. Almost all cases of eczema of the scalp occurring about the fiftieth year of life are improved by exclusion of bread from the diet, likewise intertrigo and oozing eczema of the inguinal, abdominal, axillary, and submammary folds. Results are seen in this direction even before the obesity has been influenced. All skin affections, whether in stout or thin subjects, accompanied by gastric hyperacidity, are improved, and likewise the gastric condition, by exclusion of bread. Among such affections are temporary or continuous forms of congestion of the face, especially the nose and cheeks, and the acne noted at about the fiftieth year. Bread previously well borne is apt to begin to give digestive trouble at the age of incipient obesity, thirty-five to forty years.

Indications for Operation on Traumatic Head Cases.—Edward H. Nichols (*Boston Medical and Surgical Journal,* October 11, 1917) discusses the lesions produced by trauma of the head and comes to the following conclusions: Uncomplicated edema of the brain almost never requires operation. Slight laceration of the brain with persisting edema sometimes requires operation to prevent cerebral degeneration. The subtemporal method is then the best. Slight extracerebral hemorrhage seldom requires operation, but occasionally demands it to prevent cyst formation; the operation of choice is always skin bone flap. Extensive extracerebral hemorrhage, from rupture of the middle meningeal artery, with or without focal symptoms, should always be operated on by the skin bone flap method. Basilar hemorrhage seldom can be cured by operation. When an operation is performed it should be done on selected cases for relief of pressure, and usually by skin bone flap method. Intracerebral hemorrhage cannot be cured by operation, although pressure may be relieved. Fracture of the skull by itself is of little importance except when compound, when it may produce meningitis unless made aseptic. All depressed fractures involving the entire thickness of the skull should be elevated.

Indications for Laminectomy in Fracture of the Spine with Cord Symptoms.—John B. Hartwell (*Boston Medical and Surgical Journal,* October 11, 1917) believes laminectomy to be absolutely contraindicated in all cases of fracture of the cervical portion of the spine in which there is a paralysis of the intercostal and abdominal muscles; to be contraindicated in all fractures of the spine with cord symptoms of immediate onset, however slight, if other severe injuries are demonstrable, or if the patient presents or has presented signs of surgical shock; and to be contraindicated in cases of fracture of the spine with synchronous cord injury, in which the signs point to a complete crush of the cord, until at least four days have passed, the minimum time in which spontaneous improvement can be expected to manifest itself. If no spontaneous improvement is shown the operation is not likely to offer any real hope. He considers laminectomy to be justifiable in cases of fracture of the spine accompanied by cord symptoms which do not point to a complete cord destruction, if the patient comes under observation within six hours, and if during the period of observation the cord symptoms are progressive. In such cases laminectomy with incision into the cord substance for drainage should be practised at once. Laminectomy is urgently and immediately demanded in those cases of spinal fracture in which cord symptoms are of slow onset and progressive, and in those cases originally free from cord symptoms in which medullary signs appear suddenly. Laminectomy is indicated in those fractures of the lumbar spine in which the cord symptoms indicate injury to the cauda equina, when an attempt should be made to suture the crushed trunks. It is also indicated in those cases of old fractures of the spine in which cord symptoms were originally absent, or slight and of short duration, but in which symptoms of pressure on the cord developed late.

Treatment of Eclamptogenic Toxemia of Pregnancy.—Edward N. Ewer (*California State Journal of Medicine,* October, 1917) gives the following advice: Be sure the patient understands and practises the well known rules of hygiene during pregnancy. Examine the urine every two weeks and take the blood pressure at least once a month; oftener if it is shown to be rising. Eliminate, diet, and alkalinize in the presence of albumin in the urine. If in spite of this treatment the albumin increases, the blood pressure continues upward, and other preeclamptic symptoms are present and becoming more severe, start labor with Voorhees bags. Do not delay too long. Do not demand too many symptoms before acting. If convulsions come on before eight months in the absence of labor, do vaginal hysterotomy if conditions are favorable, especially in multiparæ. After eight months do abdominal Cæsarian section, unless labor is well advanced with dilatation of the cervix and good engagement of the head, when forceps may be used. Convulsions first occurring after labor are treated by most authorities by the abstraction of blood, twenty to thirty ounces. Adjuvants to this treatment are veratrum, alkalies, and morphine.

Active Treatment of Eclampsia.—Gilbert I. Strachan (*Lancet,* September 15, 1917) divides the active treatment of developed eclampsia into the palliative and the radical or operative. The palliative treatment includes the use of sedatives, of which morphine is the best. The initial dose should be thirty mgm., followed, if necessary, by half as much after two hours, and this latter dose can be repeated once more after another two hours. Not more than these three doses should be given. This usually gives satisfactory results and never causes any harm. If it fails, other and more radical measures must be adopted at once. Chloroform is a valuable sedative, but it probably does too much harm for continued or repeated use. The general restlessness between fits is best controlled by the administration of hydrated chloral and potassium bromide, but they can never be trusted to control the fits. On the other hand the administration of paraldehyde is often very satisfactory for their control. It should be given rectally, the initial dose being eight mils, and two hourly repetitions of half that dose can be safely practised. Only one pelvic examination should ever be made in these cases and that should be complete. The patient's surroundings should be carefully arranged to eliminate all sources of stimulation and irritation and good nursing should be provided. The circulatory depressants and vasodilators are not used, but every effort is made to secure proper elimination. To this end the stomach is washed, the colon irrigated, and a hydragogue purgative administered. The most satisfactory purgatives are magnesium sulphate in a dose of four grams daily, or compound jalap powder in doses of six grams as required. Croton oil is disappointing and dangerous. Diaphoresis may be employed, but the pulse must be watched carefully during the application of heat. Venesection with the simultaneous injection of normal salt solution is also of value in eliminating the toxic substances. The rectal administration of salt solution promotes diuresis in the less urgent cases and is of value. If these palliative measures fail, or if the case is too urgent for their trial, the uterus must be emptied promptly. For this purpose no rough method of haste should be employed and if labor has set in the uterus should be allowed to empty itself or delivery may be aided by forceps. When the cervix is not dilated the best plan is to make lateral incisions in it and deliver at once. The associated loss of blood does good rather than harm.

Induction of the Normal Muscle Movements in Intestinal Stasis.—F. H. Morse (*American Journal of Electrotherapeutics and Radiology,* September, 1917) asserts that the sinusoidal current, as commonly employed for intestinal stasis, does not effect the muscular invigoration, the constant reversal of the continuous galvanic current, if strong or too long continued, exhausting the reflex excitability of the muscles. If merely ten to sixty contractions to the minute be induced, however, according to the part under treatment, the muscles will be given time to recover between contractions and respond to the successive impulses with greater force. Large abdominal electrodes should not be used, unless one is treating a vaginal or rectal affection. Constipation due to infection, with or without impaction at the splenic and sigmoid flexures, is successfully treated by the use of a rectal electrode curved to pass into the sigmoid and a surface electrode not over three by four inches square, placed over the flexure.

Afterresults of the Interposition Operation.—D. R. Ayres (*American Journal of Obstetrics,* September, 1917), among thirty-seven cases examined after the interposition operation, found only sixteen entirely free of symptoms. There were nine cases of cystitis, sometimes severe, invariably with elevation of the base of the bladder and deep pockets on either side of and behind the trizone. Only one of these patients gave a history of previous bladder trouble, and several had not been catheterized. Incontinence developed after the operation in one case. In two cases the uterine fundus appeared at the vulva upon straining and in two more the prolapse had returned, the uterus having apparently broken away from the anterior vaginal wall. There were two cases of persistent bleeding and two of stone formation in the bladder. Anatomically, the results were better, thirty of the thirty-seven cases showing a perfect cure of rectocele, cystocele, and prolapse. To reduce the chances of cystitis, the floor of the bladder should be left in a smooth condition, and to avoid bulging of the fundus in the floor of the bladder, reduction of the size of the uterus may be necessary. To avoid pocketing of the ureters and lateral depressions, the bladder must be well pushed up laterally. The operation is an unwise procedure during the childbearing age. It is indicated in the lesser degrees of prolapse with cystocele, but contraindicated in third degree prolapse. When fibroids exist or fibrosis is suspected because of profuse, irregular bleeding, hysterectomy should be performed and the other indications met. One should not hope to cure incontinence without strengthening the vesical sphincter. Cystoscopic examination is advisable before and after the operation, together with careful uranalysis.

Inguinal Hernia.—Charles Bennett (*Glasgow Medical Journal,* September, 1917) deems it generally accepted that the great majority of indirect inguinal hernias are of congenital origin, there having been a preformed sac. This view is supported by embryological evidence, while the view that even a few of these hernias are acquired rests on nothing more substantial than belief. On the other hand, the general verdict as to direct inguinal hernia is that it is acquired. To establish a congenital origin for it many cases would have to be produced in childhood, and these are not forthcoming. Since the causative forces cannot be removed, direct hernia should be treated in a specal way. One should remove as much of the sac as possible and erect a strong barrier in front, preferably by opening the canal and carrying the cord forward permanently in front of the external oblique, then stitching the internal oblique, transversalis, and conjoined tendon to Poupart's ligament as far as possible. All tissue round the remaining opening close to the rectus, may be used to fill the gap. The external oblique aponeurosis is then sutured. In addition, Bennett deems necessary some such procedure as that of Davis, who opens the edge of the rectus sheath and sutures the muscle fibres to Poupart's ligament. In several cases he inserted strong silk sutures through the ligament, rectus sheath edge, and conjoined tendon; then, without drawing them too tight, darned the opening, with satisfactory results. Yet recurrence must always be considered a possibility. Indirect hernia being, on the other hand, a congenital condition, no causative force should persist after the operation, the essential step in which is therefore the complete removal of the sac.

Specific Serum Therapy of Poliomyelitis.—John W. Nuzum and Ralph G. Willy (*Journal A. M. A.,* October 13, 1917) describe the method of preparing an immune serum of high titre by repeated inoculation of the horse with cultures of the coccus of anterior poliomyelitis and record the results of its use in a series of 159 unselected cases of human anterior poliomyelitis, occurring during a recent epidemic. The total mortality among these treated cases was twelve per cent. as compared with a general mortality of thirty-two per cent. of the cases in the epidemic which were not treated with the serum. Seven of the patients given the serum were moribund from medullary involvement when admitted to the hospital and all died within a few hours. When these were excluded from the series of treated cases the mortality was reduced to 7.5 per cent. Ten patients were treated in the preparalytic stage and all recovered without paralysis. The serum also arrested the progress of paralysis in cases in which it had already begun to develop, though it had relatively little influence in causing the disappearace of the paralyses which had developed. The serum was given slowly intraspinally by the gravity method after the withdrawal of an equal or greater amount of spinal fluid, the dose having been from five to ten mils for a child. Simultaneously from ten to thirty mils were given intravenously. The injections were repated at intervals of twenty-four hours, the guide being the absence of a fall in the temperature, which usually dropped at once following the first dose or two. The average total amount of serum given to each patient was between forty and seventy-five mils, though in some cases as high as 150 mils total were given in as short a time as seventy-two hours. The serum produced typical mild serum disease in about a third of the patients. The serum was used without any preservative and was not inactivated before injection. In no case did it cause any ill effects.

Bakers' Yeast in Skin and Gastrointestinal Diseases.—Philip B. Hawk, Frank Crozer Knowles, Martin E. Rehfuss, and James A. Clarke (*Journal A. M. A.,* October 13, 1917) recall the fact that yeast has been used therapeutically from time to time since the early days of medicine and state that there have been several waves of enthusiasm over its curative properties in many forms of disease. There has been very little careful investigation of its therapeutic value and the present paper is a summary of the results obtained from its use in a series of ninety-one cases of skin or gastrointestinal disease. It proved specially beneficial in furunculosis, acne vulgaris, rosacea, and certain other skin lesions and in constipation and gastrointestinal catarrh. In many other cases than those suffering from these conditions the use of yeast was followed by an improvement in the patient's general condition, although the special condition was often not benefited. The usual dose of the yeast was from half to one cake of Fleischmann's compressed yeast three times daily after meals. The yeast was given in water, beef tea, or orange juice. It was found that in many conditions the use of killed yeast was as effective as that of the fresh, living product, but in constipation the living yeast was the more effective. Where gas formation was present the killed product was less likely to increase it than the living.

Combined Vaccination with Multiple Vaccines.—Aldo Castellani and Frank Taylor (*British Medical Journal,* September 15, 1917) report the results of their investigations in man and animals of the effects of inoculation with multiple vaccines. They used combined vaccines containing the organisms of typhoid, both paratyphoids and cholera; the first three with those of Malta fever; typhoid, the paratyphoids, cholera, and plague; a similar vaccine with the organism of Malta fever substituted for that of plague; and a vaccine containing all six organisms. In each combination the several organisms were present in the following numbers of millions: typhoid, 500; each paratyphoid, 250; Bacillus pestis, 500; and cholera and Malta fever, each 2,000. These combined vaccines proved harmless and did not produce more severe reactions than single vaccines made from any one of the organisms, except that wherever Bacillus pestis was present the reaction produced by this organism was moderately severe. The agglutinins produced for each of the organisms in the mixed vaccines were not less than those produced for any one of the organisms used separately. The method of using multiple vaccines had the very great advantage of enabling soldiers to be protected against a number of communicable diseases by two inoculations given one week apart, instead of by many extending over a number of weeks.

Effect of X Rays on Bacterial Diseases.—Christopher Kempster (*Lancet,* September 15, 1917) concludes from his own experiments and those of others that the x rays have little or no direct destructive action upon bacteria. On the other hand it has been amply demonstrated that their use in bacterial diseases in man and in animal inoculations does aid in the cure of disease or prevents the infection of the animal. The author believes that this action is due to a combination of the property of x rays to stimulate phagocytosis and their property of damaging microorganisms so that they lose the the power of multiplication and are more readily destroyed by the action of phagocytes.

Treatment of Vincent's Angina.—E. Emrys-Roberts (*British Medical Journal,* September 15, 1917) recommends the use of the following lotion in cases of Vincent's angina:

Hydrogen peroxide,	150.0;
Wine of ipecac,	12.0;
Glycerin,	20.0;
Water to make	250.0.

The lotion should be thoroughly applied to the entire buccal cavity and will clear up the throat condition in one to two days and the gingivitis in about six days. The hydrogen peroxide loosens the purulent exudate and inhibits the growth of the anaerobic bacillus; the ipecac may have a more or less specific action on the spirochete; and the hygroscopic properties of the glycerin aid in the penetration of the preparation into otherwise inaccessible regions. In practical use the mixture has proved most valuable.

Serum Therapy in Acute Lobar Pneumonia.—Arthur Bloomfield (*Bulletin of the Johns Hopkins Hospital,* October, 1917) presents a study of eleven cases of lobar pneumonia, in which the Type I pneumococcus was isolated from the blood or sputum of the patients who were given serum treatment. A preliminary desensitizing dose of one to five c. c. was given, either subcutaneously or intravenously. The serum, warmed to body temperature, was injected intravenously by gravity at the rate of two to four c. c. a minute. Five patients showed pneumococci in the blood before treatment, and after serum treatment the blood of four of the patients became sterile. In the remainder of the patients the blood showed no organisms on admission, and none developed later. It is therefore concluded that serum therapy is effective in preventing the development of septicemia, and in sterilizing the blood. A study of the agglutinins in eight cases gave such dissimilar results that it appears that the titre of the patient's serum is an uncertain guide to the efficacy of the treatment. Clinically, there was no striking change in the course of the disease which could be attributed to the serum, as all but one of the cases cleared by lysis at about the normal time, between the seventh and twelfth day. Most of the patients had to remain in the hospital longer than usual on account of the severe relapsing serum disease, and it was noted that many of the cases showed marked rises of temperature during convalescence with slow resolution, not only in Type I infections, but in those due to the other groups. Concerning the serum reaction, only three cases showed any reaction immediately after receiving the serum, and five cases showed very severe late reactions. Two of the patients showing a reaction after the initial injection presented the picture of acute anaphylactic shock. With the exception of the serum reactions, complications developed in only one case, which showed an abscess of the abdominal wall. Resolution was delayed in three instances. These cases do not indicate clearly the curative value of serum therapy. Only one case seems to have been definitely saved by its use, but there was but a single case which showed a spread of the pneumonic lesion after the serum had been used. In most of the cases, however, treatment did not begin until after the fifth day, so that it was impossible to obtain an abortive termination of the pneumonia, which would have been more suggestive of effective treatment.

Gynecology in the Care of the Insane.—Alice M. Smith (*Northwest Medicine,* September, 1917) relates her experience in a large institution for the care of the insane and points out that remarkably few of the female inmates are found to be free from some more or less severe gynecological disorder. Among the commonest of the disorders are the various forms of inflammation of the vagina and associated glands, the cervix, and the uterus, both of its mucosa and its wall. A host of other conditions are present which may cause more or less chronic irritation and nervousness. It has been found that the prompt and efficient treatment of those conditions amenable to simple measures and productive of physical annoyance to the women has given most gratifying results in the reduction of the patients' excitation and secondarily in improving their mental states. The investigations are yet very incomplete and the results are merely suggestive, but it would seem from them that much help can be given to insane women by gynecological treatment directed to the removal of chronic causes of nervousness and mental excitation.

Treatment of Scoliosis.—Frank E. Peckham (*Journal A. M. A.,* October 13, 1917) contends that scoliosis is due to a softened state of the bones and ligaments, apparently arising from some disturbance of the calcium metabolism, and that the weight of the head and trunk is merely a secondary factor in its production. Since the thyroid gland is generally believed to preside over calcium metabolism, and since many cases of scoliosis occur in persons obviously rachitic or presenting symptoms of hypothyroidism, the administration of thyroid extract was tried with pronounced success. It may be used in other cases, presenting no definite symptoms pointing to a defect of the gland's function. In addition to the use of thyroid extract the extracts from others of the endocrine glands may prove of value. Combined with this glandular therapy aimed at the fundamental cause of the disease, there should be mechanical removal of the weight of the head and trunk from the spine, which is best accomplished by the use of properly fitted braces. These should be such as to allow the patients to get about fairly normally. Their use should be supplemented by treatment by exaggerated body flexion over a curved frame and simultaneous rotary traction.

Miscellany from Home and Foreign Journals

War Nephritis.—C. E. Sundell and A. T. Nankivell (*Lancet*, September 15, 1917) discuss the clinical aspects, pathology, and etiology of this common military affection, based upon their personal study of 250 cases. The more striking symptoms of the disease usually appear almost suddenly, but careful questioning reveals the fact that most patients have had slight prodromal symptoms such as headache, backache, a cold, or fatigue, for several days previously. The characteristic symptoms are as follows: There is always some edema of the face and it may involve the entire body. It is commonest, however, in the face, feet, hands, lumbar region, scrotum, and abdominal wall. The edema is present at the very beginning but usually disappears rapidly, often by the third or fourth day. With the edema the skin has a red flush like mild sunburn. Some degree of dyspnea is almost constant and it may be the first symptom and come on suddenly while the patient is doing his usual duties. It is greatly exaggerated by mild exertion. It usually lasts for several days and may persist after the edema has gone. Headache is present in all cases and is usually frontal, though it may be occipital, and is rarely vertical. It usually lasts a long time, although it is one of the earliest symptoms to develop. Cough and mild bronchitis are of very frequent occurrence. Backache is almost constant but seldom severe and is localized to the loins. Pains in the limbs are common but transient and not severe. There may be suppression of the urine or oliguria for the first few days, followed by polyuria which continues after the edema has been removed. Albuminuria is a constant early manifestation, but is very variable in severity and may be strikingly transient. There may be gross hematuria in less than half of the cases at the first, but it may also be quite persistent. There are usually a few days of moderate fever with little change in the pulse rate. In mild cases the blood pressure is usually about normal, but in severe ones it may rise to as high as 210 millimetres Hg. Bronchitis and uremia are the only common serious complications. Uremia usually begins early in the disease and is marked by the typical symptoms. If convulsions occur very early the prognosis is usually favorable. The most typical pathological findings in the disease are those in the urine, which consist a variable degree of albuminuria, the presence of all forms of casts, red and white blood cells, and most characteristically large endothelial cells containing one or more nuclei, several vacuoles, and a granular protoplasm. They may be of any shape but are usually spherical, and may be found in all stages of degeneration. The blood picture is that of a large mononuclear increase with slight eosinophilia. Pathologically the kidneys of fatal cases show an irregularly distributed diffuse acute nephritis. No other characteristic post mortem features are found. Several theories have been put forward as to the etiology of this condition, but the only one which has much to support it is that the condition is a nutritional disturbance due to some dietary deficiency. The prognosis is good.

Rectal Crises of Nontabetic Origin.—A. MacLennan (*Glasgow Medical Journal*, September, 1917) describes a little known condition characterized by sudden attacks of extremely severe pain in the sacral region, occurring more frequently in males and at ages ranging from sixteen to fifty years. There is no associated tenderness, pressure tending rather to give relief. Occasionally the victim is wakened from sound sleep by the pain, but commonly the latter arises during defecation, especially if accompanied by straining. At the close of defecation the pain ceases. At times the pain is such as to cause syncope; at its height a general tremor or rigor occurs, with a sensation of cold. Examination during an attack in two cases showed a fine fibrillar tremor of the internal sphincter. Piles constitute an etiological factor. The condition is held to be a neurosis, though affecting persons not of neurotic temperament. The best treatment consists in the inhalation of a dozen drops of chloroform from a handkerchief. Morphine by suppository or hypodermically gives relief, but acts too slowly and is dangerous. A hot rectal douche is rapidly effective. Prophylaxis consists in regulation of the bowels and removal of chronic piles.

Tetanus Treated in Home Military Hospitals.—David Bruce (*Lancet*, September 15, 1917) presents the fourth analysis of the results of treatment of 100 consecutive cases of tetanus and reviews the death rate in this series as compared with those of the preceding groups. In 1914-15 there were 231 cases analyzed, with a mortality of nearly fifty-eight per cent.; in 1915-16 the mortality was forty-nine per cent. in 195 cases; from August to October, 1916, it was 36.5 per cent. in 200 cases; and from October to December, 1916—the present series—it was only thirty-one per cent. in 100 cases. Not only has the mortality fallen, but also the incidence of the disease among wounded men has been very greatly reduced and the average incubation period has been much lengthened. It is well known that the longer the incubation period the better the prognosis for complete recovery and the present series bears this out strikingly; thus eighty-three per cent. of those died who acquired tetanus within ten days after being wounded; about twenty-nine per cent. died who had an incubation period between eleven and twenty-four days; and only sixteen per cent. of those with incubation periods of more than twenty-four days. Another striking fact was observed, namely, that the mortality was nil among those who acquired only a local tetanus in the region of the wound. All of these changes in the character of the disease and its mortality are directly attributable to the more general use of tetanus antitoxin, given as a prophylactic immediately after the receipt of the wound. So far as the therapeutic value of the antitoxin is concerned in the treatment of the developed disease, the results are so far inconclusive, and the same may be said of the matter of choice of the mode of administration in treatment and of the use of multiple prophylactic doses.

Etiology and Development of Nephritis.—William Ophüls (*Journal A. M. A.*, October 13, 1917) says that there is a diffuse nephritis in which the glomeruli are primarily involved, though there may be a subsequent and secondary involvement of the other renal tissues. This glomerular nephritis is due to a general sepsis which arises from some focus of infection. If this focus is discovered early and removed the nephritis may be recovered from completely, but in many cases the continued presence of the infected focus makes the nephritis a progressive disease with ultimate fatal outcome. The condition is a true nephritis as the lesions are typically inflammatory in character. Three forms of the disease can be recognized: the acute, the subacute, and the chronic. The focus of infection may occur anywhere in the body but one of the commonest focal infections, specially in the chronic types, is a chronic suppurative tonsillitis without material enlargement of the tonsils and due to a diplostreptococcus. Lesions quite similar to those seen in man can be produced in animals by the intravenous injection of many different bacteria, even such as are not pathogenic. The symptoms of the three forms are given by the author and are those generally recognized as nephritic.

Cancer Decalogue.—The Standing Committee on the Control of Cancer of the Massachusetts Medical Society (*Boston Medical and Surgical Journal*, October 11, 1917) has prepared the following "decalogue": 1. The classical signs of cancer are the signs of its incurable stages. Do not wait for the classical signs. 2. Early cancer causes no pain. Its symptoms are not distinctive, but should arouse suspicion. Confirm or overthrow this suspicion immediately by a thorough examination, and, if necessary, by operation. The advice, "Do not trouble that lump unless it troubles you" has cost countless lives. 3. There is no sharp line between the benign and the malignant. Many benign new growths become malignant and should, therefore, be removed without delay. All specimens should be examined microscopically to confirm the clinical diagnosis. 4. Regarding the precancerous stage, chronic irritation is a source of cancer. The site and the cause of any chronic irritation should be removed. All erosions, ulcerations, and indurations of a chronic character should be excised. They are likely to become cancer. 5. Early cancer is usually curable by radical operation. The early operation is the effective one. Do not perform less radical operations on favorable cases than you do on unfavorable ones. The chances for a permanent cure are proportionate to the extent of the first operation. Make wide dissections; incision into cancer tissue in the wound defeats the object of the operation and leads to certain local recurrence. 6. Late cancer is incurable, though not always unrelievable. Radium, x rays, ligation, cautery, or palliative operations may change distress to comfort and may even prolong life. 7. All chronic lumps in the breast should be removed without delay. Benign tumors can be removed without mutilation. Examine all specimens microscopically. An immediate microscopical examination is desirable since, if positive, it permits a radical operation at the same sitting. A radical operation performed ten days after exploration is almost never successful in curing cancer of the breast. 8. Any irregular flowing from the uterus demands thorough investigation. Offensive or even very slight serous flows are especially suspicious. Curette and examine microscopically. Amputate all eroded cervices which do not yield promptly to treatment. Do not wait for a positive diagnosis. 9. Cancer of the digestive system is difficult of early diagnosis and therefore unfavorable in prognosis. All persistent and recurring indigestions, more especially if attended by change of color and loss of weight, and any bleeding or offensive discharges demand prompt and thorough investigation. Do not wait for a positive diagnosis. 10. Any warts, moles, or birthmarks which enlarge, change color, or become irritated should be removed promptly. They are likely to become cancer. Do not wait for a positive diagnosis.

Pain in the Arm.—Walter M. Brickner (*Journal A. M. A.*, October 13, 1917) contends that a very large proportion of the cases of pain in the upper arm are due to the presence of a subdeltoid bursitis and are surgical so far as their treatment is concerned. The condition causing the pain may be a partial fracture of the greater tuberosity or a partial rupture of the tendon of the infraspinatus, but in all cases it is associated with a bursitis of the subdeltoid bursa and often also with the presence of a lime deposit beneath the bursa and in or on the supraspinatus tendon. The affection may be provoked by a sudden slight strain of the shoulder oi it may come on without any definite cause. It is marked by pain in the upper arm, often made worse by abduction or elevation of the arm, and sometimes present only when such movements are tried. In very severe cases the pain may radiate down into the forearm and is often mistaken for neuritis, which is further suggested by the presence of some degree of deltoid atrophy. The disease may be acute, hyperacute, chronic, or chronic with exacerbations. In all cases the treatment should be rest in bed with the arm held above the patient's head by a bandage attacked to the head of the bed. The head of the bed is elevated so that as the patient slowly slides down extension is increased. During the acute stage it may be necessary to give codeine and acetylsalicylic acid. After the acute stage has passed off, or in chronic cases when the extension is complete, the aftertreatment is designed to maintain the capacity for extension and to secure external rotation, which are best accomplished by Indian club exercises. In a small proportion of the cases this form of treatment is of no avail and then it becomes necessary to split the deltoid, carefully open the anterior wall of the bursa, free any adhesions which may be present, incise the posterior wall and remove any lime deposite present and repair any tear in the tendon. Then the posterior wall is closed, the interior of the bursal sac coated with a thin film of petrolatum, the anterior wall closed and the wound sutured in layers. The arm is then put up in a position of extension, usually by means of the elevated head of the bed and tying the wrist to the head of the bed as just described. This operation is promptly and permanently curative.

Diarrheas Accompanying Gastric Achylia.—Martin E. Rehfuss (*Journal A. M. A.*, October 20, 1917) discusses the several forms of achylia and the relationship between that condition and the diarrheas which often accompany it. The achylia may be due to a number of different causes, each apparently producing a somewhat different type of disturbance. The achylia may also be present throughout the entire cycle of gastric digestion, or may be limited to any portion of the cycle. It may also be found in apparently normal persons, in whom a secretion is formed in the stomach which contains neither hydrochloric acid nor enzymes. Neither achylia nor the injection of partially digested foods into the duodenum necessarily causes diarrhea and it seems certain that some condition other than that of achylia causes the gastrogenous diarrheas. It is probable that this is often some form of infective enteritis. The infection may itself be the cause of some of the achylias. Permanent good results may be obtained in the treatment of achylia by lavage of the stomach, its disinfection if need be, and the administration at intervals of fifteen to thirty minutes of sixty mils of 0.25 per cent. hydrochloric acid for several hours. After several such treatments the patient is given a full meal and this is followed at once by another fractional instillation of the acid. The administration of parathyroid extract is also often of value in cases of obscure etiology.

Infective Jaundice.—Bertrand Dawson, W. E. Hume, and S. P. Bedson (*British Medical Journal*, September 15, 1917) state that this disease has probably been known since the very earliest days of medicine, although it was not recognized as a clinical entity until Cleghorn described an epidemic in 1745. The disease usually begins suddenly with shivering, pain behind the eyes, generalized pains and extreme prostration. There is a fever between 103° and 105° F. which is irregular and falls by lysis in about twelve to fourteen days. In some cases there is a secondary rise of temperature at the beginning of the third week. The tongue is dirty brown and there are anorexia and extreme constipation with a deficiency of bile in the stools. Vomiting is common at the onset and there is frequently some abdominal tenderness. The liver is usually enlarged and tender and the superficial lymphatic glands are often palpable in axillæ and groins. Hemoptysis and hematemesis or epistaxis are not infrequent. Melena and purpura are less common. The jaundice usually begins about the fourth day and becomes intense, along with the development of a herpes labialis. The heart rate is not much increased and the blood pressure is low. There is very commonly a bronchitis, but never a pneumonia. The urine usually contains much bile, albumin, and casts. Convalescence is usually established by the fourth week, but in severe cases it may be much later. The investigations of the Japanese workers, Inada and Ido, proved the cause of this disease to be a spirochete, and this has been confirmed many times by European students of the disease. In the early stages the parasite may be found by careful examination of the patient's peripheral blood, by examination of the blood and liver of guineapigs which have been injected with the patient's blood, or later in the urine of the patient. The diagnosis can be made easily and certainly by means of one or another of these findings. The morbid anatomy of the condition points to its being an obstructive jaundice due to an inflammation of the duodenum and lower portion of the common bile duct. There is also some slight damage to the liver cells, just sufficient to stimulate the abnormal division of the cells. The kidneys show some acute exudative nephritis. The blood shows a secondary anemia with some leucocytosis and a slight polynucleosis. The prognosis of the disease is generally good and the treatment is purely expectant and symptomatic. The disease seems to be transmitted by the field rat, in the urine of which the spirochetes can very often be found. Some immunity can be developed to the disease both in man and by inoculation in animals and it has been suggested that an effective immune serum may be prepared. Such has been tried with some success by the Japanese workers.

Closed, Active Pulmonary Tuberculosis.—Charles Richet, Jr. (*Presse médicale*, September 6, 1917) presents evidence to the effect that active pulmonary tuberculosis is an "open" process from the start, that tuberculosis sputum from the beginning contains tubercle bacilli, and hence that even incipient tuberculous cases transmit infection. In two of his cases, incipient tuberculosis had been clinically excluded, yet bacilli in the sputum imposed the diagnosis, which was confirmed by radiography and the course of the disease. Cases are also adduced in which the physical signs were doubtful but careful sputum examinations settled the diagnosis affirmatively. Repeated examinations are essential, for among fifty-three patients with tubercle bacilli in the sputum fifteen required two or more examinations before the bacilli were detected. Absence of bacilli is of definite value in excluding the disease only after repeated examinations at rather long intervals. Among eighteen cases with incipient, inconspicuous tuberulosis, no less than eight required two or more sputum examinations for detection of the bacilli, and of these five required three or more examinations. Thus, in incipient tuberculosis the bacilli will be missed in nearly one half the cases if but one examination is made, no matter how carefully. Repeated negative examinations permit of eliminating a large number of subjects mistakenly suspected of being tuberculous. Such subjects make up many of the cases brought out as instances of the curative action of new treatments for tuberculosis. In only three probable cases of tuberculosis did the author fail to find bacilli in the sputum. Some such cases occur because the process is limited to the mediastinal lymphatics or pleura. Histological evidence is adduced to show that in the lung tissue itself, excluding the large bronchi, no tuberculous granulation, even only half a millimetre in diameter, can exist without encroaching on the alveolar surface. A tuberculous process sufficiently extensive to impair resonance and alter the quality of the breath sounds cannot possibly exist without entrance of bacillus, carrying granulations into the alveolar lumen. Violent coughing cannot fail to detach some of this infected tissue, which will thereupon appear in the sputum.

Proceedings of National and Local Societies

CLINICAL CONGRESS OF SURGEONS OF NORTH AMERICA.

Seventh Annual Meeting Held in Chicago, October 22-27, 1917.

The Retiring President, Dr. Frederick B. Lund, of Boston, in the Chair.

(*Continued from page 961.*)

Surgery of the Spinal Cord.—Dr. Charles H. Frazier, of Philadelphia, read a paper on surgery of the spinal cord, dealing largely with the neurological problems encountered.

Dr. Allen B. Kanavel, of Chicago, in discussing this paper presented a lantern slide demonstration of twelve patients operated upon for traumatic injuries of the spine. Ten of these dealt with fractures of the spinal column causing pressure symptoms on the spinal cord. The results to be obtained even in cases operated upon some months after receipt of the injury varied with the site of the fracture. Injuries of the cauda equina presented the best prognosis. In several of these cases the bladder function had been restored, sensation greatly improved, and motor power much improved, so that the patients were able to walk with a cane, whereas they had previously been bedridden. He emphasized that the greatest care must be used not to injure the spinal cord. Whereas brain tissue might be handled with some impunity, the slightest injury to the spinal cord during the operation was followed by serious results. Two gunshot cases were shown, one in which the bullet had been imbedded in the cauda equina for four years. This was dissected out with care and the patient ceased to complain of the serious pains that he had had and his motor power improved markedly. The second case was one in which the bullet was lodged within the spinal canal at the junction of the base of the skull with the atlas. The patient complained of inability to flex and extend the head without great pain. An incision was made through the mouth and the posterior wall just to the inside of the posterior pillar, since the bullet lay on the anterior portion of the spinal canal. The bullet was removed and the patient made a satisfactory recovery.

Surgery of the Stomach.—Dr. William J. Mayo, M. R. C., U. S. A., of Rochester, Minn., stated that thirty per cent. of all cancers of civilized man were in the stomach, and that this condition was uncommon in primitive man and in the lower animals, although there was no mechanical and secretory difference in the construction of the stomach. He believed that chronic gastric ulcer was not often cured medically, and was not seldom a source of cancer. He called attention to heat as a source of irritation, and was of the opinion that cancer occurred more frequently in man than in woman because man was in the habit of taking his food and beverages hotter than the average woman did. Woman sat at the foot of the table and poured the tea and coffee, served the men of the household first, and drank hers after it had cooled somewhat. Among the Chinese the same rule held true with the rice that was eaten, for the women ate at the second table and the food was cool. It was his opinion that food and drink should not be taken into the stomach hotter than could be borne comfortably in the mouth. The mouth and throat were protected by sensitive nerves, but the stomach was not. Early diagnosis of cancer depended upon the Röntgen examination. The antecolonic end to side anastomosis between the stomach and jejunum greatly accelerated closure. The results of operations for cancer of the stomach were now fairly good and were improving. He reported that 38.4 per cent. were cured.

Dr. A. J. Ochsner, of Chicago, said we were impressed at once with the fact that a condition to which every one was exposed was an important factor in the production of this most fatal of all diseases. We had known for a long time that there was no superficial cancer anywhere which occurred without preliminary irritation, and that this irritation gave rise to disturbed circulation. He was of the opinion that human beings were afflicted with cancer because they were manure eaters. We fertilized our soil and in that way took unclean food into the stomach which produced an irritation. Cancer occurred most frequently at the point at which there was interference with the circulation, and he was convinced that this was a large factor in its production; smoker's cancer occurred most often on the lower lip because the circulation was interfered with owing to the weight of the pipe. Although we had not yet found the organism that caused it, we had found the condition that made it possible for this agent to live successfully under those conditions. He thought we should endeavor to avoid all irritation, "stop boiling our insides," and at the same time insist on having clean food to put into the alimentary canal. He was sure that when that was done there would be an enormous decrease in the incidence of cancer.

Dr. L. L. McArthur, of Chicago, agreed with Doctor Mayo that irritation was a predisposing cause of cancer, and was convinced that irritation made a doorway through which the infective element finally gained access. This atrium he had called attention to in various ways. He was sufficiently neutral to call Doctor Mayo's attention to the fact that the male stomach in Germany had the same frequency of infection as the female, and yet in Germany the man sat at the foot of the table and poured the tea and had his cool. Cancer of the skin had been shown to be due to the yeast plant and had been sloughed off from the great group known as cancer proper. He thought the great lesson to be learned from Doctor Mayo's paper was that the operation formerly considered as formidable was being lessened, and that the extent of the operation continually increased. When hearing Doctor Mayo's remarkable statistics that 38.4 per cent. were cured in that for three years they had lived and were free from evidence of other disease, we were to remember that this represented not the mortality when the stomach was operated upon, but only the mortality which followed selected cases—not cases selected to improve the statistics to be presented to a medical society, but selected cases in which operation could be performed with reasonable hope of success. The diagnosis was very difficult in many cases even after the abdomen was opened, and when the diagnosis was made even then the prognosis could not be accurately made. He called attention to an operation for putting the stomach at rest after operation, especially in cases of cancer of the stomach complicated with gallstones, by inserting a tube into the gallbladder and bringing it outside the abdomen. In this way the bile was prevented from getting into the bladder, salt solution could be introduced into the duodenum, the intestines could be flooded, and the patient could be made much more comfortable. Lantern slides demonstrating this method were exhibited.

MILITARY SURGERY AND THE SPECIALTIES.

General Surgery.—Major Charles H. Mayo, M. R. C., of Rochester, Minn., stated that it was only through medicine that it had been possible to carry on the war for three years. Without thorough medical efficiency the war would have been terminated through disease and infection and we would have probably had brought upon us a very unsatisfactory peace, which would have been far worse than no peace at all. Through medical efficiency this war would be carried on to a termination. When war was first declared the medical men of our country responded to the call for the aid of humanity. Probably 2,000 of them had been helping in England, hundreds had helped in France, Serbia, Russia, and Italy and some few hundred in Germany, and we had their experience to aid us. We were proud, from a medical standpoint, that Germany recognized us by dropping bombs on the hospitals, because we were returning eighty per cent. of the injured back to the front. It was unfortunate that the medical profession had not quite the military standing to associate on an equality with the representatives of France, England, and Italy who were doing the same work. The navy had been recognized and all the men of the army should have it. Congress had given our Surgeon General the highest honor by bestowing on him the rank of major general. Through his sanction and help the greatest post graduate school in medicine in the world had been developed and there were thousands of our medical men in training. Many of the best medical men objected to the training because they did not understand that without it they would not be able to handle the work. The military training of doctors was essential and every camp produced a better lot of men.

The specialists were doing great work in the Surgeon General's Office. Colonel Sir Robert Jones had 5,000 beds and had done most wonderful work in orthopedic surgery; we were going to have a little better work in that line. Reports in over the top fighting showed that about ten per cent. of men received head injuries of some sort; in trench warfare possibly twenty per cent. received injuries about the head of all varieties. There was about ten per cent. of chest injuries, six per cent. of abdominal injuries, and twenty-five per cent. of fractures. There would be plenty of work for every man. The specialties were grouped under three headings: general surgery, general medicine, and the laboratory. Under them came all sorts of reconstruction work. Mobile operating pavilions were being built and connected with them were a few large vans that could be moved about rapidly. They were all standardized and completely equipped with all the necessary paraphernalia for army medical work. Carrel had developed the principle of a clinical agent that would not injure the tissues and Dakin as the chemist had carried out his ideas. Dakin took the old Labarraque's solution of lime chloride and by removing the free alkali made it safe for use. This did not mean that this antiseptic or any other could be applied indiscriminately without common sense and the judgment of the surgeon. There was no great innovation about the care of injured people; there was the modern application of the principles. Men of mature age and judgment were needed for heads of the base hospitals.

Head Surgery.—Major Walter R. Parker, M. R. C., of Detroit, said that he had been asked to speak in place of Colonel Lyster who had been detained in Washington on war duties. One of the first problems to be considered after the sudden expansion of the Medical Corps of the army was to determine how to give the army the benefit of the services of those trained in the special branches of surgery and at the same time construct the necessary organization to make them effective from a military standpoint. One of the steps in carrying out this policy was the grouping of those specially qualified into a unit to be known as Division of Surgery of the Head, the specialties in this group being ophthalmology, otolaryngology, brain surgery, and oral plastic surgery of the face. In the office of the Surgeon General this division was under the direction of Lieutenant Colonel Lyster of the regular corps, and to each subsection a member of the Medical Reserve Corps was assigned. The first duty of the division had been to secure the names of physicians qualified to do the work who were willing to serve. In some instances, particularly in brain surgery and oral plastic surgery there were not enough trained men to meet the demand, so schools had been established where preliminary training was given. Through the activity of this division 589 officers of the Medical Reserve Corps were now on duty or ready to serve, and more than twice that number had signified their willingness to serve. Should the war necessitate the training of 3,000,000 men it was estimated that the number of surgeons required by that section would be over 3,000. Another special duty of the division had been to suggest plans and equipment and to advise on the personnel of a special head hospital of 1,000 beds authorized by the Surgeon General to be erected and operated somewhere in France at the proper time. In that hospital the first work of reconstruction would begin.

It was the purpose of the Surgeon General to establish schools of instruction for all the surgeons in the cantonment hospitals. To assist in this work teachers of known reputation had been assigned to take charge of the various divisions and textbooks dealing with the military aspect of each department were being prepared. The spirit shown by the men assigned to duty in the National Army and National Guard cantonment hospitals had been all that could be desired. In a few instances requests for a higher rank had come to the heads of the various divisions, but only in rare instances had service been refused because of the commission offered. The Surgeon General had authorized him to say that it was the policy of his office to give the higher rank to those of large experience who, on entering the service, were qualified to assume full control of the special service to which they had been assigned. To those in the lower grades it could be assured that merit would be recognized and promotion given whenever it was fitting to do so.

Brain Surgery.—Captain Charles Bagley, Jr., M. R. C., of Baltimore, thought that physicians, in common with others, had failed to appreciate the full force of duty until their great work was divided into small parts. He classified the wounds of war surgery of the nervous system as follows: 1. Tangential wounds, in which the missile, usually a rifle bullet, had passed superficially to the bone, leaving its mark externally in the form of a gutter, with or without fracture or intracranial complication. 2. Penetrating wounds, in which the missile had passed immediately beneath the bone. In these cases the laceration of the dura and brain was naturally inevitable. Bone fragments might penetrate more or less deeply. 3. Direct localized blows by fragments of shell or shrapnel bullets, which had themselves failed to penetrate the skull, but nevertheless had driven fragments of bone deep into the brain. 4. Penetrating wounds in which a missile had entered and remained lodged with the brain substances. 5. Cases in which a rifle bullet had passed across the cranial cavity, the wounds of entry and exit being on opposite sides of the head. 6. Concussion of the spinal cord, in many instances not associated with external signs of injuries. 7. Compression of the spinal cord when a detached spicule of bone was driven into the spinal cord, these injuries frequently differing only in degree from those produced directly by a projectile. 8. Direct localized injuries resulting from fragments of shell or shrapnel in which there might be extensive local destruction and often a considerable amount of blood clot. 9. Wounds or injuries of the peripheral nerves, of varying degrees, again divided into a small group in which the nerve injury was of primary importance, and much larger group in which the injury of neighborhood structure was of far greater significance.

The problems in the care of this varied group were to combat shock and to use promptly whatever revisional operative work might be indicated, to combat infection, and to remove foreign bodies as intelligently as possible. The x ray had been of tremendous assistance in localization and also in directing the removal of fragments. The giant magnet had a limited value and was capable of great harm. Herniæ cerebri had proved particularly difficult to treat successfully. Bony defects of the skull and "crippled brains" were not of immediate importance, but indicated to a small degree the tremendous problem of reconstruction which would fall to the division of brain surgery after the war. He made an earnest plea that every possible means be used to reduce the occurrence of epilepsy. The present very small corps of neurological surgeons would have to undergo expansion now so conspicuous in all branches of the service. A plan had been formulated for training the men who were capable and willing to undertake this special work and schools had been established at various places under the direction of skilled neurological surgeons. After receiving intensive fundamental training they would be capable of special clinical training in Europe. A book on *War Surgery of the Nervous System* had been compiled by Major M. C. Seelig in which the complex subject matter had been condensed. For over three months they had been steadily compiling a list of candidates for this special branch but were still seriously in need of surgeons. The work must be undertaken in an unselfish and selfsacrificing manner, but if properly done the compensation upon completing might be summed up as follows: To the individual soldier, the best service; to the Medical Department of the army, a small part of the great task well done; to scientific research, the advance that would necessarily come if all specimens were carefully preserved and correlated for post bellum study; to the civilian population, all the advantages incident to the wider dissemination of a broader surgical knowledge; to the individual surgeon, active in the work, the satisfaction of having done his part.

Ophthalmic Surgery.—Major James Bordley, Jr., of Baltimore, said that his committee had been authorized on April 26th, and since that time without an intermission of a single day it had been working in Washington in an advisory capacity on the many ophthalmological problems of the army. A complete catalog of nearly 9,000 ophthalmologists in the country had been prepared and they had been able to hand to the Surgeon General the names of over 1,400 men who had signified their willingness and were qualified to serve. More than 300 had been commissioned and more than 200 ordered into active duty. They felt convinced that when the American army was in the field the Surgeon General's plans for ophthalmic service would be found adequate. They had caused to be manufactured for the first time in the United States the soda glass necessary in the manufacture of glass eyes, which heretofore had been manufactured exclusively in Germany, and a member of the committee acting independently had devised a plan for protecting eyes against injury, which they believed would be of far reaching value. One member of the committee had been called into active service and assigned to the division of physical reconstruction and reeducation to assist Major King, the chief of the division, in preparing plans for the reeducation of the blind and deaf soldiers. A group of twelve of the leading educators of the blind in this country had been asked to study this complex question with him and on their suggestions Major King had arranged for the field service in France and for the establishment of a teaching institution in this country. Everyone who had given thought to the subject of reeducation of the injured soldier knew that it was essential for the army to hold him in the military service until his reeducation was completed. In order to do that the Surgeon General must have supervision over every stage of the process, and the organization that would have the responsibility of the placing of an injured soldier in a trade or profession should likewise be directly under the Surgeon General who was charged with the duty of preparing that man physically for the battle of life.

Surgery of the Ear, Nose, and Throat.—Dr. C. W. Richardson, of Washington, reviewed the appointment of the various committees and stated that the first activity engaged in by the Subcommittee on Otolaryngology was the listing of all the known specialists in that branch of medicine throughout the United States and the preparing of an index catalog. They had discovered that 852 men were available for service; of this number forty-three had been assigned to National Army cantonments, thirty-four to National Guard cantonments and 149 others had accepted their commissions and were awaiting assignment to duty. The number that had been assigned to go abroad was thirty-two, and there were 852 others who had signified their willingness to accept service but had not yet taken out their application papers. Other activities of this committee had been the standardization of otolaryngological instruments; aiding the Surgeon General to assign the proper personnel to cantonments and base hospitals; the revision of hearing requirements for entrance to the army; the assembling of tests for malingerers, and the near perfection of an ear protector. A special hospital and dispensary building for the Section of Surgery of the Head had been planned for the National Army cantonment and for the base hospitals abroad. All of these activities had received the approval of the Surgeon General.

A manual of war surgery of otolaryngology was being prepared by Major H. W. Loeb, of St. Louis, and several trips had been made by members of the committee to various cities to explain to otolaryngologists the activities of the committee and awaken interest in the members of this branch of medicine to their opportunities for service. The committee had also been enabled to suggest the names of the men to be assigned to each of the cantonment special hospitals and they were now preparing a roster of the men to be placed in the base hospitals abroad.

(*To be concluded.*)

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Letters to the Editors.

A JAPANESE EXPERT'S COMMENT ON NEW YORK'S HYGIENE.

New York, *November 8, 1917.*

To the Editors:

In answer to your letter dated November 2d, asking me to state my impressions of the medical and sanitary conditions in this city, I shall be delighted to have the opportunity to express my opinion on what I have seen here and what conclusions I have drawn as a result of the last few days' inspection.

I believe that I am not mistaken when I say that true civilization, material or moral, should be achieved through sound hygienic conditions of the citizens who share the cooperative community life as well as through sound sanitary conditions of the community itself. The standard of civilization is measured by the amount of money appropriated for the welfare of the community, and I have expected to find the wonderful civilization of this country and especially of this city due to excellent sanitary and hygienic conditions. It has been my desire to study these conditions thoroughly in order to develop my theory. I am indeed gratified to know that the death rate in New York is only 1.3 per cent., and it seems to me quite clear that this figure indicates beyond doubt that a high degree of civilization necessarily implies sound hygienic conditions. This extremely low death rate I believe is due to the following conditions enforced by the Board of Health: the efficient methods of sewage and garbage disposal; the prohibition of the use of soft coal; supervision of infectious diseases and the research on these lines; the activities of the tuberculosis clinics; the development of child hygiene; and the higher ideals about individual and social hygiene. In connection with tuberculosis work, compulsory reporting of cases of tuberculosis by private physicians seems to me an excellent measure.

I have found my few days' investigations in this city very useful and profitable. I have been a constant and earnest student of sanitation and I believe I have received some valuable points as a result of my visit. I wish to express my sincere appreciation to Dr. Haven Emerson, Dr. Charles F. Bolduan, and Mr. Sears for their kindness, and I hope that your activities will contribute to the welfare of the citizens of the city of New York.

Yours very truly,

M. Yamane, M. D.

THE NEW NARCOTIC LAW.

New York, *November 19, 1917.*

To the Editors:

Your attention and that of your readers is directed to the blanks just issued by the State Department of Health to physicians who have registered with this department in compliance with the requirements of the last narcotic law of this State. This registration is necessary for the privilege of dispensing what are called habit forming drugs. In this blank will be found a formal demand for the registration of patients by physicians which is not called for under the law as passed, but which was actually rejected by the lawmakers when offered by its proponents, the department of health of this city and the so called "judges committee on narcotic addiction." This demand relates to information asked by the State Department of Health under the column headed Disease or Habit, together with the explanatory footnote "distinguish between a prescription of a drug given to alleviate pain due to an incurable disease, or one given because of habit." Whether this extra legal procedure on the part of this administrative body is due to ignorance, oversight, or any other cause, it is equally reprehensible and should be resisted.

The registration with the local health authorities of all persons using opium in the course of an acute illness while under the care of a physician for a period of three weeks, though demanded by the department of health, was properly defeated. This was a breach of professional privilege to be resisted at all hazards. The registration of addicts with the State board of health was a compromise. It was agreed to by the representatives of all the medical bodies except one. This one I had the honor to represent. We were against every form of registration which violated professional secrecy, a stand that is now justified by this attempt to exceed the legal requirements of the present law, to what end remains to be discovered.

John P. Davin, M.D.

Resolution to be introduced by Dr. John P. Davin at the meeting of the Medical Society of the County of New York, November 26th:

Whereas, For several years the medical profession has had to contend against measures and methods, which were inimical to the welfare of those connected directly or indirectly with the private practice of medicine, and such measures and methods were promulgated without the knowledge of the organized medical societies, and

Whereas, This condition should now be obviated by the Medical Society of the County of New York by offering to the incoming municipal authorities its point of view on these conditions, and assuring such authorities of our desire to cooperate with them in every way, in order to avoid a continuation of this condition, therefore, be it

Resolved, That there be appointed from the body of the Medical Society of the County of New York a regularly organized medical body of this city, a committee to carry out the spirit of this resolution, as a matter of duty on the part of this society to its members in defense of their rights as lawful practitioners of medicine.

Book Reviews.

[*We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.*]

The Child in Health and Illness. By Carl G. Leo-Wolf, M. D. Illustrated. New York: George H. Doran Company, 1917. Pp. 207. (Price $2.00.)

This is a well presented work intended for the guidance of the young mother, or even the older mother, for that matter. There is not much that is new in the volume, but that is not to be expected in a work of its nature. The author's opinions on the feeding of infants differ somewhat from those generally held in that he advocates no night feedings at all, even in the first weeks, and places the intervals between feedings at four hours, five feedings being given each day. He does well to lay much stress on the great importance of maternal nursing and holds that not less than ninety per cent. of women can nurse their infants if they are properly guided. The importance of maternal nursing and the dangers of formula feeding are emphasized by the author's choice of the expression, "unnatural feeding" for the more common term of artificial feeding. In the dietaries given for older children the importance of fats and carbohydrates is well brought out and the desirability of sharply limiting the protein intake emphasized. An excellent feature of the whole work, both for normal and ill children, is the fact that the author refrains from instructing the mother in a way that might prevent her calling a physician in time. In fact the discussions are designed chiefly to enable the mother to keep her child in health and to recognize at once when a physician should be called. Throughout the book the advice is well tempered with common sense and is given in a way to inspire confidence on the part of the reader. Some well deserved strictures on the general class of so called infant foods are given and should suffice to warn the sensible mother from the dangers of trying to make use of the type of produce. Altogether the volume is an excellent representative of its class and the physician will not go astray who recommends it to any of his patients who are mothers or who soon expect to become mothers.

The Principles and Practice of Dermatology. Designed for Students and Practitioners. By William Allen Pusey, A. M., M. D., Professor of Dermatology in the University of Illinois, Emeritus; Dermatologist to St. Luke's and Augustana Hospitals, Chicago; Member of the American Dermatological Association. With fifty-four plates and four hundred and sixty-six illustrations. Third edition, New York and London; D. Appleton and Company, 1917. Pp. xxxv-1253.

There is little that the reviewer can say to add to the reputation and prestige of this authoritative book on the vastly important and rapidly progressing subject of dermatology. The six years that have elapsed between the second and third editions have seen many new conceptions in dermatology. This third edition of Doctor Pusey's work has been completely revised; scarcely a department has been untouched. Some subjects have been rewritten and some new developments have been added. Among these are: The Changes of the Blood in Skin Diseases; Autoserum Therapy; Fulguration; Infantile Erythema of Jacquet; Dermatitis from Hair Dyes; Dermatitis from Formaldehyde; Gonorrheal Eruptions; Balanitis, Gangrenosa; Ulcus Acutum Vulvæ; Espundia; Acauliosis; The Skin Lesions Produced by Bees, Ants, Flies, and Gnats; Blue Atrophy of the Skin; Dermatitis Nodularis Necrotica; Dermatothalasia; Nævus Anæmicus; Zoniform Ectases; Purpura Annularis Telangiectodes; Leucemia Cutis; Sarcoid; Trichotillomania; Moeller's Glossitis; Periadenitis Mucosa Necrotica. The departments that have received most attention are pellagra "because of the importance which it has assumed for us here in America," and syphilis "because of the epoch in our knowledge of that disease which the last few years represent." In Doctor Pusey's treatment of the topic of venereal diseases, we are particularly impressed by his discussion of the social aspect of the problem. In this, as throughout the whole work, the scientist is ever mindful of the broad, human, social justification of his science. In one respect we wish the work were different. Dynamic trends are being appreciated in all departments of science. Static, descriptive views are being abandoned, not because they are not valuable—what architect would build without a blue print or plan?—but because they lack the energetic viewpoint of function. The function of the skin in its largest aspects is neglected. Hence the book remains too descriptive and static. A feature of more importance in a book on this subject than on any other probably is the illustrations. Doctor Pusey has made extensive and most intelligent use of this valuable adjunct in the presentation of his material. Excellent as were the cuts in previous editions, we note that there are many first rate additions; in fact we might say that at first glance this feature seems to be the most conspicuous in this new edition. The classification and arrangement of the material and the prodigality and excellence of the illustrations make it one that the general practitioner should have to keep up in a general way with progress in this important specialty and the dermatologist must have to continue his practice.

Births, Marriages, and Deaths.

Born.

Buerger.—In New York, N. Y., on Thursday, November 15th, to Dr. Leo Buerger and Mrs. Buerger, a daughter.

Married.

Bohannan-Lenz.—In Witte, Ill., on Tuesday, November 6th, Dr. Hugh R. Bohannan, of Jerseyville, Ill., and Miss Agnes Christine Lenz, of Jerseyville, Ill.

Gould-Black.—In Watertown, Conn., on Saturday, November 10th, Dr. J. Howard Gould, of Bayonne, N. J., and Miss Mabel Grace Black.

Marsh-Goodwin.—In Bangor, Me., on Thursday, November 8th, Dr. Stanley N. Marsh, of West Enfield, Me., and Miss Evelyn A. Goodwin.

Died.

Bartholow.—In Urbana, Ill., on Wednesday, November 7th, Dr. James M. Bartholow, aged seventy years.

Currie.—In Cambridge, Mass., on Saturday, November 10th, Dr. John Z. Currie, aged seventy years.

Gillard.—In Sandusky, Ohio, on Sunday, October 14th, Dr. Edwin Gillard, aged seventy-two years.

Henkel.—In Hammond, La., on Friday, November 9th, Dr. William E. Henkel, aged fifty-six years.

Jolley.—In Canandaigua, N. Y., on Thursday, November 8th, Dr. William F. Jolley, of Troupsburg, N. Y., aged sixty-nine years.

Morrison.—In Atchison, Kan., on Friday, November 2d, Dr. Paul S. Morrison, of Bancroft, Kan., aged thirty-three years.

Murphy.—In Fort Wayne, Ind., on Saturday, November 3d, Dr. George Murphy, aged seventy-nine years.

Nash.—In Cortland, N. Y., on Tuesday, November 6th, Dr. Eugene B. Nash, aged seventy-nine years.

Nickerson.—In Camden, Del., on Saturday, November 3d, Dr. Harry A. Nickerson, aged fifty-one years.

Pollard.—In Evansville, Ind., on Thursday, November 1st, Dr. William Shannon Pollard, aged seventy-nine years.

Ray.—In Monterey, Tenn., on Wednesday, October 31st, Dr. Robert L. Ray, aged fifty years.

Reade.—In Springfield, Ohio, on Thursday, November 1st, Dr. Thomas M. Reade, aged sixty-nine years.

Reed.—In Alhambra, Cal., on Wednesday, October 31st, Dr. Boardman Reed, aged seventy-two years.

Saunders.—In Columbus, Ohio, on Monday, October 29th, Dr. George L. Saunders, aged forty-three years.

Sherman.—In Cleveland, Ohio, on Tuesday, October 30th, Dr. Harris G. Sherman, aged sixty-one years.

Smith.—In Bellefontaine, Ohio, on Saturday, November 3d, Dr. Emmet L. Smith, aged fifty-two years.

Stolp.—In Wilmette, Ill., on Friday, November 2d, Dr. Byron C. Stolp, aged sixty-six years.

Tallman.—In Chicago, Ill., on Saturday, October 27th, Dr. William Lewis Tallman, aged fifty-nine years.

New York Medical Journal

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Original Communications

SURGICAL TREATMENT OF WOUNDED MEN AT ADVANCED UNITS.

An Outline.

BY H. M. W. GRAY, C. B., A. M. S.

Aberdeen, Scotland,

Colonel, Royal Army Medical Corps.

It is impossible to convey on paper anything but the feeblest impression of what the conditions for surgical work are at a very advanced unit during a big "push." For the surgeon who comes fresh from the choice surroundings of palatial, well ordered hospitals, who has hitherto had all things made easy in virtue of his training and surroundings, and who may be so cocksure of good results that he dreams of performing marvelous operations at the front and that men will stand dumbfounded at his skill, for him there will be much to learn and much to unlearn. The place he takes in the military scale of things, the conditions of his work, the dimly lighted dugout dressing station, the curtailed facilities, the dust, the wet, the sweat, the mud, the blood, the noise, the bustle, the numbers of wounded, the appalling wounds, the hopeless shock will open his eyes, test his capacity and resource, and tend to break his heart as never before. Here is no brilliantly lighted and fully equipped theatre, here his patients do not come before him in spotless apparel, here he has not unlimited skilled assistance, here no aseptic ritual is possible, here he must be content with very simple things. And through it all he must keep cool, he must hurry, he must be thorough, he must be gentle and careful in every possible way. His is the responsibility to make or mar a man for life. Often his patients, shattered in nerve as well as in limb, can give but feeble response to his utmost efforts, so that a little slip in judgment, a little unnecessary exposure for them, a little lack of ordinary comfort even, or a little rough or unconsidered handling will tip the scale and send them to that death which their foes have desired. The same remarks in a modified way apply to units farther back.

COMPARISON OF NAMES OF UNITS.

American.		*British.*	
1. Regimental dressing station	=	1. Regimental aid post—R. A. P.	
2. Ambulance	=	2. Advanced dressing station—A. D. S.	Field ambulance
3. Field hospital	=	3. Main dressing station—M. D. S.	
4. Evacuation hospital	=	4. Casualty clearing station—C. C. S.	
5. Hospital train	=	5. Hospital train.	
6. Base hospital	=	6. Base hospital, "Stationary" or "General."	

What an opportunity! What a necessity for each equipping himself as best he can so that he may give of his best to those who deserve it more than ever men did! In so far as we fail to accommodate ourselves to these unavoidable conditions or neglect opportunities of acquiring for ourselves or imparting to others the special knowledge which will help our wounded men and fail to put that knowledge into practice, so far do we fail in duty to our country. These papers represent, in a modest way, a desire to help. They form a plain unvarnished statement of what a varied experience of three years leads me to think are the best methods of treating the wounded man from a professional point of view. Administration is not dealt with although administration cannot be dissociated. Any attempt to divorce administrative from professional work is fraught with great danger to the success of our calling. If the administrator neglects the advice of his clinical brother his faulty administration may result, during a big battle, in the loss of literally hundreds of lives and of limbs which would otherwise have been saved.

In a communication such as this one cannot enter into details with regard to all procedures or types of injury. Some are described more fully than others for various reasons. One is impressed by the fact that the methods of treatment which are most successful are those which are simplest and which follow the indications of Nature most closely. The man who can land his patient at the next destination in best condition with the fewest contraptions serves best his country. Some measures described are so simple that were they not so frequently neglected, one would not be justified in drawing special attention to them. Principles of surgery remain the same, but the application of them is perforce adapted to local conditions. Original minds will always devise the means to the

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end in the greatly varying and new conditions which this war will continue to force upon them. The surgery of the field ambulance, of the casualty clearing station, of the hospital on the lines of communication in France, and of the base hospitals at home differ widely from each other. Even the most skilful hospital surgeon of civil life must pass through an apprenticeship at any of these places before he becomes of the same value as his house surgeon of three years ago who has qualified in war surgery in France. Even three weeks' experience makes a wonderful difference in one's ideas.

The importance of preventive work.—As indicated, enormous difficulties beset advanced work, especially during severe fighting. The conditions of warfare demand, to put it bluntly, that wounded men shall be got out of the way so that supplies of reinforcements, ammunition, and food to the fighting line are not interfered with. But while the primary function of advanced medical units is to clear the wounded as rapidly as possible, yet the enormous importance of preventive work must constantly be kept in mind. The effects of treatment of the wounded man at the earliest stages are reflected in the whole course of his subsequent illness. The influence of efficient early treatment cannot be overestimated. The prevention of early complications gives a man a good start in his struggle for life and limb. Only the most necessary procedures can be carried out, but these must also be the best possible. Intercommunication with units farther back will alone insure efficiency and improvement. Reports as to the condition in which patients arrive there should be furnished and treatment at the more advanced units should be amended, if necessary, according to the indications given. The three great factors for evil which have to be combatted in these early stages are shock, hemorrhage, and sepsis.

Shock.—The intense surgical shock from which some of the wounded suffer must be seen in order to be appreciated. Primary shock from the injury is aggravated by unavoidable early handling and by transport of the patient. This fact is brought home to us in a negative way by the observation that a man with a fractured femur who lies out for a day or two after being wounded, arrives at the casualty clearing stations in better condition on the whole as regards pure shock than those who are picked up and transported without delay. A comparatively smooth railway journey has a deleterious effect. How much worse is the effect of transport down uneven trenches, over rough country, and along bumpy roads! A wounded man left lying out keeps his limb at rest and recovers from the first shock of the injury. We must pay close attention to these indications because other considerations compel the immediate removal of the patient to a place where he can be operated upon to the best advantage. We must prevent the summation of painful stimuli, which transport inevitably provides, from producing shock, and this from being, when superadded to shock already present, too much for the patient's endurance. The most important elements in combatting the development of profound general secondary shock are rest and warmth. Rest during the journey is procured by proper fixation and efficient support of the injured part and prevention of jarring bumps. Complete rest to the patient is out of the question at this stage and therefore the aid of sedatives has to be invoked, and should be used as early as possible in order to render him less sensitive. Morphine is very valuable, but its purely depressing effect on the vital centres and on metabolism, which are in these cases already too often at a low ebb, constitutes a disadvantage. Omnopon, or any similar extract of opium under a different name, is preferable, because this depressing effect is not manifest to anything like the same degree. Two thirds of a grain of omnopon is equivalent in sedative action to about one fourth to one third of a grain of morphine. At this point one may say that much of the benefit of the sedative is lost if the patient is at once sent off on his journey. He should be detained, if possible, for fifteen minutes or more, until the injection has taken effect. Every dose of morphine or omnopon and the time at which it is given, should be noted on the field medical card. One cannot say that any other treatment of shock hitherto tried at this stage has proved of much value.

The position of the patient during transport is often important in that it may obviate a sudden jar from an uneven road. For example, a patient with a fractured humerus will often ride more comfortably sitting than lying. Jolting is dissipated by his yielding body before it reaches the arm. In the same way some head patients with considerable, though unsuspected, damage to the brain often arrive as "sitters" in extraordinarily good condition. Sudden sharp bumps or lateral movements of the head are particularly bad in cerebral injuries. Such patients must usually be sent lying down. An extra pillow or folded blanket should be put under the head and, especially if the man is unconscious, side supports should be used to prevent coarse lateral movements during lurches of the car. In the case of fractured femur the Thomas's splint should be slung in some way for similar reasons.

Acute sepsis.—Shock, hemorrhage, and acute sepsis react on each other in marked fashion. The sepsis we have most to fear in very early stages is caused by gas forming bacilli. Gas gangrene develops most rapidly in parts which are deprived of circulating oxygenated blood; witness the extrordinary rapidity with which the whole body becomes affected after death. Gas bacilli thrive best in lacerated, devitalized muscular tissue. An injury which wounds a muscle or group of muscles and simultaneously cuts off the blood supply paves the way for rapid gas infection of the whole muscular tissue involved. Pressure of a blood clot renders the walls of the wound anemic. Inflammatory effusion, both liquid and gaseous, soon completes a steadily widening vicious circle. If gas bacillus is present in a wound, shock or severe hemorrhage predisposes to the development of the infection owing to the slowing and enfeeblement of the circulation. If the main vessel of the limb is injured the danger is still greater, because efficient collateral circulation is so delayed that before it is established the infection often obtains a firm hold. Prolonged use of a tourniquet has sometimes a disastrous effect. A further trouble is that shocked cases frequently slide rapidly into a condition of profound toxemia. The patient is too often with the devil and in the deep sea!

Hemorrhage.—One need not do more than draw attention to the fact that hemorrhage predisposes to shock and will aggravate shock already present. On the other side, the only good thing that can be said of shock is that by enfeebling the circulation it may prevent so great a loss of blood as might otherwise occur. Always remember that every ounce of blood is of the greatest importance to the wounded man. An extra ounce lost may be like, although in an inverse way, the fatal straw on the back of the camel.

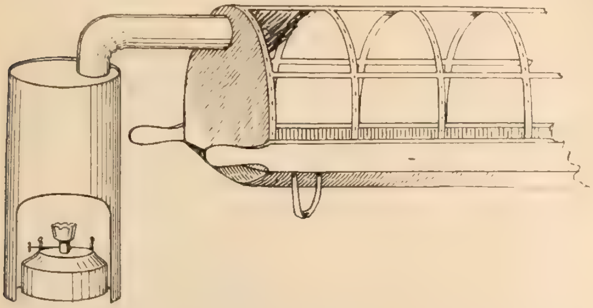

FIG. 1.—Improvised apparatus for warming patients rapidly. The stove is made of an ordinary oil drum in the side of which a hole is cut. The cradle is made of aluminum straps ordinarily used for making splints. The end is closed by tin sheeting through which the stove chimney projects slightly. Tin also covers part of the top of the cradle. When in use the cradle is covered by blankets Quite a small lamp suffices.

Shock in slightly wounded.—Such remarks apply to all severe wounds, but you will be impressed by the number of slight wounds in which the element of shock becomes manifest, sometimes in a very marked degree. It is remarkable also how in some patients shock suddenly develops, especially during transport, for no evident reason. It seems that their power of endurance suddenly breaks down. Such men are often of a highly strung nature, excitable and talkative while being dressed. They do not usually complain of pain and there may be no hemorrhage or other shock producing factor present. It may be that a sufficient injection of sedative will prevent the onset of such shock. I believe that "shell shock" plays a large part in these cases, and is a contributory cause to the somewhat sudden death which may occur later. The surgical lesion *per se* is not sufficient to explain the death. Other gross organic lesions of hitherto recognizable type are also absent.

Fluid nourishment.—The exertions and experiences which these men have come through make a great demand upon their vitality. It is therefore necessary that they should have food and drink in plenty and of an easily digestible nature. In serious cases digestion seems sometimes to be inhibited. Wounded patients, who are likely to be operated on when they arrive at casualty clearing stations, should be given only warm fluid nourishment. Hot tea is probably the most favored beverage. In a case of severe shock, it is not much good giving the patient even drinks until he has been warmed up. If they are given he will probably vomit and the exertion of doing so is bad for him.

Warmth.—All wounded men in winter and most seriously wounded men even in summer are apt to suffer from cold. All possible precautions and remedies must be taken against this. Especial care should be exercised in dressing rooms, where patients' bodies are uncovered in order to have their wounds dressed. Stoves are not much use if draughts blow in through imperfect walls, windows, or open doors. Hot water bottles and heated ambulance cars have saved many lives. The soldier's water bottle makes a good substitute for the ordinary hot water bottle. The curtains of the ambulance cars should be closed in cold windy weather except when a patient is actually being loaded. Blankets may have to be pinned or otherwise fixed on restless patients or during transport over particularly rough roads. Remember that cold strikes through the canvas of the stretcher. The apparatus shown in the accompanying sketch (Fig. 1) provides a very useful means of rapidly warming patients at advanced and main dressing stations. It will be appreciated that the best results in resuscitating bad cases are got by those who give the greatest attention to all the points mentioned. At the same time fussy interference cannot be too much deprecated. Do what is absolutely necessary and then leave the patient alone.

General treatment of wounds.—Patients cannot be kept long at field ambulances. Owing to the numbers of patients who pour through field ambulances during severe fighting it is usually impossible to do anything for them except what is absolutely necessary to carry them on with the greatest safety to the casualty clearing stations. Arrangements for operations, the splints and dressings used must be of the simplest form combined with efficiency and must be capable of rapid application. Everything should be practised in "peace" times on the same plan as is to be carried out in "strafe" times, so that when severe fighting occurs everyone knows exactly what to do. Speeding up of peace procedures is then all that is necessary. It is difficult for inexperienced officers to realize that wounds which look fairly clean are really so hopelessly and virulently infected as the ordinary shell wounds in France are. The general principles in dealing with such wounds will be discussed in a later article. These prinicples cannot be applied satisfactorily in

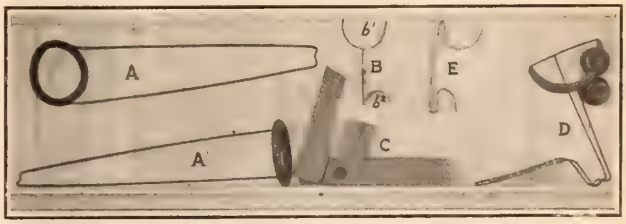

FIG. 2.—Arm splints. A^1 A^2, small Thomas's splints, right or left. In A^2 the ring has been turned over so that the arm may be brought to the side during transport. The ordinary form, A^1, necessitates support of the upper extremity in an abducted position. B, modified Depage humerus splint, right or left. Telescopic adjustment is possible. The crutches, b^1 b^2, rotate so as to allow more accurate adjustment to the axilla and forearm. A narrow sling supporting the wrist keeps the elbow flexed to less than a right angle so that the splint does not usually require fixation by bandages. C, Bowlby's wooden angular splint, right or left, with hinged posterior shutter. D, Jones's extension splint for humerus, right. E, extemporized splint made of aluminum strap, left, applied in same manner as B.

a field ambulance during heavy fighting. It is necessary to emphasize strongly at this stage that wounds must not be closed either by suture or by occlusive dressings. The infection which is carried into these wounds develops often at such a rate that in a few hours patients may succumb to its virulence. These effects are delayed when a few loose folds of gauze, preferably impregnated with some antiseptic of prolonged action, are inserted so that the surfaces of the wound in the depth, as well as the skin edges, are kept apart. Previous to this, of course, clot and gross infective material should be rapidly removed. Care must be taken that "corking" of the wound by this gauze does not occur, so as to cause retention in the depth.

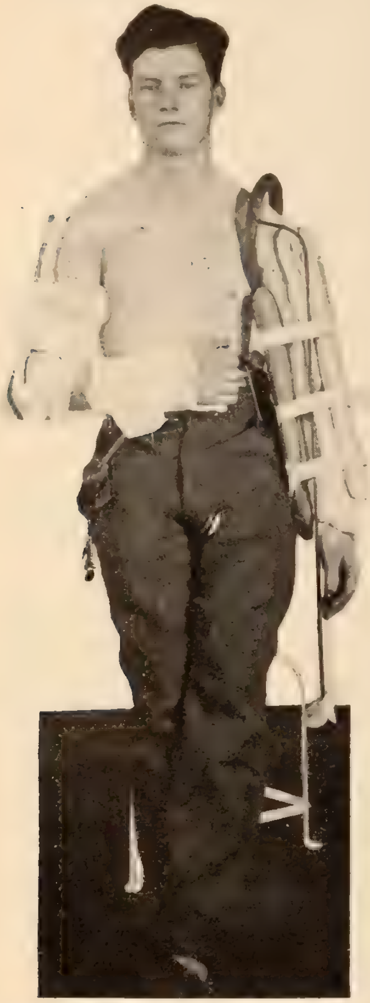

Fig. 3.—Application of Bowlby's splint, right; a spica bandage round the shoulder and sling have been omitted. Thomas's small splint for transport, left. In the latter, the patient is sent down as a "lying" case.

Small entrance and exit wounds caused by undistorted rifle bullets require usually no further attention than disinfection of the skin, application of dressing; and, when time permits, fixation in a splint. If severe swelling of the limb has occurred from hemorrhage in the depth so that the circulation in the distal parts of the limb is imperiled, the patient should be sent on at once with a special note drawing attention to his condition.

Minor shell wounds.—It is impossible to estimate by inspection the depth to which a missile has penetrated. If, however, the wound admits a finger the wound may be explored by it, and if the foreign body is felt at a depth of not more than one and one half inches the wound may be opened up and the foreign material, metal, clothing, etc., removed. At the end of the operation the wound should always be wider at its orifice than in the depth. In such wounds Bipp, recommended by Professor Rutherford Morison, or one of the recently introduced nonpoisonous antiseptic pastes should be smeared on and a fold or two of gauze inserted in the wound. Such operations can usually be done without the aid of chloroform or ether. Nitrous oxide gas anesthesia or infiltration of the line of incision with local anesthetic is preferable.

If a foreign body cannot be felt no attempt at extraction should be made. This ought to be done only after localization by x ray. Even though the foreign body can be felt under the skin, if it has traversed the soft parts for more than the above mentioned distance it should be left alone, for removal at the casualty clearing station, otherwise the major operation involved is apt to be either unfair to the patient under the unsuitable conditions or to be inefficient in removing infection. Where fracture has been caused, also, no operative interference should be made. Even such interference as described must not be carried out unless there is sufficient time to carry it out thoroughly. It must be remembered that such minor wounds are really of great military importance, because while they are at first comparatively trifling, yet if not treated early and efficiently, preferably at casualty clearing stations, the development later of gas infection may entail the performance of a major operation which of course incapacitates the patient from duty for a longer time than would otherwise be necessary. Such operations should therefore only be done at the field ambulances by a competent surgeon who has had considerable experience of casualty clearing stations or base hospital work.

Large gaping wounds should be cleared of clot and foreign material and gauze made up with antiseptic as described laid loosely into the recesses. Particular care should be taken not to close down flaps of tissue without such gauze having been previously placed under the flap. In this type rapid incision with a scalpel will often be of greatest assistance in allowing this gauze packing to be done effectively. The important thing in these wounds is to prevent the apposition of infected surfaces. All visible foreign bodies or displaced loose fragments of bone should be removed, whatever the type of the wound, especially in those in the neighborhood of large vessels and those which project into joints or from the surface of the brain. It is evident that during transport these would increase

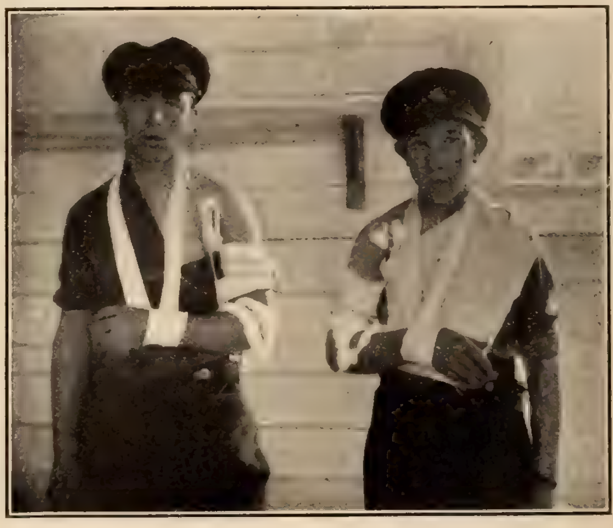

Fig. 4.—Application of Depage's splint, right, and improvised aluminum or strong wire splint, left.

the amount of damage done or even cause fatal hemorrhage. It is of the greatest importance to support large wounds of the extremities by splinting material. Hemorrhage, effusion, pain, and development of sepsis are thereby minimized.

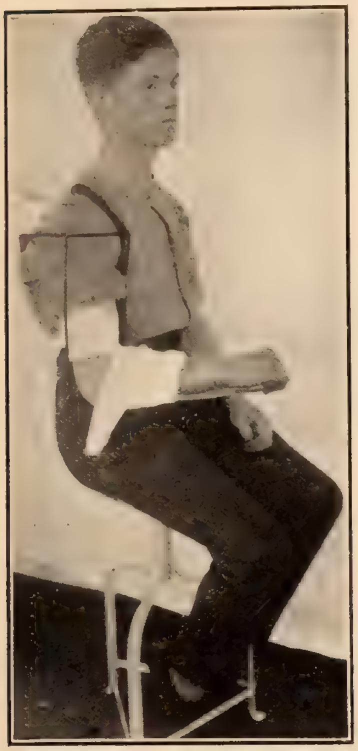

Fig. 5.—Application of Jones's extension humerus splint. The shirt sleeve has usually to be cut away.

Dressings and antiseptic applications to wounds.—Plain sterile gauze and wool are the best for a field dressing. Infection is carried deep into the wound by the missile and after the skin has been disinfected no superficially applied antiseptic has any effect in preventing the development of such infection. There is doubt that mere syringing through with antiseptics is so beneficial as some think. It may actually distribute the infection to parts previously uninfected. Dressings impregnated with mercurial preparations have been the cause of severe blistering when applied after the skin has been painted with iodine. Such medicated dressings entail unnecessary expense. Sterile gauze can be impregnated on the spot, if thought desirable. Picric acid, three per cent. in alcohol, has been found superior to tincture of iodine for early application to these wounds and has entirely replaced its use in most hospitals immediately behind the line for general disinfection of the skin. If soap and water and picric acid solution are available, no other of the ordinary antiseptics need be provided for work at field ambulances during a battle. Pastes made up with paraffin, containing antiseptics in different proportions and varieties, may be used to great advantage at this stage for smearing the inside of the wound. Bipp—bismuth subnitrate, one part; iodoform, two parts; liquid paraffin, q. s. to make a thin paste—has been popular and wonderfully efficient, but it is desirable, at all events in recent wounds, that less poisonous substances should be used. Pastes made with brilliant green or flavine, chloramine-T, and boric acid have given good results, as also has a one per cent. solution of iodoform in liquid paraffin. The last is used to saturate the gauze which is inserted into and covers the wound. It can be used alone or in conjunction with a paste.

Watery solutions of antiseptics, such as eusol, Dakin's fluid, etc., have too evanescent an effect to be of great value in a gauze dressing, while Carrel's method of applying them is unsuitable for many reasons, one being the paraphernalia required. Sphagnum moss dressings are very useful. They are made up in pads which are suitable either for dressings or for padding splints. Cottonwool should be used with due regard to wastage. When applied in large quantities dressings may prevent the discovery of what is, for the patient, a severe hemorrhage.

Precautions in applying dressings.—Wounded parts are apt to swell and because of the interference with circulation thus caused, very serious results may follow in a wound which would otherwise have been slight. It has been found of great importance to support large and deep flesh wounds with splints even though no fracture is present. It is desirable that the encircling bandage be put on after the splints have been placed in position. If extension is applied to a fractured limb this should be made before bandages are applied around the wound. This precaution is taken chiefly because of the swelling which supervenes but one has heard of fatal results following inattention to it in case of fractured femur. The application of extension sometimes dislodges clot occluding a large artery, and in these cases the hemorrhage was obscured by the bulky dressing until too late to save the patient.

Avoid frequent change of dressings.—Patients have been needlessly annoyed by too frequent dressing of their wounds. In badly wounded men the extra pain and disturbance will tend to produce or aggravate shock. Routine interference at every stopping place means waste of time and material and of the energy and endurance of the patient. Without definite indications, therefore, no dressing should be changed. Generally speaking, these indications are the presence of: 1, A first field dressing, usually applied over a dirty or imperfectly disinfected skin In some cases, however, when the dressing is dry and the patient's skin apparently clean in the neighborhood of the wound, the dressing need not be disturbed; 2, soaking of dressing with blood, mud, etc.; 3, unsuitable or imperfectly applied splints; 4, too tight bandages which interfere with circulation, causing swelling and pain; 5, too loose bandages which do not support the wounded part and are allowing the dressings to slip; 6, increasing pain in the part, which may indicate hemorrhage

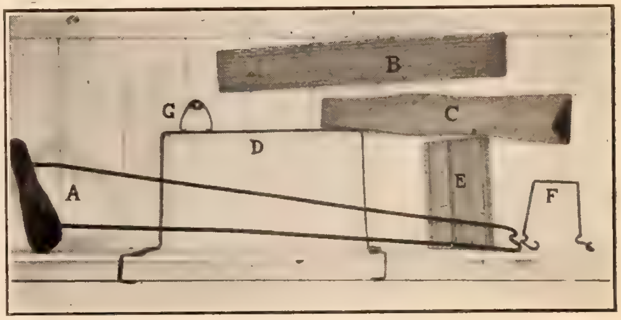

Fig. 6.—Thomas's splint outfit. A, Thomas's knee splint. B and C, supporting back splints. B, Gooch's splinting. C, a shaped "ham" splint. Jones's metal gutter fracture splints, padded with felt, largest sizes, are even more suitable in many respects. D, stretcher suspension bar or frame. E, short piece of Gooch for anterior thigh splint. F, strong wire footpiece. G, Tapson's heel clip from which extension is made.

in the depth or the onset of gas gangrene. In either case the patient should be hurried to the casualty clearing station with a chit or specially colored label drawing attention to his condition.

Operations at aid posts or dressing stations.—It is not advisable under the conditions of this war to make elaborate arrangements for serious surgical operations on patients within the zone of ordinary shell fire, therefore as a routine only such operations as are absolutely necessary should be performed in units in front of casualty clearing stations. Operations for hemorrhage which threatens life and those for the removal of hopelessly smashed limbs are the only ones which ought to be done.

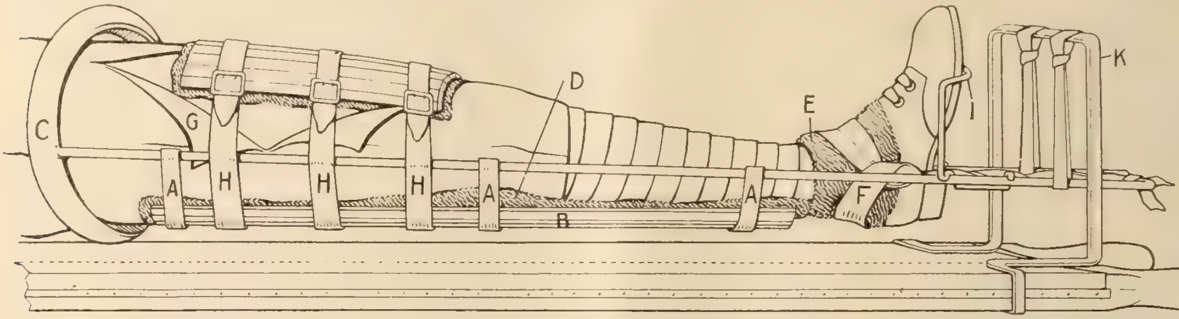

Fig. 7.—Diagram of Thomas's splint outfit applied, without removal of trousers or boot. A, adhesive plaster slings; B, supporting splint; C, Thomas's splint; D, pad graduated so as to cause slight flexion at knee; E, pad round ankle; F, clove hitch round ankle tied over notch at end of splint; G, trousers cut away to expose wound; H, splint straps fixing anterior thigh splint; I, footpiece; K, suspension bar over which two suspensory slings are tied.

Amputations.—Hopelessly smashed limbs which tend to bleed much or which are attached by mere shreds of tissue should be removed. Detachment of the part can often be effected by a few snips of a scissors. Retention of a shattered foot may lead, owing to the pain from dragging and so forth, to severe shock. If the pressure of work is very great all that need be done is to control hemorrhage, and clean and pack the ragged stump with prepared gauze. Even when a more elaborate trimming of the stump is possible suture of the flaps is rarely attended with success; in fact it has repeatedly led to death of the patient from sepsis. Secondary suture when the wound is clean is the safer procedure. This can often be done in a few days if development of sepsis is prevented by careful application of the dressings recommended.

Operations for hemorrhage.—These are sometimes extremely difficult and may demand great daring, but it must be remembered that the patient will die very shortly if active hemorrhage is not checked satisfactorily. Application of a tourniquet for long periods may produce ordinary gangrene, it predisposes to gas gangrene, and always causes pain. Therefore if, because the case is a difficult one and a casualty clearing station is not far distant, the patient is sent on for operation there, the transport should occur without loss of time and a special orderly should accompany the patient in order to control the tourniquet. Sometimes a ligature cannot be applied easily to a vessel which has been caught up by forceps. If the wound is complicated or is a very deep one the patient should be sent on with the forceps *in situ.* Arrangements must obviously be made for the immediate return or exchange of tourniquets, forceps, and other special appliances so that the field ambulance may not suffer for want of them. A type of wound, which, though possibly not severe, has frequently led to very serious results, is one from which steady oozing occurs. The medical officer who first sees such a case may have applied compression and voluminous dressings in the hope that the oozing will stop. The soaked dressings are removed by the next medical officer who see the patient and who reasons in the same way. This may occur even a third time, so that although at no time is the bleeding at all alarming, the patient arrives at the casualty clearing station in a collapsed and anemic condition, having lost in the aggregate a large amount of blood. Such wounds should be opened up and the bleeding, which is usually venous in origin, controlled. In such cases gauze packed directly on the bleeding surface may be the best remedy.

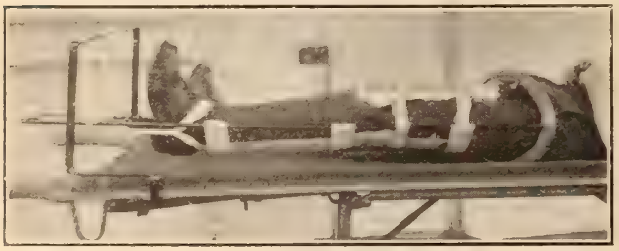

Fig. 8.—Thomas's splint outfit applied without removing trousers or boot. The supporting splint should have been placed a little higher up the thigh.

The use of general anesthetics.—If this is necessary patients should, if possible, be kept for at least twelve hours until they have thoroughly recovered from the effects. Chloroform and, to a less extent, ether predispose to shock; therefore, if the patient is subjected to the comparative rough and tumble of an ambulance journey before their effects have passed off, shock will very readily occur. At casualty clearing stations patients are kept until the effects of general anesthetics have passed off before being despatched even in a smooth running train. General anesthetics are usually unnecessary for "scissors amputations" and for the most of the minor wounds which it may be necessary or justifiable to open up at advanced units. Where deep hemorrhage is occurring the patient should have a general anesthetic. Gas apparatus is out of the question except possibly at main dressing stations or at a few favorably placed advanced dressing stations. It is probably less deleterious to the patient in the long run to cause him short severe pain than that he should run the risk incumbent on the use of general anesthetics. When, for example, setting a fractured femur has to be done, a suitable injection of morphine may be given if necessary and until it has taken effect the patient is left for ten or fifteen minutes, during which time other patients can be attended to. Less than one fourth grain of morphine is rarely of any use.

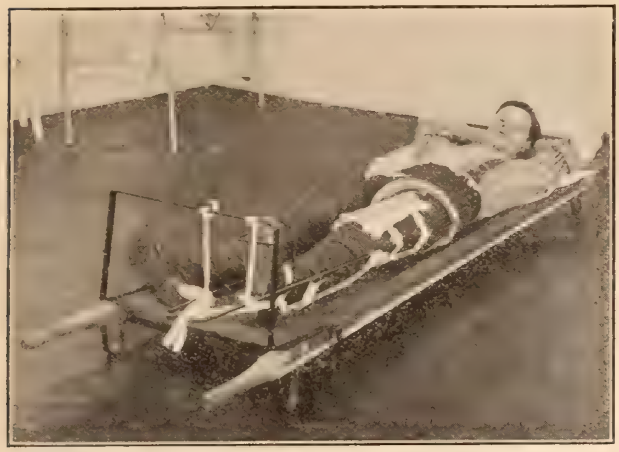

FIG. 9.—Thomas's splint outfit applied without removing trousers or boot.

Fractures.—For transport purposes those splints in which it is possible to apply selfcontained extension are to be preferred. The best example of these is Thomas's knee splint. The simplest splints are usually the best and they should be capable of adjustment with the least possible general disturbance of the patient. When fractures are handled a pull on the affected limb should always be kept up so that the fractured surfaces are prevented from rubbing together unduly. It is rarely necessary to administer anesthetics for setting fractures. The opposition of wounded muscles to reduction of deformity is usually easily overcome. In order to provide greatest comfort for the patient during transport the following three points must be attended to: adequate extension, adequate support for the wounded part, and prevention of rotatory movements. The minimum amount of bandaging must be done so that easy readjustment of the splint is possible. Tapes with buckles are often all that is necessary. Long splints ought to be prevented from becoming displaced by fixing them to the skin, or possibly, as in the case of fractures of the thigh, to the Thomas's splint. A strip of adhesive plaster round the lower and upper extremities of a long straight splint will usually be sufficient. The strip may encircle the limb on the distal side of the wound, but proximal to the wound should be applied spirally or in an incomplete circle and not tightly. Care must be taken that the proximal splint strap or turns of bandage do not constrict the limb. A variety of splints must be provided for each limb on account of the varying situation and size of the wound as well as variation in site and extent of the fracture. Amputations for fracture at field ambulances should only be done when vessels and nerves are also destroyed or if gangrene on the part distal to the fracture has already occurred. As a general rule mere smashing of bone, even with extensive laceration of muscle only, is not sufficient justification for early amputation.

Fractures of the humerus.—The splints and their method of application shown in the photographs are those which have been found to be the most valuable. If the small Thomas's splint is used, a well padded anterior and posterior splint should be added for support. For fractures of the shaft, Depage's modified splint is practically always applicable. Jones's extension humerus splint has also been used fairly frequently. If a wound prevents the application of these two, Bowlby's wooden angular splint is then probably as good as any. For fractures at or near the elbow, whether of forearm bones or humerus, the small Thomas's splint is the best. For transport on a stretcher this splint is bent as shown over the edge of a table or stretcher handle, or is provided with a swivel at the ring. A very efficient splint can be made rapidly by bending a strip of thick aluminum or thick wire in the way shown in the photograph; the crutches must be turned at right angles to each other according to the side for which it is used (Figs. 2, 3, 4, and 5).

Fractures of the femur.—Thomas's splint outfit consists of (Fig. 6): 1, Thomas's knee splint; 2, a posterior supporting splint, as Gooch's splinting, a wooden "ham" splint, or Jones's metal gutter splint; 3, a short anterior splint for the thigh; 4, a strong wire footpiece, for preventing wobbling of the foot; 5, a stretcher suspension bar; 6, one inch adhesive strapping, bandage, or splint tapes. This has proved to be the best method of preventing shock and should be used as soon as and whenever possible. The only occasion on which the use of Thomas's splint is impossible is when the site of the wound corresponds with the back or inner part of the ring of the splint; that is, if a wound of the lower part of the buttock or perineum exists. A wound of the groin or trochanteric region need not prevent its use. No other splint or no modification of Thomas's splint has been so successful in bringing these patients in good condition to the casualty clearing stations. Patients with compound

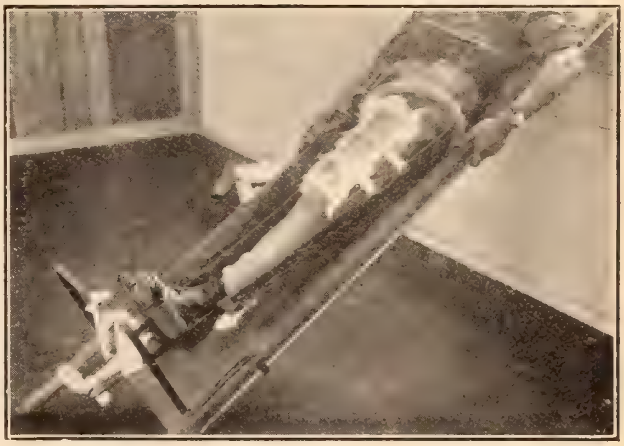

FIG. 10.—Thomas's splint outfit applied without removing trousers or boot. In the absence of a suitable supporting splint, the leg of the trousers has been split down the front and pinned over each bar of the Thomas's splint. Tapson's clip extension is used in this case. The stretcher has been tilted in order to show details.

fracture of the femur bear handling particularly badly. Liston's long splint has been much favored by some. Only very rarely indeed do men treated in this splint arrive without severe shock. One need not detail the reasons. During a recent severe battle the mortality of cases of fractures of the femur at casualty clearing stations was reduced by at least twenty five per cent. even though the comparison was made with the results obtained during previous "peace" times. During this battle period practically every case was sent down in Thomas's splints, whereas in the peace period Liston's and other splints were used as well. The death rate from gunshot fracture of the thigh was at one time of the war about seventy or eighty per cent. and probably over forty per cent. occurred at casualty clearing stations. The death rate at casualty clearing stations during this battle was 15.6 per cent. in 1,009 cases. Before this these patients used to arrive in such a shocked condition that they could not be touched for hours. Previous to the battle the method of application of the splint was widely demonstrated, with the result that only five per cent. of the cases admitted were unfit to be operated on immediately after admission. This was owing chiefly to the presence of severe wounds elsewhere, and to the fact that, the patients having been lying out, the wounds were already in a hopeless state of sepsis.

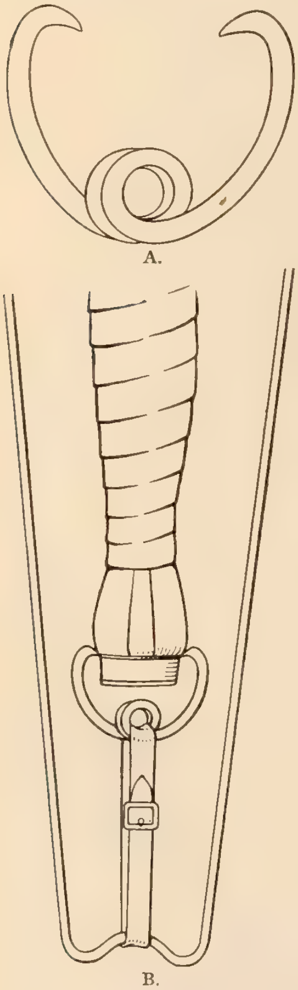

Fig. 11.—Sergeant Major Tapson's spring clip (A) from which extension is made (B).

The fact that such patients bear handling extremely badly has led to the general adoption of the plan of putting on the Thomas's splint without removing either trousers or boots. Great credit is due to Captain K. M. Walker for having thought of this method. The application of the splint will be gathered from a study of the accompanying drawing and photographs (Figs. 7, 8, 9). The trousers opposite the wound are first cut open freely; the splint should be applied and the extension made with a strong calico bandage or puttee before the wound is attended to; the limb is supported behind by the hand of an orderly; the wound is dressed and the supporting posterior splint, well padded so as to flex the knee slightly, is then slung to the side bars of the Thomas. An anterior short thigh splint prevents flexion of the upper fragment and gives greater security. The footpiece is finally fixed in position and prevents wobbling of the foot better than anything else. If the boot has been removed the foot should be well padded before the footpiece is applied. If the boot has to be removed on account of wounds of the foot, extension may have to be made by ordinary adhesive plaster strips applied to the leg above the wounds, but when possible, all things considered, a clove hitch around the padded ankle, knot on the outer side, is most suitable.

When extension is made clot may be dislodged from the lumen of the main artery. As already remarked, death has occurred from this cause in patients previously exsanguine. Therefore, in order to get at the wound easily, no encircling bandage should be put around the dressings before extension is made, and the necessity for immediate digital compression of the femoral should be borne in mind. The extension should be examined at every stopping place and adjusted if necessary. A posterior long supporting splint is better than interrupted slings. Prevention of wobbling of the foot by the footpiece is important. The splint should be slung by two pieces of bandage from the suspension bar. If a suspension bar is not available these bandages may be tied to the traverse of the upper bunk in the ambulance car. The patient's pelvis may be steadied by a broad bandage encircling both pelvis and stretcher, but the splint should be allowed to swing freely, otherwise jarring occurs. Unless there is a distinct indication for changing the dressings of these patients during transport they should not be interfered with except to control extension. Patients who arrive at casualty clearing stations without these points being attended to are always in worse condtion than those who have been properly looked after.

If the suspension bar and the footpiece are not available at very advanced posts, the projecting end of the Thomas's splint should be supported on, for example, a brick, so as to carry the heel free from the stretcher and the foot fixed by a figure of eight bandage. If a supporting back splint is not available, the leg of the trousers should be cut down in front and pinned firmly over each side bar of the Thomas's splint, as shown in Fig. 10. If a patient is picked up on the field, the following device will be found serviceable. A puttee or strong bandage is passed under the perineum and round the head handle of the stretcher on the side opposite to the injury, pulled and tied firmly. A clove hitch is fixed over the ankle and strong extension is made round the foot handle on the same side as the injury. Two or more splints are fixed on the thigh by two strips of bandage or splint tapes. The foot is kept from rotating by the support of bricks, equipment, etc., or the toe of the boot is connected by bandage to each of the foot handles. The pelvis should be bandaged to the stretcher. There are many other methods of making extension from the boot. One of the best is that introduced by Sergeant Major Tapson, R. A. M. C., shown in the diagram, Fig. 11. It is made from thick wire such as can be extracted from the broken up bedsteads found in ruined houses. Splint tapes may be used to make extension.

Fractures of leg bones.—For those in the upper part of the leg Thomas's splint as applied for fracture of the thigh is the most suitable. For those in the lower part of the leg a long back splint with footpiece plus two lateral straight splints, which should bear both on the footpiece and on the back splint, should be applied.

Wounds of joints, especially knee joints.—All penetrating wounds should be splinted. In the case of the knee, if the wounds are not accompanied by fracture a straight gutter splint, reaching from the tuber ischii to the heel, is sufficient. More serious wounds, with fracture, should be put up in a Thomas's outfit.

Head wounds.—The scalp around the wound should be well soaked with picric acid solution. In gutter wounds, any gross dirt, projecting bone, or foreign body should be removed and a piece of impregnated gauze placed to keep the wound open. In a puncture wound no attempt should be made to disinfect the track. In no case should the brain be interfered with except to remove any visible loose bone or foreign body which during transport might cause further damage. Direct pressure by dressings over a hole in the skull should be avoided as it may cause cerebral compression to occur. Rather make a bank of folded gauze on each side of, or all round, the wound so that blood or disintegrated brain can readily escape. Head cases should be propped up when possible. If this is not possible a soft pillow should be placed under the head, and sandbags, pillows, etc., placed at each side to prevent lateral movements during lurches of the car.

Chest wounds.—In view of the success which has recently attended radical operations, severe chest cases should be sent to the casualty clearing stations as soon as possible. Although not so urgent as abdominal cases, yet delay imperils the success of the operation. Men with open sucking wounds and severe intrapleural hemorrhage may be so collapsed or distressed that they cannot be sent on at once. The closure of an open sucking wound brings about very rapid relief and should be done immediately. This closure is best done by suture, with local anesthetics if necessary; by corking the wound with gauze plug, which is prevented from slipping by adhesive strapping; or by occluding the opening with a broad piece of strapping. Administration of morphine helps such patients greatly. A considerable risk must be taken in sending on many of these cases. The worse the wound the sooner will the patient die if the chest cannot be closed. If suture of a sucking wound is made, a note should always be sent with the patient stating that an open wound of the pleural cavity was present and that the patient requires immediate attention.

Abdominal wounds.—These should be sent on at once to casualty clearing stations unless it is obvious that the patient is dying from shock or hemorrhage. It must be continuously borne in mind that wounds of the chest, especially of the lower posterior parts, and wounds of loins or buttocks are frequently associated with penetration of the abdominal cavity. In cases of doubt always treat as if penetration had occurred.

Multiple wounds.—These are apt to be associated with, or to produce, very severe shock. All possible care, therefore, should be taken to prevent or assuage it. The patient should be handled as little as possible. It is often preferable to leave such men absolutely alone for a few hours, simply seeing that they are kept warm. Sedatives may be given if the patient is in pain. Cardiac stimulants are indicated if the circulation is very feeble.

Notes on field medical cards.—In periods of great stress time will be saved in the aggregate by having a special orderly detailed to make notes in the dressing room. The name of the medical officer treating the patient should be put on the card. These notes are essential for satisfactory treatment of the patient in units farther back. The following points are noted: 1, nature and severity of the wounds; 2, presence of shock; 3, dose and time of giving morphine, etc.; 4, amount of antitetanic serum injected. This is given at the advanced dressing station, but should be made certain of at all units further back; 5, a very short description of any operation or special treatment carried out. If foreign bodies or fragments of bone have been removed, this should be stated.

MANUAL TREATMENT OF THE CERVICAL SYMPATHETIC.

By Edgar F. Cyriax, M. D., Edin.,
London.

In 1910 in conjunction with Dr. A. Kellgren-Cyriax, I (1) made a brief communication on the subject of the manual treatment of the abdominal sympathetic. In consequence of an article by Dr. R. K. Smith (2) in which he stated that this method of treatment was the invention of the osteopaths, we made another communication on the same subject which showed that the priority lay with the Swedish school, inasmuch as they had been employing these methods previous in 1840. In this paper I propose to give a few details on the subject of the manual treatment of the cervical sympathetic, inasmuch as in my opinion this agent is employed far too little by the practitioners of mechanotherapeutics.

HISTORY.

Although there is abundant evidence that the treatment of the abdominal sympathetic had been practised by the Swedish school ever since the days of P. H. Ling, 1776-1839, there is hardly any record of the direct treatment being applied on the cervical sympathetic. Such treatment was worked out and systematically applied by the late Henrik Kellgren, 1837-1916, a graduate of the Central Gymnastic Institute, who in the early days of his practice elaborated his methods of frictions and vibrations for the purpose of directly stimulating and soothing nerves. Already in the late sixties he was using his new methods with success. However, hardly anything about the treatment of the cervical sympathetic has found its way into print, and even the methods themselves have received but scant recognition.

PATHOLOGY.

Such conditions as tumors, invasion by abscesses, etc., will not be considered. The pathology of the cervical sympathetic has been studied in man and the results of surgical interference for various conditions, such as glaucoma, epilepsy, and exophthalmic goitre, though up to the present the subject has only been partly elucidated. Various morbid changes in the cervical sympathetic have been found in cases of exophthalmic goitre by a large number of observers (3) and changes in the thyroid gland after lesions of the cervical sympathetic have been recorded (4). These ganglia have been found to be affected in cases of glaucoma (5), and trophic changes of the eye have been found to ensue after extirpation of the superior cervical ganglion (6). On the other hand no changes were found by Hertel (7). Facial neuralgia appears in some cases to be dependent upon anomalies in the cervical sympathetic; surgical interference with the latter has been successfully performed in such conditions (8). Hartenberg (9) considered migraine to be a fulminating neuralgia of the cervical sympathetic; Henschen (10) found tender spots in the latter in ninety-one out of 112 cases in migraine. Isolated cases of tic douloureux cured by massage of the cervical sympathetic have been reported (11), and tender spots in migraine, headache, etc., have also been found by various other authors (12). Degenerative changes in the cervical and abdominal sympathetic have been found in constitutional syphilis (13); similar changes have been identified after sunstroke (14) and in locomotor ataxia. Another way of investigating the pathology of the cervical sympathetic and the posterior cervical nerves is to test by means of applying frictions in the manner to be described below, or else simple pressure. These manipulations in healthy subjects call forth a definite sensation, the exact nature of which can only be gauged by experience. This sensory response is a very reliable index to the state of functional activity of the nerves mentioned, frequently indeed indicating even daily variations in it; this is true both of increase and decrease. This state of affairs is similiar to what holds good for the abdominal sympathetic.

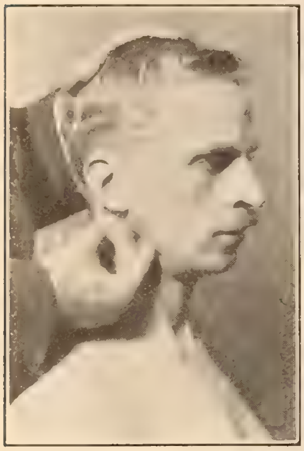
FIG. 1.—Direct manipulation on the superior cervical sympathetic ganglion.

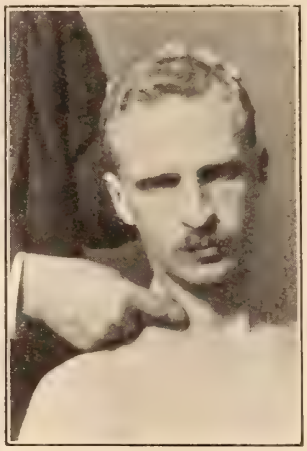
FIG. 2.—Direct manipulation on the middle cervical sympathetic ganglion.

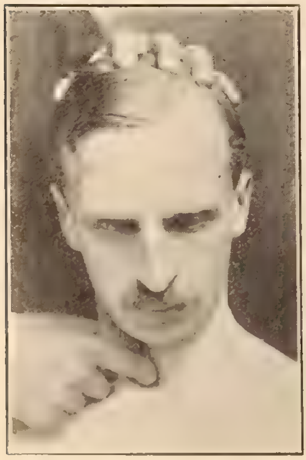
FIG. 3.—Direct manipulation on the inferior cervical sympathetic ganglion. Reproduced by kind permission from the *Edinburgh Medical Journal*, 1913, N. S. xi, 504.

In passing, it may be mentioned that by means of frictions actual palpation of the superior ganglion is sometimes possible, and increase in its size noted. I cannot remember ever having seen this diagnostic method mentioned. It is not always quite certain what this increase in size is due to; in some cases it is evidently due to venous or lymphatic congestion, even perhaps hyperemia, as it disappears fairly quickly under treatment. A certain amount of interstitial fibrosis is not excluded. To distinguish the middle or inferior ganglion by means of palpation is almost impossible.

Superior ganglion.—I have found diminution of sensation in many slow eye degenerations such as optic atrophy, retinitis pigmentosa, chorioretinitis, and in some cases of deafness, and increase in sensation in exophthalmic goitre and some cases of acute eye trouble, and either increase or decrease in neurasthenia, migraine, facial neuralgia, brachial neuralgia and headache.

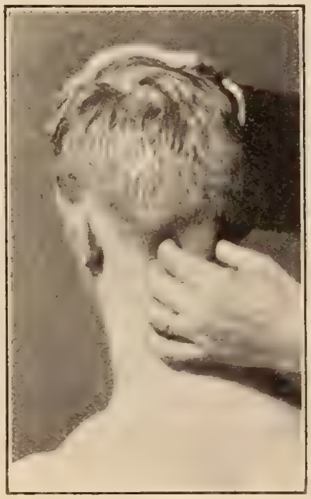
FIG. 4.—Direct manipulation on the posterior divisions of the cervical nerves. Reproduced by kind permission from the *Edinburgh Medical Journal*, 1913, N. S. xi, 504.

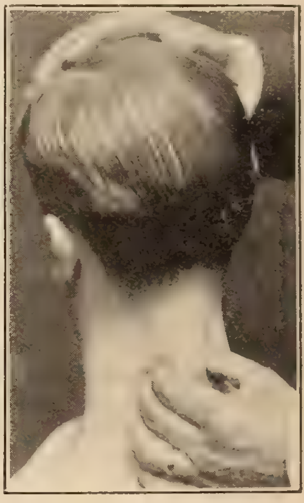
FIG. 5.—Direct manipulations on the great occipital nerves. Reproduced by kind permission from the *Edinburgh Medical Journal*, 1913, N. S. xi, 504.

Middle ganglion.—I have found diminished sensation in some eye and throat conditions, and increase in sensation in some irritative and inflammatory states of the larynx and in exophthalmic goitre. Just like the superior ganglion, there may be increase or decrease in various forms of neurasthenia, migraine, facial neuralgia and headache.

Inferior ganglion.—This is often affected in respiratory disorders, being the seat of increased sensation in acute or subacute conditions, and the seat of diminished sensation in chronic ones. In relaxed throat and hoarseness of various kinds it is frequently entirely without sensation. It is hardly ever affected in cases of neurasthenia, migraine, headache, exophthalmic goitre, and ear and eye conditions.

Cervical nerves.—Reference will only be made to such changes in which the sympathetic element is a major factor. Increase of sensation is found either locally or generally in hyperemia cerebri and many forms of headache, whether due to anemia or the opposite. This increase is also found in phthisis, bronchitis, pneumonia, irritative conditions of the phrenic nerve, various heart troubles, and certain abdominal and pelvic complaints. Diminution of sensation is present in many vasomotor cerebral conditions, and in my opinion must be regarded as the direct cause of some of them. It would appear that in consequence of diminution of sensation in the posterior cervical nerves, the vasomotor centre for the blood supply of the head no longer receives the normal stream of afferent impulses which regulate it and as a result is liable to perverted activity. This state might be termed "cervical vasomotor ataxia."

TREATMENT.

The cervical sympathetic can be affected directly by manipulations on the ganglia themselves, and indirectly by manipulations on the posterior divisions of the cervical nerves.

Manipulations on the ganglia themselves.—Before describing the modus operandi, it will be necessary briefly to refer to one or two points in the topographical anatomy. It must be remembered that the line of the ganglionated cord follows closely that of the common carotid artery, whose surface marking is a line drawn from the sternoclavicular joint to a point midway between the angle of the jaw and the mastoid process, the vessel bifurcating at the upper border of the cricoid cartilage. The middle ganglia can be accurately located by the carotid tubercle of the sixth cervical vertebra which lies just external to the ganglion. This tubercle can be felt by deep pressure over the line of the carotid vessels at the level of the cricoid cartilage.

The various manipulations that may be applied to the cervical sympathetic ganglia are frictions, vibrations, shakings, and petrissage. The word "friction" in this case denotes something very different from that form of massage which unfortunately bears the same name. I have on so many previous occasions described (15) the technic of these various forms of treatment, that it will not be necessary to repeat them. In the following descriptions it is to be understood that the patient is in the sitting position, unless specially mentioned otherwise.

Superior ganglion.—Stationary frictions are never applied to both sides simultaneously; this applies also to frictions on the middle and inferior ganglia. Standing at the side of the patient, the operator places the tip of the forefinger as in Fig. 1 in the angle formed by the horizontal ramus of the jaw and the sternomastoid muscle. The patient's head is then flexed a little forward and toward the side to be treated, and the tip of the forefinger pressed gently upward, backward, and inward until it lies against the vertebral column. The frictions are executed laterally in both directions, great care being exercised in so doing not to apply them too hard. Stationary vibrations are generally applied only to one side at a time. Standing behind the patient, the operator places the tips, held in the line of the long axis of the sternomastoid, of three or four laterally approximated fingers just in front of the sternomastoid at about the level of the angle of the jaw, and presses them gently inward and backward. The patient's head is then flexed as described above, and the vibrations executed over the ganglion. Stationary shakings are applied in the same way as stationary vibrations, excepting that the tips of only two fingers, less commonly one, are employed. The shakings may be applied longitudinally or transversely. Petrissage may sometimes be administered to both sides at once, and then the lying position is often more convenient than the sitting one. The operator applies the tip of the forefinger with or without the middle finger or the tip of the thumb alone over the site of the ganglion and executes the petrissage from above downward.

Middle ganglion.—For stationary frictions the operator, standing at the side of the patient, flexes the patient's head a little to the side to be treated, and then proceeds in one of the following ways: 1. He places the tip of the forefinger on the outer edge of the sternomastoid at the level of the carotid tubercle as in Fig. 2, and then presses it gently inward and backward. 2. Standing as before, he places the tip of the forefinger on the inner side of the muscle at the same level and then presses it gently backward. The frictions are executed laterally in both directions. Stationary vibrations are generally applied to one side at a time. The fingertips are placed as described under the second method for frictions, except that the fingerjoints are somewhat more extended and the tips placed a little further outward so as to lie exactly over the ganglion.

Inferior ganglion.—For stationary frictions, standing at the side of the patient, the operator first flexes the latter's head slightly forward and toward the side to be treated. He places the tip of the forefinger between the clavicular insertion of the sternomastoid and the trachea as in Fig. 3, and presses it directly backward until it lies against the prevertebral muscles. The frictions are then applied transversely in both directions. For stationary vibrations, the operator stands in the same position as for frictions and places the tips of the approximated forefinger and middle finger over the ganglion. Frictions applied to the ganglionated cord of the sympathetic in between the ganglia seem to produce very little effect, and in any case are overshadowed by the vagus phenomena induced; hence, they are hardly employed. As resultant phenomena arising from the above treatment, speaking generally, frictions are the most stimulatory, and vibrations the most sedative. Shakings occupy an intermediate position; petrissage is a mild stimulant. Friction applied to the superior ganglion may produce momentary acute pain in the corresponding side of the head; this may also be felt in the larynx, pharynx, and eye. The sensations are quite unlike those produceable by frictions on any cerebrospinal nerves. A feeling of imminent fainting may easily arise, and actual fainting may occur unless the frictions are applied very carefully to begin with; hence, the warning given above. Dilatation of the pupil usually results. The effect on headaches is often immediate and marked relief. In two cases of optic atrophy, frictions on this ganglia induced the appearance of lights or stars with an appreciable increase in the perception of light and in the course of time permanent improvement of vision. The effect of vibrations on the ganglion are similar to those of vibrations on nerves elewhere, namely, diminution of pain, local and reflex, and possibly in some cases diminution of reflex phenomena resulting from irritation of the ganglion.

Frictions applied to the middle ganglion induce a sense of constriction in the throat, quite unlike that arising from frictions on the recurrent laryngeal nerve or the superior ganglion. The sense of imminent fainting so readily evoked by frictions on the latter does not result from frictions on the middle ganglion. Dilatation of the pupil usually results. In frictions applied to the inferior ganglion, the sensory effects are very slight compared with those due to stimulation of the superior ganglion; indeed in most normal persons such frictions cause but little inconvenience. Radiating sensations in the thorax may be experienced together with a sense of constriction in the throat; a cough is often induced. Dilatation of the pupil usually results. In cases of bradycardia, acceleration of the pulse generally occurs. Crile (16) found that dissections involving exposure and manipulation of the cervical sympathetic caused an increase of the pulse rate.

Manipulations on the posterior divisions of the cervical nerves.—Both anatomical and physiological connections exist between the posterior cervical nerves and cervical sympathetic. Anatomically each posterior division is of course united with its anterior, and from the latter divisions branches pass to the sympathetic ganglia, the superior being connected with the first four cervical nerves, the middle with the fifth and sixth, and the inferior with the seventh and eighth. Physiologically nerve fibres have been found to run from the posterior roots into the sympathetic, and many observers have found degeneration in localized areas in the spinal cord resulting after section or removal of the sympathetic (17). The various manipulations that may be applied to the posterior cervical nerves are frictions and vibrations. I shall first describe these manipulations as applied to the neck, leaving the method for the great occipital nerves to the last.

Stationary frictions are nearly always applied to the nerves of both sides simultaneously. The patient's head must first be extended backward a little in order to relax the posterior cervical muscles. Standing at the side of or somewhat behind the patient, the operator places the tips of two or three laterally approximated fingers on the further side of the neck over the nerves, and the tip of the thumb on the corresponding spot on the nearer side, as in Fig. 4. The distance from the middle line at which the digits are placed depends partly on whether it is desired to stimulate chiefly the internal or external branches, and partly on the state of muscular development of the patient's neck. As a rule, the greater the energy with which the friction is to be applied, the greater the initial amount of flexion of the interphalangeal joints. The fingers having been placed in position, the actual frictions are executed by: 1, approximately the opposing digits; 2, still further flexing the interphalangeal joints; 3, moving the forearm and hand backward *en masse*. A slightly upward movement is sometimes of advantage. In order to repeat the frictions, the digits are brought back lightly to the original position, and the manipulation repeated. Frictions in the reverse direction, i. e., from behind forward, should not be attempted, as this only results in a dull aching sensation of an unpleasant nature, quite unlike the stimulatory effect aimed at. Frictions may be applied either continuously at one spot, or in a series, five to ten in number, commencing above and proceeding downward.

Stationary vibrations are almost always applied on both sides simultaneously. The operator places his hands very much as in Fig. 4, but generally employs three or four fingers, which in this case have their interphalangeal joints almost fully extended, so that the palmar aspect, instead of the tips, of the terminal phalanges, with or without the second ones, is placed on the region it is desired to vibrate. If it is desired to apply running vibrations, the operator proceeds as above, placing the fingers just below the occipital bone, and while vibrating, causes his fingers to travel slowly down to the upper dorsal vertebræ.

Frictions induce the same phenomena whether they are applied to the internal or external branches. Some of these phenomena are due to stimulation of the cerebrospinal nerves, other are due to stimulation of the cervical sympathetic. It will only be necessary in this paper to refer to the latter. The sensory effects are as follows: A general feeling of stimulation is experienced, together with a feeling as of cold or warm shivers passing down the spine; in some persons this may be felt in the face, arms, and even as far as the toes; various irregular distributions of sensation may result. It passes slowly in a wave from above downward; each wave takes about one to three seconds to reach the sacral region, and may be followed by a second and even a third wave. Occasionally there is a latent period of one or more seconds. If frictions are applied to the nerves of one side only, as a rule the sensations are only experienced on that side, or if on both sides, to a much less extent on the opposite one. In degenerative diseases of the sensory tracts in the spinal cord they are felt less down the more affected side, should such exist. In case of complete transverse myelitis, the wave of sensation stops suddenly at the site of the lesion, and in partially recovered cases, its intensity diminishes at the site of the lesion. The phenomena appear to pass down the sensory columns, through which they are transmitted to the vasomotor nerves.

Regarding vasomotor effects, it has been found clinically that frictions of the upper cervical nerves. specially the second, cause amelioration of hyperemic headache, whereas frictions on the lower cervical nerves are of benefit in anemic headache. In cases of fainting the latter manipulation will often rapidly restore the patient; this calls to mind the time honored remedy of applying a key to the nape of the neck in such cases. In cases of menorrhagia, frictions on the lower nerves appear materially to lessen the tendency to hemorrhage; frictions on the upper nerves do not seem to produce this effect. The slight dizziness that ensues from suddenly changing from the lying to the sitting position or from the latter to the standing one, can generally be removed by frictions on the lower nerves, but not by these manipulations on the upper ones. All this tends to show that stimulation of the upper nerves induces vasoconstrictor effects on head, of the lower ones on the rest of the body. The effect of frictions on the lower cervical nerves is generally a vasoconstriction of the vessels of the arms; this may be succeeded by vasodilatation. The method by which the latter is induced may either be a simple reaction, or an active one in which Bayliss's antidromic impulses probably play a part.

As for effects on viscera, glands, etc., the cardiac action may become steadier and stronger, specially in cases of cardiac weakness. The dicrotism of low pressure can be made in some cases to disappear immediately for even some hours. Cutis anserina may result over the arms and chest; this may not happen until after the lapse of one or even several minutes. Perspiration may ensue. Respiration may become slower and fuller. Vasomotor effects may arise in the abdominal viscera, as may also changes in gland activity, such as diminution of sugar in diabetes. It is difficult to say how these two kinds of effects are dependent upon or influence each other.

Technic of treatment of the great occipital nerves.—As a rule, both nerves are treated simultaneously. The treatment can be applied at the following sites: 1. On the nerve where it becomes cutaneous. Standing at the side of or behind the patient, the operator places his hands as in Fig. 5, with the radial side of the forefinger on the outer side of the further nerve, and the ulnar side of the nail of the thumb on the outer side of the nearer nerve and executes the frictions from without inward and the reverse. For stationary vibrations, the operator stands and places his hands as just described, but the interphalangeal joints are nearly fully extended, so that the tips of the digits instead of the nails are placed directly over the nerve. 2. On the nerve in its course in the scalp. For stationary frictions, the tips of the thumb and one or two fingers are placed to the outer side of the nerve of each side respectively, and the frictions executed from without inward and the reverse. Running frictions are executed either by applying a series of stationary ones, each one being at a slightly lower level, or with the approximated forefinger and thumb applying frictions crossing and recrossing the nerve, also proceeding from above downward. Stationary vibrations are executed with the hand as for frictions, but with the interphalangeal joints more fully extended, so that the tips of the digits lie directly over the nerve. The resultant phenomena are those of similar manipulations on the upper cervical nerves, specially the second.

As regards the length of time during which the treatment can be applied. Frictions on the ganglia themselves should not be applied oftener than about a dozen times in succession, unless they are administered with very moderate energy. Frictions on the posterior cervical nerves can be applied for a considerably longer period, especially when employed in conjunction with other manipulations on the head, such as vibrations. As regards vibrations on the ganglia, or the nerves mentioned, there is theoretically no limit of time, though in practice it is rare to have to apply them for longer than twenty minutes; five to ten can be taken as a good average for the ganglia and eight to fifteen for the posterior cervical nerves.

The indications for the employment of the manual treatment of the cervical sympathetic are taken from the study of the general pathology of the nerves and ganglia, and from the condition of the sensory response to friction. Personally I must add that I do not employ these manipulations as a treatment *per se,* but always in conjunction with other manipulations and exercises, as thereby the best results are obtained.

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Focal Infection.—Judson Daland (*Canada Lancet,* August, 1917) writes that focal infection is generally due to the streptococcus, occasionally to the staphylococcus, and other bacteria in association. The focus in the order of frequency is roots of teeth and gums; tonsils; the antra, ethmoid sphenoid, frontal, mastoid, middle ear; gallbladder; appendix; genitourinary and respiratory tracts.

AN INTERESTING PONTINE SYNDROME.

By MICHAEL OSNATO, M. D.,
New York,

Neurologist, Italian Hospital; Consulting Physician, Manhattan State Hospital; Assistant Visiting Neurologist, Kings County Hospital; Instructor, Department of Nervous Diseases, College of Physicians and Surgeons, Columbia University.

This case is reported because it is extremely interesting from an anatomical point of view. I still have the patient under observation on my service at the Kings County Hospital. It may be possible to obtain permission for autopsy and thus sections may later be made which may corroborate these findings.

CASE.—H. O., sixty-one years of age; married; longshoreman. The patient had always been perfectly well until two years ago, when he was suddenly stricken, while working as a longshoreman, with paralysis in the right arm and, as he has always thought, paralysis in the right side of the face. He did not lose consciousness and did not fall to the ground. He was taken to Kings County Hospital the same day. About five or six weeks later, while coming from the toilet, he fell to the ground, was unconscious for a few hours, and found himself on regaining consciousness paralyzed in the right leg. The patient had developed a peculiar frame of mind concerning this leg palsy, based probably on the fact that the palsy in this leg was flaccid, whereas the palsy in the right arm was spastic. The patient felt that something was given him in the other ward where this happened which made him lose his strength and that in falling he broke his limb. He felt bitterly resentful because his leg had not been treated as a fracture or as a dislocation despite the fact that neither condition existed. The patient's attitude was one of distrust, suspicion, and condemnation directed toward the hospital authorities, whom he blamed for his condition. Nothing was known of his previous personality, so that I am unable to state whether this paranoid trend existed prior to the onset of his illness. He was moody and had very little to do with the other patients. There was no memory or intelligence defect, and there was no sign of apraxia, aphasia, alexia, agraphia, or amimia. There was no astereognosis. The neurological findings were as follows: All cranial nerves except the seventh and eighth were functioning properly. The pupils reacted equally, promptly, and consensually, both to light and accommodation. There was no nystagmus. There were no irregularities in the shape or the size of the pupils. In the distribution of the facial nerve we found that the left eyebrow was on a lower line than the right and that it was elevated but little; the left palpebral fissure was narrower than the right and in making various movements of the face there was a distinct drawing of the angle of the mouth to the right. The left side of the face was distinctly smaller and smoother than the right. Taste—bitter, sweet sour, and salty—was absent in the anterior two thirds of the left side of the tongue. The cochlear pathways of the eighth nerve were considerably affected. Hearing on the left side tested by both air and bone conduction was gone; on the right side hearing was present, but very much diminished. Hearing in both ears was normal prior to the injury and there was no history of any kind of ear trouble before or since the illness. Reaction of degeneration was present in the muscles supplied by both branches of facial, therefore the lesion here was undoubtedly nuclear or at the exit of the root fibres. The lateral filet on the same side—left—must also be involved at or near its decussation. There is no Romberg and the gait was mincing and short stepped, the right leg being held limply and dragged after the left. [To those who believe that the cerebral control of tone is carried from the pallium to the cerebellum by way of the middle peduncles of that organ, the loss in tone and the consequent flaccid paralysis in the right leg may be of interest.] This was undoubtedly a pontine syndrome and it was extremely unlikely that the middle peduncle of the cerebellum had escaped. In this connection it is also interesting to note that there was a marked ataxia in the left or sound leg which was not present in the left arm. The presence of ataxia in the palsied right leg or arm could not be tested because of the weakness. The presence of this ataxia in the left leg was constant and undoubted. The reflexes showed an increase in the right triceps, biceps, and patellar over the left side. The abdominal and epigastric and cremasteric reflexes on the right side were absent. The right ankle jerk was more active than the left and there was a distinct Babinski and clonus on the right side. There was no deviation of the tongue or uvula. There was a distinct loss of power in the muscles in the left side of face, the right arm, and the right leg, most marked in the latter. There were no tremors and no choreoathetoid movements. Sensation in the right arm and leg showed a marked diminution to touch discrimination and a diminution particularly of light touch as tested by cottonwool. There was a marked hyperesthesia to pain and temperature in the right leg below the knee. Sensation in the face was perfectly normal on both sides. Position sense was normal and vibration also appeared to be normal. Pressure sense was diminished slightly in the right half of the body. There were no disturbances of speech; the heart and lungs were normal; the blood pressure was systolic, 165, and diastolic pressure, 110.

It was concluded that this case presented a pontine lesion occurring at the level of the nucleus of the seventh nerve and the decussation of the lateral filet involving both in the left side involving also the median filet to a slight extent also the spinothalamic tracts which at this level are very close to the median filet, involving finally the pyramidal tracts and the nuclei of the pons. It will be remembered that the nuclei of the pons give rise to those fibres of the middle peduncle of the cerebellum which go to the cerebellum of the same side and do not cross over to the other side, all connections of the cerebellum being uncrossed; this might account for the ataxia in the left or sound leg. Another possibility should be thought of in this connection, for the ventrospinocerebellar tract is very close to the lateral filet at this point and it is possible that the ataxia in the left leg can be explained by an involvement of this tract. Sections through the level of the seventh nerve nucleus often show this tract as it goes upward and outward to reach the superior peduncle of the cerebellum. The lack of tone in the right leg may possibly be accounted for by the break in the efferent path from the pallium to the cerebellum which is crossed. The loss of taste in the left tongue is obviously explained by an injury to the seventh nerve—pars intermedia. The root fibres of this portion of the seventh must be involved because the posterior third of the tongue retains the sensation of taste which is supplied by the nucleus of the fasciculus solitarius which contains the sensory portions of the ninth, tenth, and seventh nerve nuclei. At this level it would be impossible to reach this nucleus.

270 WEST EIGHTY-NINTH STREET.

A Hemogregarine in Trench Fever.—Lyn Dimond (*Lancet*, September 8, 1917) reports the isolation of a typical hemogregarine parasite from the venous blood and the blood from puncture of the liver, spleen, and lung in twelve cases of trench fever during the day or two preceding the febrile stage of the disease. The physical characters, cycles of development, staining properties, and modes of isolation are described. This discovery lends very strong support to the belief in louse transmission of the disease and points strongly to the ever present rat as carrier, both of the parasite and of the louse which transmits it.

THE EFFECT OF THE ACCIDENTAL INSTILLATION OF A STOCK SOLUTION OF CORROSIVE SUBLIMATE INTO THE CONJUNCTIVAL SAC.

With Report of a Case.

By Aaron Brav, M. D.,
Philadelphia,
Ophthalmologist, Jewish and Lebanon Hospitals.

Bichloride of mercury in 1:10,000 or 1:5,000 solutions is not infrequently used in the eye for therapeutic reasons. I am in the habit of using a 1:1,000 solution, one drop instilled three times daily in cases of infection of the lacrymal sac. A stock solution is never employed. It may get into the conjunctival sac by accident, as in the case I report herewith. Such accidents may occur in hospitals where stock solutions are kept for the purpose of facilitating the making of various dilutions. A stock solution consists of seven and a half grains of mercuric chloride to sixty minims of water which, mixed with a quart of water, makes a 1:1,000 solution.

The instillation of a stock solution for corrosive sublimate is followed by severe pain and burning lasting for several days. The pain is almost intolerable the first few hours. It grows less in intensity and finally stops after the third day, although the sensation of burning still continues. The conjunctiva is raised from its bed like a balloon all around the cornea covering the cornea completely. There is a contraction of all the bloodvessels including the capillaries so that the chemosed conjunctiva is quite pale. The lacrymal gland ceases to function so that the conjunctiva is dry. The dryness lasts for about twenty-four hours; it is then followed by a relaxation of the bloodvessels, and the conjunctiva again becomes red. The function of the lacrymal gland is reestablished and is stimulated so that there is marked lacrymation. The chemosis of the conjunctiva lasts from six to ten days. The first day it has the appearance of a conjunctiva into which a salt solution has been injected except that the tissues are dry. After the bloodvessels have relaxed, one is reminded of the chemosis seen after insufflation of the dry powder of dionin into the conjuctival sac. The superficial layers of the conjunctiva become necrosed and begin to form a membrane which, thin and delicate in the beginning, becomes thick and tough after the third day. This membrane resembles the diphtheritic membrane; it adheres closely to the conjunctiva for several days and then becomes loose and may be removed in a mass as one layer, leaving a smooth pale conjunctiva behind. There is no bleeding when this membrane is removed.

On the second day after the accident bands of adhesions begin to form and if proper care is not taken the conjunctiva of the lid becomes agglutinated to the bulbar conjunctiva. The raised conjunctiva of the lower lid becomes agglutinated to the upper lid thus hiding the eyeball. Beneath this agglutination there is a collection of lacrymal fluid. This agglutination may result in firm adhesion. The agglutinated conjunctiva is easily separated without producing any deep ulceration. The chemical reaction of the poison forms an albuminate of mercury which is insoluble. This accounts for the fact that there are no constitutional symptoms present. The effect of the solution is localized. There is, however, a necrotic effect, as the thickened membrane covering both palpebral as well as the bulbar conjunctiva is a mere sloughing of the conjunctival tissues. There is no deep ulceration, as would be expected. The cornea remains clear and unaffected; the cornea is apparently able to resist the corrosive nature of the poison. The corneal epithelium is intact. The corneal infiltration noticed in my patient's left eye after the fourth day I attribute to faulty manipulation on the part of the overanxious nurse.

The lids are affected. In the beginning there is a serous edema. The lids are baggy and swollen and both upper and lower are involved. The swelling soon extends above the superciliary ridge and downward to the malar bone; at its height it reaches the lower maxillary region. About twelve hours later this swelling becomes tense and red having the appearance of a well developed cellulitis. The infiltrated lid is painful to the touch and is separated with great difficulty and severe pain to the patient. The cellulitis reaches its height about thirty-six hours after the instillation of the chemical poison and then begins to recede. The lids change in color. They are no longer so tense and red, but somewhat soft, wrinkled, and dark brown in color, looking like the common traumatic "black eye." They are more yielding to manipulation although still painful because of the agglutination of the conjunctiva and the formation of adhesions. Gentle pressure applied separates them, exposing the raised conjunctiva and its various adhesive bands to the view of the observer. The pain finally subsides after the fifth day. The swelling diminishes and the discoloration disappears within two weeks; the skin of the lid resumes its natural color, the sloughing of the conjunctiva ceases, the redness begins to disappear, and after six weeks of careful treatment the eye, with the exception of some conjuctival contractions, is again in a normal condition.

This favorable result is obtained through rational application of therapeutic measures, without which a great deal of damage would result to the eye either through corneal abrasions, the agglutination of the lower lid to the upper lid, or adhesions from the palpebral to the bulbar conjunctiva that would require surgical interference for relief.

If the accident is discovered immediately after its occurrence I believe it is advisable to flush the eye with milk. In my case the accident was discovered about five hours later when the chemical reaction had already taken place. The chief principle in the treatment is to prevent corneal complications resulting from the dry state of the conjunctiva and the formation of adhesions. This is best accomplished by the frequent instillation of olive oil. Several drops of the oil should be instilled every two hours. This provided a smooth gliding surface for the cornea, keeps the eye moist and minimizes the pain. The iris should be put at rest by the instillation of a one per cent. solution of atropine. In the beginning the physician should see the patient twice daily in order to separate the adhesions that form rapidly and prevent the agglutination of the raised lower conjunctiva to the upper lid. In separating the conjunctival agglutinations care must be taken not to injure the conjunctiva. It is best to use a cotton pledget applicator dipped in oil; a dry applicator should not be used as it will produce ulcerations. The process of breaking up adhesions and separating agglutinated surfaces should not be delegated to the nurse, but should be done by the attending physician, who alone recognizes the seriousness of the case. Externally an antiphlogistic solution should be applied. I have used the following formula:

Tincturæ arnicæ, ...℥ii;
Tincturæ opii, ...℥ii;
Liquor plumbi subacetatis diluti, ...℥v;
Aquæ, ...q. s. ℥xvi.

This should be applied very cold. The application of the ice bag on top of this solution is essential in reducing pain and giving comfort to the patient. This should be continued for about five or six days. I discontinued the ice bag after the fifth day, fearing the development of necrosis. I continued the arnica solution for ten days to the gratification of the patient. The external application reduces the swelling and minimizes the pain and the burning sensation which in the first twenty-four hours is very severe. As soon as the chemosis has subsided so that the lids can be freely opened, the eyes should be irrigated three times daily with a boracic acid solution. This acts as a cleansing agent and also has a sedative effect upon the tissues which have become irritated by the increased lacrymation. The olive oil has to be employed for about three to four weeks while sloughing is going on in the conjunctiva. The atropine must be continued until the conjunctival redness disappears and the necrosed conjunctiva has reformed. It may be said that it takes from six weeks to two months before the eyes are perfectly quiet.

Since there is no literature on the subject, I wish to place the following interesting case on record, which, while accidental, deserves careful attention. I believe it may be of some help to somebody who may be so unfortunate as to come face to face with the situation that gives grave concern.

Case.—F. R., girl, aged fourteen years, was operated on for imperforate hymen May 24th, at 10 a. m. The anesthetist asked the nurse for a boracic acid solution to irrigate the conjunctiva after the operation. By mistake the nurse handed him a stock solution of bichloride of mercury and he flushed the eyes while the patient was still under the influence of the anesthetic. He left the hospital and returned at 2 p. m., when he found both eyes markedly swollen and the patient complaining of severe pain. The mistake was discovered, and I was asked to see the patient. At 2:30 I found the following condition: In the right eye, the upper lid was puffy, yellowish, and pale; the patient could not open the lids. Separating the lids with my fingers, I found the conjunctiva ballooned, chemosed, very pale, and very dry. The cornea was clear and the pupil reacted well. In the left eye, both upper and lower lids were markedly swollen and thickened, somewhat reddened, and rather painful to pressure. Separating the lids, the conjunctiva appeared raised all around the cornea; the lower conjunctiva, meeting the upper conjunctiva, formed an arch which completely covered the cornea. Several fibrous bands connected the upper to the lower conjunctiva, which, however, was easily separated. The cornea was clear and the pupil reacted. At 9 p. m. the lids were more swollen and thickened, swelling extended down to the malar bone, and the skin was red and smooth and had the appearance of a well developed cellulitis. The swelling above involved the frontal region. The patient complained of severe pain and a burning sensation. The lids were separated with great difficulty. The cornea was clear and pupils were dilated with atropine. May 25th, 2 p. m. The lids were swollen and red, but easier to manipulate and not so tense. On separating the lids, hot lacrymal fluid gushed out and the conjunctiva was no longer dry but was still raised. The lower conjunctiva was covered in several places with a thick membrane which adhered closely to the upper conjunctiva. The chemosis persisted. Lids were still swollen and the patient could not open them. On separating the lids, we observed an agglutination of the lower raised conjunctiva to the margin of the upper lid, which was separated by gentle pressure and a quantity of fluid made its escape. There was considerable pain, which was intensified by manipulation. May 26th. Swelling of lids was somewhat reduced; the skin of the upper and lower lids was dark brown in color, looking like a traumatic "black eye." The eyes still burned; chemosis of the right eye had partly disappeared. The membranous cover of the conjunctiva was thicker and involved also part of the bulbar conjunctiva. In the left eye edema was still very marked. There was considerable sloughing of the conjunctiva in various places. The necrosis was apparently not very deep. May 27th. The patient could open the right eye, exposing a slightly necrotic conjunctiva; several bands of adhesion were seen which were easily broken. The cornea was transparent and there was no pain. The left eye was very painful; lids were swollen and immovable. Conjunctival chemosis was marked and the lower conjunctiva was agglutinated to the upper margin of the lid, which, however, was easily separated. The membrane was very thick, sloughing considerably deeper as before. May 28th. The eyes were markedly injected and sloughing was more marked. Necrotic membrane was removed with ease in the right eye, leaving a clean white surface of the conjunctiva. In the left eye sloughing was more marked, necrosed tissue covering cornea but cornea underneath clear. The eye was painful to manipulate. May 29th. Swelling of the lids was markedly reduced and there was no pain. Right eye was injected; left eye free from pain. Conjunctiva was still chemosed and sloughs still adhered and could not be separated. The patient was comfortable and the cornea was not affected. May 30th. Right lid was normal; eye injected; no sloughing. Left lid was still swollen; chemosis subsided; considerable sloughing; eyeball moved freely; cornea was slightly hazy. The patient could not see as clearly as with right eye. There was no pain or burning. May 31st. The right eye was wide open; conjunctiva injected; cornea clear. Left eyelid was still closed but the swelling was nearly all gone. The patient could open the lid slightly. Conjunctiva was still sloughing. No adhesions were seen. The cornea was infiltrated but not ulcerated. Vision was blurred. June 1st. The left eye was partially open; cornea more infiltrated; vision blurred; no more sloughing, but conjunctiva was ulcerated in several places. June 2d. The left eye cornea was clearing and only the lower half was infiltrated. There was no pain and no discharge and lacrymation was reestablished. June 4th. Eyes were still sensitive to light; the conjunctiva was injected; right cornea clear; left cornea still infiltrated but clearing; no pain. June 9th. The right eye was quiet. In the left eye the conjunctiva was red; there was marked lacrymation and no pain; lower part of cornea was still hazy; vision, 5/9 mydriatic. June 13th. The left eye was still red; there was considerable lacrymation; cornea was clear; bulbar conjunctiva was regenerating. June 16th. The left eye was still injected and ulcerated; conjunctiva was apparently contracted. June 21st. The eyes were still injected; lacrymation was active; several contractions of conjunctiva were seen in the left eye. June 26th. The left eye was still injected; there was considerable contraction at the external angle but movement of the eyeball was normal. July 1st. Both eyes were quiet; there was considerable lacrymation; vision was normal. July 4th. Lacrymation persisted; eyes quiet; contraction of left eye same as before. The patient was discharged.

The lacrymation was probably the result of the necrotic action of the bichloride on the lining membrane of the lacrymal canal, causing a partial stenosis which might have to be remedied later. The cornea became clear again. I believe that the corneal infiltrated was due not to the chemical action of the drug but to the faulty manipulation of the overzealous nurse who in my absence touched the cornea in an endeavor to separate the agglutinated conjunctival surfaces. The slight contraction at the external angle of the left eye will require no treatment as it is not visible and does not interfere with the movement of the eyeball.

917 Spruce Street.

DEATH IN TABES DORSALIS.

Note on Causes of Death and Average Age at Which Death Occurs.

By Morris Grossman, M. D.,
New York,
Adjunct Visiting Neurologist, Central and Neurological Hospital; Chief of the Neurological Clinic, Lebanon Hospital, O. P. D.; Assistant Neurologist, Mount Sinai Hospital, O. P. D.

The following note is based on the study of 240 cases of undoubted tabes, taken from my private practice and from the services of Dr. B. Sachs, neurologist to Mount Sinai Hospital; Dr. S. Wachsman, medical director of the Montefiore Home and Hospital; and Dr. W. J. M. A. Maloney, neurologist to the Central and Neurological Hospital, to all of whom I am greatly indebted for the privilege of using the material at those institutions.

In this group of 240 cases, twenty-eight, or 11.66 per cent., died. Of these twenty-eight cases, only ten were examined post mortem. Post mortem examinations so frequently rectify clinical opinion, that it is rash to base conclusions upon causes of death that have not been subject to their corroboration. Post mortem deductions, however, are also unreliable in certain particulars. One pathologist may stress the occurrence of a vascular degeneration which another would ignore; thus the pathological examination of one of my cases is reported to have revealed nothing except tabes. There is no fixed standard by which the lethality of any but the grossest morbid changes can be judged. Some observers are prejudiced in favor of renal, some prefer vascular, others lean to cardiac, incrimination, and so forth. If, as in my cases, the post mortem examinations have been made by several observers, the personal factor is probably so important that I hesitate to generalize from their reports. Moreover, the number of my cases is not enough to warrant the attempt to generalize.

The causes of death in these twenty-eight cases fall into three main groups: In the first group are those due to cardiac, vascular or renal disease, or a combination of these; the second group comprises those in which septic or other infections hastened or even determined the fatal issue; and in the third group are tabetics in whom death occurred without the immediate cause being ascertained. Of these twenty-eight deaths, ten, 35.7 per cent., belonged to the first group; seven, twenty-five per cent., to the second; and five, 17.85 per cent., to the third group. There were three deaths in which a combination of causes, cardiorenal and septic, occurred, and three of other origin. The ten deaths in the first group were recorded as follows: Five patients died of arterial disease; two of cardiac insufficiency and three of kidney inadequacy. Of the seven deaths in the second group two were attributed to cystitis; three, to cystitis with pyelonephrosis, and two, to pneumonia. The five cases in the third group were reported as deaths from tabes without further information being offered. Of the three cases attributed to composite causes, one was recorded as due to cerebral thrombosis and pneumonia; one to uremia and cystitis, and one to cystitis, nephritis, and bulbar palsy. The remainder comprised one attributed to diabetes, one to angioma of the liver, and one to edema of the glottis.

The average age at which death occurred in these twenty-eight cases was fifty-three years, the arithmetical mean, and 52.5 years, the probable mean, by the *wahrscheinliche Mittel* method. The arithmetical mean duration of the disease was 12.4 years.

Lucke (1), in a study of 250 cases of tabes, records fifty-six deaths under observation. The cardiovascular renal group among these contained twenty-four, 42.88 per cent., of the cases; sixteen deaths were attributed to nephritis; five, to myocardial disease, and three to arterial disease resulting in apoplexy. The second or septic group contained nineteen, 33.93 per cent., of the fifty-six cases. Nine died of pneumonia; seven of these were of the lobar and two were of the bronchopneumonic type. Pulmonary tuberculosis was given as the cause of death in five of these nineteen cases; in four general sepsis and in one, infection of the genitourinary tract. The third group was composed of seven cases in which no lesions were mentioned other than tabetic. Of the remaining six cases, two patients were stated to have died of edema of the lungs; one, of gastroenteritis; one, of tuberculous enteritis; one, of intestinal paralysis; and one, of carcinoma of the esophagus. The average age at the time of death was 54.96 years. The average duration, probably the arithmetical mean, of tabes in these fatal cases was stated to be 8.01 years.

Burr (2) reported a series of thirty-four cases. Of these thirty-four cases nineteen patients died of cardiovascular renal disease; seven of these deaths were attributed to myocardial disease; three, to arterial disease; three, to endocardial disease; five, to renal disease; and one, to combined cardiac with vascular and renal lesions. The septic group comprised thirteen cases; in six of these death was due to pulmonary tuberculosis; in four, pneumonia; in two, general sepsis, and in one, infection of the genitourinary tract. The remaining two patients in his series died of edema of the lungs, but both of these cases showed myocardial and arterial disease on post mortem examination; the edema was probably an agonic phenomenon. The average age at which death occurred in thirty-three of Burr's thirty-four cases was 53.4 years. The age of one patient was not mentioned. The average duration, probably the arithmetical mean, of tabes in thirty-three of Burr's thirty-four cases was stated to be 8.2 years, the duration of one case not being mentioned.

The average age at death in Lucke's fifty-six cases was 54.96 years; in Burr's thirty-three cases, 53.4 years; in my twenty-eight cases, fifty-three years. In these 117 cases, the average age at which death occurred was 53.06 years. The average age at which death occurred in all three groups of cases approximate each other very closely—54 96, 53.4, and fifty-three years.

The arithmetical mean age at death in my twenty-eight deaths was fifty-three years; the probable mean was 52.5 years; of these twenty-eight deaths there were fifteen patients who lived to be fifty-three years or more. Among my 240 tabetics there were sixty-three patients of fifty-three years or more; of these fifteen died. This gives a mortality of 238 per 1,000 tabetics of fifty-three years or over. To enable the death rate to be compared with the death rate from syphilis, chronic cardiac, and chronic renal disease, Mr. Louis I. Dublin, statistician of the Metropolitan Life Insurance Company, kindly gave me the following statistics: "Among Metropolitan premium paying industrial policyholders between the ages of fifty and fifty-four years inclusive, during the quinquennium 1911-1915, there were 109 deaths from locomotor ataxia corresponding to a death rate of 6.3 per 100,000 exposed; there were 367 deaths from syphilis with a death rate of 21.1 per 100,000 exposed; from organic disease of the heart there were 5,346 deaths corresponding to a death rate of 308 per 100,000 exposed; these deaths from organic diseases of the heart include those due to affections of the myocardium as well as affections of the valves of the heart, no separate tabulation being made of these; and 4,435 deaths from chronic nephritis with a death rate of 255.5 per 100,000 exposed."

The duration of the disease cannot be accurately estimated because while 238 per 1,000 tabetics die at the age of fifty-three years, we do not know at what age the rest die. We cannot even state definitely when the average tabetic dies. However, this age, fifty-three years, is a critical age of tabes. In an earlier paper (3) I pointed out that fifty-three years was the average age at which an uncomplicated case of tabes takes to bed. Excepting the case of edema of the glottis, which may have been a laryngeal crisis, there is no evidence of death from tabes. The paralysis of the intestine quoted by Lucke cannot be discussed without further data. There is no death reported among these cases from gastric crises; yet Foerster confesses a mortality from his operation nerve root section for gastric crises, in his own hands of twelve per cent. In my group of twenty-eight cases six patients reached the age of sixty-five years or more; one of them lived to the age of seventy-three years. In Burr's series there were four who lived to be sixty-five years or more; one reached the age of seventy-one years. Lucke does not give the individual ages in his series. Mortality in tabes is practically due to syphilis only. Except for the doubtful case of laryngeal spasm, and other occurrences so rare that no example of them was found in 118 deaths, tabes has merely the menace of syphilis plus whatever menace there may be in sensory losses such as blindness, and in the weakened resistance to organismal invasion, which the prolonged presence of syphilis creates.

CONCLUSIONS.

1. The cause of death in tabes is syphilis.
2. Syphilis and tabes led to death through cardiovascular and renal degeneration and through weakened resistance to nonsyphilitic infections.
3. The probable average age at which death occurs is fifty-three years.
4. The mortality among tabetics over fifty-three years of age is 238 per 1,000.
5. Tabes is as nonlethal as any form of syphilis.

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1 West Eighty-fifth Street.

WASSERMANN COMPLEMENT FIXATION TEST FOR SYPHILIS.

By J. Wheeler Smith, Jr., M. D.,
New York.

[*From the Laboratories of the New York Post-Graduate Medical School and Hospital.*]

I.

THE CHOICE OF THE ANTIGEN

Wassermann, Neisser, and Bruck applied complement fixation to the study of experimental syphilis in monkeys. They published a report in 1906. At this time the syphilis reaction, called after the senior author the Wassermann reaction and since known generally by his name, was considered a simple and direct application of the Bordet phenomenon, depending upon a reaction between antibodies specific for Spirochæta pallida and the specific protein constituents of this pathogenic organism. At present it is quite generally believed that the test is not a specific one in the usual immunological sense, but that it is a somewhat analogous reaction, which finds its justification in its practical value attested by experience, rather than in logical theoretical considerations. A proposed "antigen" or a proposed technic finds favor not according to its theoretical specificity, but only through extensive and satisfactory use upon a large series of patients. Although clinical satisfaction, especially in a short series of cases, cannot, without reserve, be accepted as final proof of scientific accuracy, yet in the long run it is a very safe criterion.

Weygandt in 1907 reported positive reactions in tabes using an extract of normal spleen. Landsteiner, Miller, and Pötzl in 1907 used an alcoholic extract of guineapig heart, which yielded results equal to those obtained with aqueous extract of syphilitic liver. Then began a long series of investigations on the various lipoids and their relation to the reaction. A modification of the Wassermann antigen, which has gained enthusiastic and almost general adoption, is that involved in the addition of cholesterol to the tissue extracts formerly used. In 1910, Browning, Cruikshank, and McKenzie (1) showed that the quantity of complement absorbed by a mixture of lecithin—watery emulsion of an alcoholic solution of lecithin—and inactivated syphilitic serum could be greatly increased by the admixture of cholesterol. Gilmour (2) in 1911 maintained that the use of cholesterolized antigen furnished the most delicate and most reliable method for the serum diagnosis of syphilis. Browning, Cruikshank, and Gilmour (3) found lecithin derived from liver or heart to be more useful than that derived from egg yolk or brain. Browning and Cruikshank (4) investigated a number of cholesterol derivatives, which they tested in combination with lecithin as antigens for the Wassermann reaction, but they found that none of these derivatives is as useful as pure cholesterol itself. Sachs (5) found that alcoholic extracts of normal tissues, when combined with cholesterol, possess antigenic properties equal to those of the extracts of syphilitic organs. This view was confirmed by McIntosh and Fildes (6), who further concluded that in this combination the requirements of a "standard antigen" were finally fulfilled. Walker and Swift (7) ascertained by comparative tests that the most favorable concentration of cholesterol is 0.4 per cent. added to the alcoholic extract of human heart muscle or guineapig heart.

There can be no question that the addition of cholesterol to the alcoholic extract renders the latter more powerful as an antigen and that considerably more positive results are thus obtained in the practical testing of human serums. The accuracy and reliability of these additional positive results have, however, been questioned. Thus Kolmer (8) pointed out that cholesterolized alcoholic extracts may give some inhibition of hemolysis with normal serums and must, therefore, be very carefully controlled. However, he places them first in order of practical efficiency in diagnosis. Zinsser (9) also has sounded a warning against too implicit reliance upon the cholesterolized antigen, as follows: "From the experience of many investigators it now seems unquestionable that additions of cholesterol increase the delicacy of the reaction in that more cases react positively with such an antigen than with the uncholesterolized preparations. The experience of Hopkins and Zimmermann, however, would indicate that great caution must be exercised when the reaction is done in this way, since occasional positive results are obtained with cases clinically not syphilitic. These workers believe that cholesterolized antigen is extremely useful, but advise its use only parallel with the ordinary lipoidal antigens and together with careful study of the clinical aspects of the case."

McClure and Lott (10) have also concluded that cholesterol additions render the alcoholic extracts more sensitive but also somewhat less specific and that they are, therefore, of questionable value in the practical diagnosis of syphilis. Snow and Cooper (11) have reported partial to complete complement fixation with cholesterolized antigen in thirty-one per cent. of serums from nonsyphilitic tuberculous patients, although they obtained reliable results with the simple alcoholic extracts. Thomas and Ivy (12) concluded that with cholesterolized antigens varying degrees of inhibition of hemolysis may be obtained in serums from many conditions other than syphilis, and in normal persons. They therefore regard the employment of these artificial antigens for routine clinical use at the present stage of our knowledge, instead of being an advance in serological technic, rather as a distinct step backward. These authors (13) expressed the same thought six months later and added that although the cholesterolized antigens give a more delicate reaction and may furnish positive results occasionally in cases of syphilis that are otherwise negative, it is a very much less serious error to overlook an occasional case of syphilis, than to saddle a diagnosis of the disease, with all it entails, upon a patient who does not have syphilis.

Smith and MacNeal (14) have recently reported comparative studies of different antigens and of different temperatures of incubation in the Wassermann test. In one study Wassermann tests were performed by three methods upon 496 identical specimens from 477 patients. In the first method a cholesterol reinforced antigen was employed and the first incubation was carried out at 37° C. In the second method a simple alcoholic extract was used as antigen, with incubation also at 37° C. In the third method this latter antigen was again employed, but the first incubation was carried out in the refrigerator for a period of four to twenty-four hours.

The last method proved more sensitive in the group of known syphilitics than the other procedures tested. Furthermore, a positive result thus obtained proved to be more trustworthy evidence of syphilis than did positive results obtained with the cholesterolized antigen and first incubation at 37° C. In the second study, tests were performed by six different methods upon 501 identical specimens from 457 patients. Three antigens were employed, cholesterolized alcoholic extract of beef heart, simple alcoholic extract of beef heart, and the acetone insoluble lipoid fraction of alcoholic extract of beef heart, prepared according to the method of Noguchi. Each of these antigens was used at two different incubation temperatures for fixation of the complement, 37° C. and 8° C., the subsequent incubation after addition of sensitized erythrocytes being carried out at the higher temperature. Upon known syphilitics, the cholesterolized antigen at 8° C. gave the largest number of positive reactions, being followed, in order of efficiency, by the plain antigen at 8° C., cholesterolized antigen at 37° C., acetone insoluble antigen at 8° C., the same at 37° C., and last the plain antigen at 37° C. Reactions considered to be false positives were obtained eight times with the cholesterolized antigen at 37° C., and five times with the cholesterolized antigen at 8° C., but the simple alcoholic extract of beef heart gave no false positive reactions of any degree of fixation in this series of 501 tests.

It would seem from these studies that a simple alcoholic antigen with the first incubation carried out in the ice box for four to twenty-four hours, is sufficiently sensitive in the detection of syphilis. Furthermore, a positive result thus obtained is much more trustworthy evidence of syphilis than is a positive fixation with a cholesterolized antigen not only when used at 37° C., but also when the incubation is in the ice box.

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685 St. Marks Place, Brooklyn.

A PROMPT EMERGENCY HYPNOTIC.

By C. J. Douglas, M. D.,
Boston, Mass.

Hyoscine, hypodermically administered, has many remarkable and valuable qualities as a hypnotic but, if uncombined, is very uncertain in action, and often produces most undesirable symptoms. At times it causes refreshing sleep, and no other result is noticeable. Again, perhaps in the same patient, it produces loss of muscular coordination and of memory, accompanied by perpetual restlessness that requires the constant attendance of a nurse to keep the patient recumbent. Unless restrained he will insist on getting out of bed and falling about the room with the possibility of seriously hurting himself. If the hyoscine is exhibited for hypnotic purposes, these symptoms are the precise opposite of the results desired. Why this drug acts in such opposite ways in different patients and even at different times in the same patient is a question I shall leave for others to explain. If these untoward symptoms could be prevented, hyoscine would be one of our most safe and satisfactory hypnotics. I have combined this remedy with apomorphine, 0.025 to 0.02 grain. As I have pointed out in previous papers, apomorphine administered hypodermically in small doses shuts off the stream of consciousness with valvelike precision. Nearly twenty years ago, in a literary contest open to the physicians of the United States and Canada, the judges awarded the prize to my paper on this subject. For many years I have relied upon this remedy as my most valuable hypnotic. Its action, however, while prompt, is transient. This defect is overcome by the hyoscine, the hypnotic effect of which usually lasts several hours. On the other hand, the muttering delirium which so often comes during the first hour after the administration of hyoscine, is prevented by the quick hypnotic action of the apomorphine. The synchronous action of these drugs may be expressed diagramatically as follows:

	First hour	*Subsequent hours*
Hyoscine	Delirium	Sleep
Apomorphine	Sleep	

In many cases 0.005 grain hyoscine is quite sufficient, and under no circumstances should 0.01 grain be exceeded. Perhaps the average dose may be given as 1/150 grain.

When I first gave to the profession the results of my experiments with apomorphine I suggested 1/30 grain hypodermically as a proper hypnotic dose. Before that time no materia medica had ever intimated that this remedy possessed hypnotic properties. Since then they have usually recommended for this purpose the same dose that I originally suggested. More extended experience, however, has convinced me that a smaller dose is usually preferable. The careful regulation of the dose is important. If it is too large it causes vomiting, and if it is too small it is inert; 0.025 to 0.02 grain is usually sufficient. The two remedies should be mixed and administered hypodermically in one injection. If morphine is indicated it combines well with the other two drugs.

Here we have an emergency hypnotic, combining two remedies that are entirely unlike, each attacking the problem from a different angle, each supplying the other's deficiences, and each correcting the other's faults. When quick action is desired, accompanied by entire safety, and a reasonable probability of a good night's sleep, I have found this a most dependable remedy. In the treatment of the excited stage of alcoholism and other mental ailments it is especially valuable. It promptly overcomes the insomnia of these patients, regardless of their wishes in the matter. To be able thus safely to force sleep even when the patient's unbalanced mind makes him earnestly desire to keep awake, is quite worth while, and is an accomplishment that gives satisfaction to every one concerned.

321 Centre Street, Dorchester District.

PHYSICAL TRAINING AND HYGIENE FOR BUSY PEOPLE.

By Leonhard Felix Fuld, LL. M., Ph. D.,
New York,

Assistant Chief Examiner, Municipal Civil Service Commission, New York; Member, American Academy Physical Education; Chairman, Committee on Education, Borough of Manhattan, New York.

PART I

Two years ago a young woman in my office who combined the ability and the all around efficiency of the twentieth century business woman with the delicate charm of the nineteenth century girl asked me, regarding courses of instruction in the evening, which in my opinion would be of most value to her. I informed her that after spending the day in the office, engaged in mental activities under high nervous tension, she was in greater need of physical activities possessing recreative features than of additional mental activities. My suggestion appealed to her sound business judgment, but a survey of the field revealed the fact that there were no facilities available in the city for such physical recreative activities as this young woman desired.

Unable to find the necessary facilities, I turned my attention to their creation. Classes in folk dancing and in social dancing were organized for the women employees of the city in the winter and classes in swimming were organized in the summer. When the young men employed by the city asked permission to join these classes it was not deemed advisable to admit them, because their admission would have necessitated the substitution by the young women of the formalities of the ballroom for the freedom of the playground. Separate dancing, swimming and gymnastic classes were accordingly organized for the young men.

That these classes have increased both the personal physical efficiency and the business efficiency of their members is reasonably certain. The return of a healthy, ruddy color to cheeks which had been pale from confinement in the office and the transformation of the careworn faces of the business women at the end of each lesson into fresh, radiant, buoyant, girlish expressions were ample evidence of this. To the critical student of business management there are few sights as inspiring as the fire and enthusiasm in the eye of the young male recruit in the business army and the refreshing sparkle in the eye of the young female recruit. And there is nothing which is so disheartening to the business executive as the rapidity with which the young business man loses his enthusiasm and becomes a routiniere and the sparkle in the eye of the young business woman becomes transformed into the conventional smile of the tired worker.

These discouraging transformations are due in most cases to physical deterioration. The young worker in his eagerness to reach the goal of success rushes past the first cautionary signal of chronic constipation and pushes himself through the tunnel of digestive disturbance until, crippled by organic disease of the heart or kidneys, he has permanently impaired his business efficiency. As soon as he has passed the first cautionary signal he loses the fire of his ambition and the sparkle of radiant good health. In most cases these physical impairments are caused in the first instance by the sedentary habits of most workers, and their effects may be minimized and in some cases entirely overcome by judicious exercise. Because most workers state and really believe that they cannot spare the time for systematic physical exercise, the exercises in this article have been planned in such a manner that they may be performed by the busy worker without devoting a single moment of his precious time to them specifically. By performing his routine daily movements in a scientifically correct manner he derives incidentally many of the benefits accruing from systematic physical training. Every careful worker and every capable business executive takes good care of his machines to lessen their depreciation and to prolong their business life. In every technical school these principles of conservation are carefully expounded. It is hoped here to point out to teachers, to business executives and to workers some of the ways in which the human machinery of business may be cared for with a view to prolonging its life and increasing its business efficiency. From a business point of view the care of the human machine is a very good investment; from a social point of view it is the noblest service.

ARISING.

You need not go to a gymnasium nor buy a special gymnasium suit to obtain the benefits of physical training. Physical training means only such systematic exercising of the muscles of the body as will result in the symmetry and the grace, and in the clear complexion and the cheerful disposition of radiant good health. In the course of your daily activities you are obliged to use your muscles constantly. If you know how to use these muscles properly you can obtain from the performance of your daily activities many of the benefits to be derived from a systematic course in physical training. You can obtain these benefits without any inconvenience and without devoting to this physical training a single moment of your precious time for which you have so many other uses.

Rolling out of bed.—How do you get up in the morning? Do you roll out of bed like a sailor? Or do you try to make yourself into a football by drawing up your knees and bending your back before you attempt to arise? Do you consider it an especially pleasurable sensation? It ought to be.

Stretching and deep breathing.—Try this method of arising in the morning: When you awaken lie flat on your back, fully extended, with the arms extended above the head. Stretch yourself and try to make yourself as long as you can. Hold this position while you take a dozen deep breaths, inhaling slowly until your lungs are completely filled and exhaling slowly until you believe you have withdrawn all the air from your lungs. Unhampered by the constriction of your clothes, which would prevent you from assuming this attitude during the day, you experience the novel and pleasurable sensation of feeling the blood tingling through your arteries from head to foot. The extension of your arms above your head will tend to develop your chest, and your back will be supported and strengthened in this position. The assumption of this position every morning will tend to overcome that tendency to flat chest and round shoulders which all possess who do not exercise regularly.

Sitting up.—When you start to get up do not turn over on your side and roll out of bed. Get some benefit from the movement. Holding your hips with your hands and catching your toes at the bottom of the bed, rise to a sitting position without helping yourself at all with your hands. You may find this movement somewhat difficult at first, because in performing it you use the muscles of your abdomen, which are seldom used by you during the day. In most of us these muscles have become through disuse a mass of fat. When exercising daily they become smaller and firmer and the size of the waist is reduced by the removal of this fat. If your abdominal muscles are weak it may be necessary for you to help yourself at first by placing your hands on the bed instead of on your hips and pushing yourself up. This makes the movement much easier and also much less beneficial. This device should, therefore, not be resorted to unless absolutely necessary, and the hands on hips position should be used as soon as possible.

Leg raising.—If you experience difficulty in rising from the lying to the sitting position in this manner it is due to the weakness of your abdominal muscles, which you seldom use during the day. These muscles may be strengthened by performing this exercise in bed before arising. Lie at full length on your back in bed. Raise your legs with the knees bent until the legs are at a position at right angles to the trunk of the body, and then straighten the legs until the toes point to the ceiling. Then let the legs sink slowly to the bed, keeping the knees straight and unbent if possible. If you find it extremely difficult to lower the legs all the way to the bed with straight, unbent knees and the effort becomes so excessive as to cause trembling or abdominal strain, bend the knees and let the feet come to the bed as quickly as possible.

STOCKINGS.

Have you ever given any thought to the function of the spine or backbone in the maintenance of your strength and the retention of your attractive appearance? The spine is a column of bones having twenty-four joints. In its beautiful natural position it forms a double curve. It curves outward at the shoulders, inward at the waist and outward again at the hips. As we hustle and bustle about our duties during the day we continually disturb this beautiful double curve. If every disturbance is a necessary disturbance, and if after every disturbance of this curve we promptly bring the spine back to its natural position, no harm, but rather benefit, will result from the movement. Frequently, however, we disturb this double curve unnecessarily and more frequently we fail to bring it back to its natural condition after disturbing it. The proper and the improper methods of treating the spine are well illustrated when you put on your stockings. Do you not generally hunch your back when you put on your stockings? The double curve of the spine has been changed into an ugly single outward curve. This has been accomplished by the exaggeration of the upper outward curve and the actual reversal of the inward curve at the waist. In this position you cannot take a full and invigorating breath because your chest is cramped by the bad position of your spine. The whole weight of your distorted trunk rests upon the principal bloodvessels of your body, rendering it impossible for the heart to maintain the circulation without impediment. The abdominal organs also suffer from this unnatural pressure of the spine and are crowded out of their natural positions.

If you wish to assist in maintaining the double curve of the spine, upon which so much of your health, strength, and beauty depends, assume this attitude when putting on your stockings: Lie on your back fully extended. In this position your spine is supported at the shoulders and at the hips, and the inward curve at the waist is properly maintained. Raise the right knee to the chest, and, while in this position, put on your stocking. Repeat this exercise with the other leg. Deep breaths may be taken by you in this position, as your chest is unhampered by pressure from the spine. Deep breathing will stimulate your circulation and permit you to feel the tingling of the blood in your arteries The contraction of the muscles used in bringing the legs up to the chest will serve to strengthen the muscles of your abdomen, which are seldom used by you during the day. This exercise will also stimulate the liver and the other organs of the abdomen. The three or four minutes devoted to putting on the stockings each day, if utilized in this manner, will convert a movement which is usually harmful to health into one of distinct benefit. It will strengthen the double curve of the spine instead of destroying it. It will give you an opportunity to develop the chest, instead of cramping it. It will stimulate the circulation, instead of impeding it. It will strengthen the abdominal organs, instead of displacing them. In short, it will enable you to begin the day's work with the refreshed feeling of radiant, buoyant good health instead of with the discouraged, disheartened feeling that accompanies cramped respiration, impeded circulation, and deranged digestion.

SHOES.

The movement of putting on shoes is ordinarily performed in a manner similar to that of putting on stockings. The double curve of the back is converted into an ugly unhealthy outward curve and the chest is cramped to such an extent that its very existence seems to be threatened. This movement may, however, be made one of considerable value. Balancing exercises are excellent for the development of the legs and for the maintenance of a proper and attractive carriage. Few persons have an opportunity to practise these exercises during the day.

Balancing on one leg.—While putting on your shoes stand in an upright position in your stocking feet on the carpet of your room. Raise the left foot, balancing your body on the right leg, and slip the left shoe on your foot while in this position. Repeat the movement with the right foot. Untrained persons sometimes find balancing exercises somewhat difficult of execution. The skill required for their performance is quickly acquired, however, and these balancing exercises then have a fascination which few other routine exercises possess.

The buttoning or lacing of the shoes presents additional opportunities for physical training and development. Ordinarily this movement is performed in the cramped position which is best described as the one in which a person with legs crossed seeks to bring his eyes as close as possible to his toes. For the performance of this movement it may be necessary to bring the eyes close to the feet in order that a person may be enabled to observe the details of the buttoning or lacing. Most must exercise this close supervision of the movement although many are able to perform it almost as a reflex movement without conscious supervision. Even if it must be consciously supervised, this supervision need not necessarily involve the usual cramping and distorting of the body. The crossing of the legs does not assist the movement or its supervision in any manner. It is a habit the development of which should be avoided. It impedes circulation, causes muscle cramp and frequently gives rise to unfavorable comment.

Kneeling for lacing.—Physical benefit may be derived from the movement of buttoning or lacing shoes when it is performed in the following manner: Take a standing position. Bend the knees and lower the trunk as if you intended to sit on your heels. Bend your knees until your body almost touches your heels, being careful not to disturb the normal condition of the spine. Then move the right leg backward. Kneel on the right knee and lace or button the left shoe. Repeat the movement, kneeling on the left knee and lacing or buttoning the right shoe. This movement develops the muscles of the abdomen, the thighs, and the calves, preserves the double curve of the spine and substitutes a graceful and beneficial posture in your daily routine for one which is conceded by all to be ugly and harmful.

Our Readers' Monthly Prize Discussions

Twenty-five Dollars Is Awarded for the Most Satisfactory Paper

All persons, whether subscribers or not, are invited to compete for the prize of $25 offered for the reply deemed best by the editors to the following questions:

CLXXXVIII.—How do you treat frostbite and chilblains? (Closed.)

CLXXXIX.—How do you treat fainting? (Answers due not later than December 15th.)

CXC.—How do you treat burns? (Answers due not later than January 15th.)

The award will be based solely on the value of the information contained in the answer. No importance will be attached to literary style. Answers should preferably contain not more than six hundred words, and should be written on one side of the paper only. All papers submitted become the property of the JOURNAL, and should bear the full name and address of the author for publication. The prize will not be awarded to the same person more than once within a year.

The prize of $25 for the best answer to Question CLXXXVII has been awarded to Dr. C. Herbert Church, of Passaic, N. J., whose paper appears below.

PRIZE QUESTION NO. CLXXXVII.

TREATMENT OF TANTRUMS IN CHILDREN.

By C. HERBERT CHURCH, M. D.,
Passaic, N. J.

The causes of tantrums in children may be divided into two classes: poor training and physical pathology. The first is not strictly in the physician's province, but is often presented to him as an opportunity to do great good. Almost any child who finds that he can have his own way part of the time by going into tantrums, even if he gets a good spanking for it, at others will often take a chance if he wants something pretty badly. Where this is the cause, of course, training of the parents and nurse is the great treatment. One of the greatest shames of our modern education is that young people are taught almost everything excepting how to fulfill the greatest responsibilities in life, those of husband or wife and of father or mother. The tactful, kindly family physician can often do some of his most important work in filling this lack, and save for a life of usefulness and sometimes greatness many a child who would, if not controlled, go to the human scrap heap. However, in the larger number of cases of real tantrums, I believe the cause will be found in some pathological condition. That being the case, it is our business to find it and remedy it if possible, and it usually is possible. Do not say it is "nerves" and give a nerve tonic or some kind of "dope." When you find a case of tantrums in the young or of "nerves" in those who are older, there is a cause for it, and that cause is seldom if ever entirely mental. Some mental shock may be the "straw that breaks the camel's back," but it usually is only the straw. Thousands have had the same or equivalent shocks and come through them all right, and so would your patient if he did not have as heavy a load as he could carry before he received the shock.

Many of the causes centre about the sexual organs or urethra; as phymosis or a contracted meatus in the male; a clitoris with an adherent hood, irritations from leucorrhea, urethral caruncles or inflamed carunculæ myrtiformes, if the hymen has been ruptured, in the female; and masturbation, worms, retained smegma, or irritations from too concentrated or otherwise irritating urine in either sex. The trouble may be in the rectum with a tight sphincter, hemorrhoids, prolapsus, irritable papillæ, ulcers, or what not. Do not be too modest nor allow your patients or their mothers to be too modest to have a thorough examination of these parts no matter what the age of the patient. Be sure there is no eye strain; have the eyes carefully tested not only for refraction, but for muscular balance. A very slight difference in the eyes often causes more strain than quite severe lesions. The tonsils and adenoids should be examined; and the teeth also may be an important cause of ill health. Do not forget the feet as a cause of nervous trouble. Do not sneer at the mechanotherapists, osteopaths, etc. Muscles get tight and rigid sometimes and interfere with circulation and nerve action. These may directly affect the nervous system or indirectly affect it by interfering with the action of some of the organs, reaching the nervous system by autointoxication, interference with the ductless glands, or a poor nutrition. I take it for granted that any physician will see to the digestion, bowels, fresh air, exercise, diet, and all other medical and surgical troubles of his patient. If you need a full list of the possible causes of tantrums and their treatment, read your most complete work or works on children's diseases and supplement this by reading the rest of your medical library together with all the books you can borrow.

128 PROSPECT STREET.

Mrs. Mildred K. Smith, of Richmond Hill, L. I., writes:

In writing on the best method of treating tantrums, one is probably not expected to repeat the simple, the obvious, and the practical, but to tangle up a little Freudian psychology and suggest a process of psychanalysis. I have no quarrel with such a method except that it would be over the head of the average person who must control and direct children. A personal experience of many years in the schoolroom and in the home and careful observation of the experience of others have demonstrated to my satisfaction the effectiveness of the "let alone" policy in dealing with the victim of tantrums. This method is the rational one from the psychological standpoint and it has stood the pragmatic test.

In other fields of medicine we have come to recognize that prophylaxis is better than cure. This is even more true of the child with a morbid mentality who indulges in violent demonstrations known as tantrums. The place to start prophylactic treatment is with the parents. All of us who have come into contact with the problems of childhood have realized that the most difficult factor in these problems is the parent. When we find a child given to demonstrations of violence on slight provocation or resorting to them to gain his ends we usually find that the mother, or other person who has cared for that child, is nervous, undisciplined, lacking in selfcontrol; she cannot endure hearing the child cry and thinks that affection is best expressed in unlimited indulgence of the child. She has failed to teach the baby from the first day of his life obedience to law and order in his physical habits and the baby soon learns that all he has to do to attract attention is to cry for it. It is the mother who does not know how to say, "No" when the older child wants some article of food that he should not have, who cannot resist giving him his father's watch and the hatchet if he insists on having them, who is responsible for the tantrums one often sees in overindulged and undisciplined children. The child learns that by kicking, screaming, holding his breath, etc., he can get what he thinks he wants. This way of getting attention is not always limited to young children, but the habit is usually formed in the way described.

If the habit has been formed the rational course is to undo the mischief by teaching the child that a violent demonstration will procure nothing for him. This can best be done by ignoring the tantrum, leaving the child severely alone, preferably in a room by himself until the storm is spent. If this method is persisted in, the most obstinate child will gradually learn that his tantrum has profited him nothing. When he finds that apparently nobody cares whether he cries and kicks and that it elicits no attention and apparently does not disturb anyone, he will give it up. It is useless to punish the child or to attempt to use moral suasion when the fit is on for he is not in a receptive or impressionable mood, and too often the person dealing with the situation is in no frame of mind either to administer punishment or to give advice. In an older child there may be a place for moral suasion, but it is at the opportune moment when he happens to be in a receptive mood. Punishing the child by denying him the thing he has tried to get by his demonstration may have a place. The two prime factors in dealing with tantrums, whether in children or older persons, are the "let alone policy" and absolute firmness, calmness, and selfcontrol in the application of this policy. Perhaps if you have tried it you will agree that it is after all not as simple as it sounds, but of its effectiveness there is no question.

Dr. Leonard B. Fauquier, of Jersey City, contributes:

Treatment of tantrums in children necessitates a thorough exploration into the constitutional or local causes and, with subsequent elimination of these factors, resolves itself into creating parental ability properly to guide the infant or child in its primordial existence. With the dawn of the young infants' mental powers and the tendency to develop in likeness of their progenitors, there is the rapid growth, relative large size, lack of inhibitory action of the cortex, and immaturity of the brain, with the greater irritability of the motor and sensory nerves, all of which predispose to functional disturbances. When the "will to do," or "conduct" is crossed by an adverse sense impression, this psychanalytical complexity manifests itself in the form of a sudden, intense overmastering emotion, which if not adjusted early assumes a subconscious state.

Inquiry should be made into parental past events, to elucidate possible predisposing factors. The constitutional or local causes should then be ascertained. The following are not infrequently the offenders: disturbed nutrition, anemia and underweight, gastroenteric intoxication, phimosis, eye strain, adenoid growths, and intestinal worms. Local treatment involves removal of the adenoids, correction of phimosis and proper eye glasses. General treatment is of prime importance and consists in correction of nutrition by proper feeding, early hours, and open air life, preferably in the country with freedom from nervous excitement or undue nervous stimulation. After the morning bath, a cold sponge for a few seconds only over the whole body with the water at 60° F. is most beneficial and should be repeated only on the subsequent reaction which follows. Internal medication is at times necessary. As tonics, iron as the citrate, nux vomica, and codliver oil in small doses are good. Bromides should be given in small doses only when absolutely necessary.

If it is impossible to detect any visible cause in addition to the above, an effort should be made to establish a proper correlation between parent and child. With a better comprehension of parental responsibility and the knowledge in the rearing of children there will be better intellectual discernment and judgment in matters of parental obligation. Corporal punishment has no place in the proper upbringing of the child. He knows nothing of right or wrong, but follows his natural inclinations. He is a sensitive being, endowed with all the desires, inclinations, and tendencies which we ourselves possess. If this leads him in the wrong direction, the parent or nurse should guide him in another and better one and divert his eager interest and energy into wholesome and normal directions. His environment should be free from all excitement. A normal development can take place only in the midst of quiet and peaceful surroundings with plenty of time for rest and sleep. As the baby passes from infancy to childhood, the same tender care combined with obedience is most necessary. The parents should exert their control in other ways than by giving commands. The authority then will bear greater force and instant obedience will be attained. They should not indulge him in everything, just to avoid the uncontrollable fit of passion, but should teach the child to control himself in everything, no matter how small. He should be treated tenderly but with great tact and firmness. Hygiene of the central nervous system is most essential and will assist in securing a better and contented psychical life. With the advent of preparatory training, both intellectual and physical, a boarding school should be selected.

Medicine and Surgery in the Army and Navy

THE TYPHOID HOSPITAL AT VICHY.

By Charles Greene Cumston, M. D.,
Geneva, Switzerland,
Privat Docent, University of Geneva; Fellow of the Royal Society of Medicine of London; Honorary Member of the Surgical Society of Belgium; Member of the Surgical Society of Switzerland, etc.

The hospital for typhoid fever at Vichy, a city which contains a number of military hospitals, may be taken as a type of many others now in operation. The necessity for a special hospital was appreciated at the very beginning of the war, because if typhoid cases could be concentrated in one hospital devoted to that purpose it was evident that the patients could be more efficiently treated. Therefore, a large modern hotel outside the town in full sunshine was selected. The building contains about 170 large, well ventilated rooms, each with a bath, the latter a most important point for treatment. At certain times when there have been many patients over 1,000 baths have been given in twenty-four hours. No room contains more than three beds. The physician in chief is Doctor Castaigne, the well known Paris doctor. He has a very competent staff and all facilities for laboratory research. A good supply of nurses are in attendance.

Such an important hospital for typhoid requires the carrying out of drastic prophylaxis, as otherwise it might readily become a serious focus of infection and a new source of typhoid bacilli. The nursing staff were given from the very beginning preventive injections of antityphoid vaccine, while the wounded soldiers coming to the other hospitals from the front were likewise vaccinated if their condition offered no contraindication. It should not be forgotten that the evolution of typhoid is not the only phase when the patient is a source of danger, because convalescents, as is well known, may often retain virulent bacilli in the gut and elsewhere for a considerable time. Therefore, the convalescents have been collected together in special hospitals, where bed linen, clothes, and feces can be cared for properly. This careful isolation would be quite ineffectual were it not enforced as soon as each patient arrives at Vichy.

As soon as a sanitary train arrives at Vichy the doctors of the typhoid hospital meet it at the station and make a first examination of all fever cases. The temperature chart and index card of each patient and his general appearance are usually quite enough to make a diagnosis and all those who appear to have typhoid are at once dispatched to the hospital. Should any wounded man in treatment at the other military hospitals at Vichy show symptoms of typhoid even of doubtful nature, a blood culture and serodiagnosis are at once made and if the diagnosis is positive the patient is instantly transferred to the typhoid hospital. Thus, the chances of contagion are reduced to a minimum. The prophylactic measures have proved themselves perfect because the disease has not occurred in Vichy and only two cases have been observed among the nurses.

Now, let us examine the results, clinical and otherwise. From October, 1914 to August, 1915, nearly 1,000 cases were treated; this was during an epidemic occurring in the trenches in the section sending its wounded to Vichy. At the early part of the war, antityphoid vaccination had not been adopted as a routine practice in the French army. The exact number of cases entered at the typhoid hospital during this epidemic was 960 and the mortality was ten per cent. or about the same as in peace times. At this hospital very few cases of typhoid have been met among previously vaccinated subjects and when it does occur it has been mild. In all, there have been twenty cases. Many soldiers coming from the region of Argonne presented a rather marked diarrhea for some days before the typhoid symptoms began. This diarrhea was usually accompanied by colic and tenesmus but no rise in temperature. This condition lasted for two weeks to twenty days during which time the patient was obliged to give up his service. It would be interesting to know if in these cases, particularly from the viewpoint of prophylaxis, the process began with an ordinary enteritis or if the typhoid bacillus was already in the gut and therefore in the dejecta.

Generally speaking, the complications observed were those ordinarily met with, namely, hemorrhage, intestinal perforation, neuritides, phlebitis, and furunculosis. An important point to note is that there has been a total absence of cardiac complications, particularly myocarditis, which is so common in certain epidemics. This peculiarity undoubtedly is due to the fact that most of the men are young and well selected and offer no cardiovascular defects. In a number of cases single or repeated intestinal hemorrhages have occurred and twenty proved fatal. Besides these, hemorrhage in typhoid of medium severity, recurring several times, has been observed, but were recovered from by energetic treatment. Taken all together the hemorrhages have appeared to be more frequent and less serious than in an ordinary run of cases. One of the characteristics of the epidemic appeared to be a decided selection for the nervous system: cerebral excitement, violent delirium, might well be expected in soldiers who had fought for months and whose nervous system had been under unceasing tension. The delirium naturally related to the war and as many patients were greatly agitated, great care was necessary to prevent harm coming to them. This excessive nervous excitement deserves notice in contrast to the quiet delirium usual in typhoid. Several cases of pleurisy occurred toward the end of the disease. This is an uncommon complication but six or seven cases have been noted at the Vichy typhoid hospital. Usually the collection was serofibrinous, coming on during convalescence without cough or pleural pain. Dyspnea was slight, while the rise in temperature hardly indicated trouble in the thoracic cavity. The collection, bilateral or unilateral, was generally small in amount, not over one litre and usually about 500 c. c. In some cases it became absorbed, in others it disappeared after one or two punctures. In only one case did the collection become purulent, but after repeated punctures the patient finally recovered at the end of three months.

A few instances of subcutaneous and muscular foci of suppuration developed and likewise some typhoid bone lesions, most commonly in the ribs or tibia. The temperature remained low and in no case did suppuration occur. The process became absorbed in six weeks to two months. A single case of spondylitis was encountered. Five cases of the rather uncommon laryngeal complication occurred; two were mild and disappeared without leaving any trace, while two others were severe. These occurred in two patients with a hypertoxic form of typhoid and the evolution of the laryngeal complication did not have time to take place in one as death occurred. The fifth case was a serious typhoid and the patient recovered, but the laryngotyphus after improvement recurred so severely that tracheotomy was done. Undoubtedly the lesions were deep seated in this case because after cicatrization, adhesion or retraction of the vocal cords took place producing an atresia of the larynx which prevented the patient from breathing when the cannula was removed. Parotiditis occurred in ten per cent. of the cases, and in spite of utmost care of the buccal cavity many went on to suppuration. This complication took place in both mild and serious cases and arose at almost any period of the typhoid.

At the beginning of the war few soldiers in the French army had been vaccinated for typhoid and for this reason a vaccination service at the Vichy hospital was instituted in November, 1914. From this time on all wounded men sent to Vichy have been examined in order to ascertain if any presented contraindications for vaccination and if not, they are vaccinated. The contraindications are infected wounds with high temperature and tuberculosis giving rise to unmistakable physical and general symptoms and certain hepatic manifestations. Taken altogether, the contraindications are reduced to a minimum since ninety-five per cent. of all patients in the hospital at Vichy could be vaccinated. The systematic use of prophylactic vaccination for typhoid among all the nurses and wounded has been intended to fulfil two objects, namely, to prevent a local epidemic and to immunize the wounded who return to the front. The first aim has been fully attained, but of course it is out of the question to ascertain if the soldiers vaccinated contracted typhoid after returning to the war zone. What is certain is that this antityphoid vaccination has been made in more than 20,000 soldiers, four injections to each, and knowing what we do of the favorable results, it must be admitted that some good work has been accomplished. No serious disturbances have been observed in any instance of prophylactic vaccination and the local reaction has never been intense; occasionally some inflammatory edema has developed but never any suppuration. Sometimes there has been a febrile reaction reaching 102° to even 103.5° F., but the duration has been short with four exceptions where the temperature ran a rather long course which closely resembled that of typhoid. On account of the infrequency of such cases it is most improbable that they cannot be explained by the fact that some of the bacilli had resisted the action of heat, because were this not so, all patients vaccinated from the same ampule would offer the same symptoms. This has not been the case.

Fourteen cases of accidents arising from vaccination in subjects presenting biliary lithiasis have been observed at Vichy. All of them had distinct histories of hepatic crises; following the antityphoid injections cholecystitis developed. Usually it was the first injection which gave rise to this reaction, but in two cases each injection was followed by pain in the gallbladder which lasted about two weeks. In only one case was the disturbance accomplished by a rise of temperature, which began with pain and disappeared with it at the end of five days. This is a new feature of antityphoid vaccination and a detailed study of it is now under way.

As to the treatment of typhoid at the Vichy hospital, baths have been found satisfactory, while curative vaccination has had a marked favorable effect when begun early in the disease and injections of colloidal gold work well when the temperature is slow in returning to the normal.

ENGLAND'S MESSAGE TO THE AMERICAN MEDICAL SERVICE.

Patriotic Rally and Reception November 14, 1917, Under the Auspices of the College of Physicians of Philadelphia, the Philadelphia Academy of Surgery, the Medical Club of Philadelphia, and the Philadelphia County Medical Society in honor of Sir Berkeley Moynihan, Colonel T. H. Goodwin, and Major George W. Crile.

The first speaker of the evening, Colonel T. H. Goodwin, said that when he came to this country some months ago the principal instructions given him were that he was to tell the American medical service of the mistakes which were made in Great Britain in order that they might be avoided here. One of the most serious errors was failing to realize the probable duration and severity of this war. He remembered very well the astonishment and the incredulity with which the British public received Lord Kitchener's statement that the war would last at least three years. He did not say, as was frequently misstated, that it would be over in three years. It was very difficult to arrive at a complete realization of conditions and necessities when you were far removed from the war zone, such as the necessity for training the medical profession. Economy and conservation of fuel and public money and avoidance of any wastage must be emphasized. The English encountered many trials and difficulties which America would experience. America's army would increase to a million. In addition to the initial army there must be large reenforcements to replace men tired and ill and to provide against the general wastage of war.

Colonel Goodwin earnestly urged avoiding the cardinal mistake of underestimating the enemy. We should not believe stories as to the enemy being broken, as to his being at the end of his resources, as to the morale of the German soldier being a thing of the past. The German morale was not broken. The German soldier was a hard fighting, determined man, essentially patriotic and splendidly disciplined. The German soldier, the German officer and the German nation were full of confidence, at least they were a few months ago. Just before coming out Colonel Goodwin was talking to a German officer of the possibility of America's coming into the war. He said, "Of course America is coming into the war. We shall attend to that. We shall take steps to bring her in. We have got to pay our war cost with American money. You may laugh now, but mark my words, you will see our victorious armies in the United States. We intend to teach them as we have taught other countries what war means. Wait and see." We had waited and were still waiting; but it was not with any confident expectation of seeing the German armies walking through this country.

In the last six months Colonel Goodwin had been so closely associated with the men of our army that he regarded our officers and men exactly as he did his own officers and men. Seeing, as he had seen, the enormous amount of suffering, pain, misery, loss, wastage, much of which might have been avoided by more forethought, more realization, more preparation, he urged us to prepare now and to leave no stone unturned to insure adequate preparation. When you were up at the front the atmosphere was not depressing. When a high explosive shell struck a regiment occupying a front line trench, much less damage was done than you thought. One of the men might be struck in the shoulder, you heard a few vitriolic remarks regarding German shells; the man used his first aid dressing; one of the officers telephoned that a wounded man was being sent to the casualty station. Private Atkins received a dose of antitetanic serum, his arm was placed in a sling, he was put on a stretcher and sent farther back where there were motor ambulances and then taken probably a couple of miles back to the dressing station. He was there given a hot meal, his wound was attended to very much more carefully than at the first aid treatment was possible. If he was more seriously wounded than was thought he was sent to the hospital at the base where he was treated for some weeks. One of the cheeriest of the men was one who had received his ninth wound and was going back to receive his tenth; he seemed to be rather looking forward to it than otherwise. The British soldier was an extremely cheerful individual. Colonel Goodwin had known him for the best part of twenty-five years at every sort of work and of play in peace and in war, in sickness and in health and had never seen him depressed. He had no idea except of winning; he was either winning or going to win tomorrow. When Americans were out there they would find the same with their men. On being asked if he hated the Germans Colonel Goodwin said that his conception of hatred carried a rather childish idea. His feeling was one of utter detestation and horror of German methods and system generally which were utterly opposed to all our ideas and principles in every way. He said he would like to forgive and forget after the war but he could not. This might seem inhuman and unchristian but when Americans had been out there six months they would feel as he did. The things he had seen, the bombing of hospitals, bombing of civilians, the sinking of hospital ships, the use of gas—these did not combine to make one feel very forgiving.

There is but one end only and that was a victorious one for us. Much hard and unremitting work had to be done before we attained that end. He begged his audience to expect and to prepare for a long and strenuous war. The more finished, the more unremitting the preparation, the greater and steadier the purpose, the more quickly would the war come to a satisfactory termination.

Major Franklin H. Martin, chief of the Medical Section of the Council on National Defense, after making an eloquent and vivid statement of the necessity of medical service, made a stirring appeal to the profession of this country to "get into uniform" shoulder to shoulder with our allies.

Major George W. Crile, in speaking of the life of the medical man who goes to France, said, first of all that he would be splendidly received. He would be placed in an advantageous position, given the preference upon all sides by his colleagues, shown all the courtesies, and treated by your professional fellows as brothers. He would have the opportunity of studying problems of military surgery from great masters and these masters in military surgery were by no means always the older men. There was a wonderful development in the younger men of about thirty years of age. We knew British surgeons who had been working on twelve hour shifts—twelve hours on and twelve hours off—for three years and they kept on doing it untiringly. He could not express in words too strong his admiration for these men and for those who had planned the work, particularly for the director general himself, Sir Alfred Keogh.

The routine of your life in France would depend upon where you were assigned. At the casualty station the real work of surgery was done. It was very odd and seemed almost incredible, that the farther toward the front one went the greater peace and harmony exist. Everybody was thinking along the same lines and working in the most single minded way toward the achievement of the same end. Among certain features of interest there was the bombing of hospitals. The hospital which he had the honor to serve had been in existence for three years. That the enemy knew it was a casualty clearing station was obvious since on the map of a pilot who had been shot down the hospital was marked as such. On the night when this hospital was bombed four other hospitals in the territory and three or four French hospitals farther down the line were bombed. The next night six other hospitals were bombed. Over 200 people were killed and wounded on these two nights. At the time of the bombing of the hospitals the German prisoners were the only ones who cried out. They supposed the British were shelling the hospital and when they were told that it was their own airplanes which were bombing the hospital they cursed their own people as only the Germans could curse and hate. So far as Major Crile could see every German prisoner of the British had been well cared for.

As to living conditions at the front, we had the British Army rations; they were excellent. The weather was always chilly, damp, and cold, yet the men throve. There was something in the whole atmosphere of this sort of life that apparently invigorated the men. In the front area, of course, very little surgery was done. You could not do any good surgery until you got behind the eight mile limit of the German guns. Not infrequently one wore a steel helmet when operating.

A word about the British soldier. Major Crile had learned to know him better and had this to say for the Tommy: he really did not know what defeat was. You might leave him in Flanders and you could go away and leave him there for a week and when you came back he would be there—living or dead. The Tommy was a good clean fighter and reflected the great sense of fairness found everywhere among the British people. He had never seen any boasting among the British soldiers nor any expression of fear or hate. Major Crile feared the intelligence of Germany far more than her soldiers. The German soldier was inferior to the British as such. It was the organized intelligence of Germany that caused thought. He hoped that the United States in this crisis would see to it that all the intelligence she possessed would be linked up close with national defense now and for all times, that all our universities would be, in peace as in war, a part of our national defense. In every one of our medical schools we ought to have an organization of physicians, clinicians, surgeons, laboratory men who felt a national responsibility so that in answer to the call they would be ready for action. In order to cope with the hard materialistic philosophy of the Germans we must have our laboratories mobilized, and we must all think on national lines. This was the time for such organization. The Council of National Defense was working upon that line now and he hoped such organization would go through.

Sir Berkeley Moynihan, of Leeds, England, reviewed the aims and ideals of England in the war. This was was different from any war which had ever been waged. For the first time in history there was a league of free peoples willingly fighting together, a league of peoples who could not be coerced by any government, or compelled by any autocracy to take up arms. At the bottom there were two conflicting moral systems ranged one against the other. Prussia had recognized one gospel only, the gospel of plunder. War was the natural industry of Prussia. Germany has said that she was fighting a war of defense. We did not for a moment believe this. If it was true, the truth underlying the war was German fear. Fear was the black godmother of cruelty. In Sir Berkeley's view, both these statements were wrong. This was a war, waged not on one side or the other for merely military ends. It was a moral war and we must recognize that there could never be any compromise. The difference intellectually and morally between the gospel of tyranny and the gospel of liberty was that tyranny desired to stamp the intelligence of every citizen in the state with a certain mark so that he can be put into the intellectual currency of the state. Liberty, on the other hand, desired to allow to each individual selfexpression and freedom of development of his own character. For us and for the world of science there was an issue as critical and grave as any that the world had had before this. Tyranny uncontrolled meant restriction of the intellectual output, atrophy from long disuse, the negation of scientific processes. Tyranny meant intellectual sterility and death. Progress in science must first and last depend upon unrestricted exercise of all the faculties of the mind, and among these imagination was the chief. Beneath a system of tyranny you could not have intellectual freedom; the two were absolutely incompatible. The best illustration of this was given by the history of Germany herself in the last forty years; for, in every branch of science you found an absolute lack of original impulse. Germany had been the intellectual clearing house of the world, but her original scientific contributions were almost negligible. In England we had our anxious times, but instantly upon the outbreak of the war the troubled waters of our national life were stilled, all corrupting influences sank to the bottom and we realized that selfsurrender was the best of all social antiseptics. The whole medical profession of England stood ready to do precisely those things which the war office required of it. With few exceptions every medical man in the country under the age of forty-two years was an officer in the Royal Army Medical Corps. The highest reward that could come to an Englishman, whether he wore the uniform or not, was being awarded the Victoria Cross. Any man who bore that personal decoration was a marked man wherever he went. When Sir Berkeley left England 103 Victoria Crosses had been awarded and of that number a proportion three times as great as the proportion to the entire army had been awarded to the Royal Army Medical Corps. When a man won the Victoria Cross more than twice he was recommended for a bar. Two bars have been awarded in this war and both to doctors. Of our achievements as doctors the greatest, of course, was that in connection with typhoid vaccination. If the military heroes of the war were doctors, the scientific hero was Sir Almroth Wright. In the South African war in 57,184 typhoid cases there were 8,000 deaths. In this war, with an army ten times as large, on a soil very much more likely to carry contamination than in South Africa, with every kind of unhygienic and unsanitary difficulty to contend with, in 6,022 typhoid cases there were but 292 deaths. In surgery we have made considerable advance. The surgical problems presenting at the beginning of the war were of a kind which none of us had ever before met, but by degrees, owing to the work of the laboratory and the putting of the right man in the right place we have made considerable progress in the treatment of surgical conditions. In the surgery of the lung operations have been done which are very different from anything ever done before.

As Colonel Goodwin has said, the conspicuous, outstanding merit of Thomas Atkins was that he was the most cheery, indomitable fellow on the face of the earth. The smile never wore off. We saw in our soldiers two kinds of courage, physical and moral. The physical perhaps any one of us could understand, for in the glitter and glamour and the glory of a concerted attack, it was not difficult to be brave. But, when you visited the soldier at night you could not help thinking of his awful loneliness and solitude and the aching misery of the early hours of the day, but there was never a whisper of regret or surrender.

Now America was in the war. America would have many lessons to learn as we had to learn in this war. It was useless to deny that Germany was a great enemy. She was an intractable enemy, ruthless, bitter and, as Tommy said, a "dirty fighter." You would never hear a Tommy express any personal admiration for the individual Boche, but you would never hear a Tommy who had fought in the East say anything derogatory of the Turk. He would tell you that the Turk was a gentleman, that he fought clean and that it was a joy to be in arms against him. Against the Boche America would find that she had to make very long, very arduous, and very intense preparation; that she would have to put up with immense losses.

And, to America and for England, what was to come out of this war? Many friendships and great inspiration; but, the most splendid thing of all was that America and England at last stand side by side. Together we were civilization's largest hope. The greatest of our statesmen of the nineteenth century in the opinion of many Englishmen, has said: "All wars are detestable, except one war—the war for liberty." America was fighting her third great war. In your first war you won freedom for America. In your second war you won freedom in America. In this war we would win freedom for the world.

MEDICAL NEWS FROM WASHINGTON.

A Sanitary Corps Needed in the Navy.—Progress in Construction of Hospital Ships.—Promotions in the Medical Reserve Corps and Medical Corps.—Physical Examinations for Major Generals and Brigadier Generals Slated for Service in France.—Public Health Laboratory Work in Camps Being Inspected.—Medical Reserve Officers on Duty in State Capitals to Advise Governors.—Typhoid at Schofield Barracks, Hawaii.—The Case of Doctor Wagner and the Officers' Reserve Corps.—Follow up Work for Men Discharged Because of Tuberculosis.—Commissioned Dental Reservists Awaiting Assignment to Duty.

Washington, *November 26, 1917.*

Consideration is being given to a suggestion that a corps be established in the navy similar to the Sanitary Corps of the national army. That corps in the army not only has to do with sanitation, but also and to a greater extent it handles certain business and technical activities coming under the Medical Department, which do not require the services of qualified physicians. For example, it looks after the procurement, care, and distribution of pharmaceutical and other medical supplies, it contains chemical and other experts, and the subject of gas masks comes under it. It is felt that the navy needs a similar corps, although not to such a great extent as the army. The navy already is employing members of the Public Health Service with satisfactory results. The problem of the navy Medical Department is quite different from that of the army, as under the naval system there are comparatively few large stations where many men are congregated for purposes of training and where they are apt to stay for months, as in the case of troops at army cantonments.

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Satisfactory progress is being made on construction of naval Hospital Ship No. 1, the first vessel of this character to be specially designed and built for our navy, and the work of converting two Ward liners to hospital ships also is proceeding at a rapid rate. There is great need for these vessels in addition to the entirely inadequate *Solace*, which long has been our only hospital ship, especially as we now have in European water such a large force of American vessels of all classes. Some attention has been given to the names to be applied to the hospital ships. Probably the new ship will be named the *Comfort*, and the two converted vessels *Mercy* and *Relief*.

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The surgeon general of the army finally has obtained approval of the Secretary of War of a number of recommendations for promotion of members of the Medical Reserve Corps. Already about 200 have been appointed captains, and it is likely that a number of promotions to the rank of major will be made. The following officers of the regular Medical Corps have been promoted temporarily: To be colonels, Lieutenant Colonels Henry S. Greenleaf, Louis T. Hess, Christopher C. Collins, Benjamin J. Edger, Jr., and Samuel M. Waterhouse; and to be lieutenant colonels, Majors Ernest G. Bingham, James D. Heysinger, Lloyd L. Smith, John B. Huggins, William H. Tefft, Llewellyn P. Williamson, William R. Davis, Leartus J. Owen, Robert M. Culler and Frank W. Weed.

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General Pershing has reported that some of the general officers that have gone to France with our forces have not been able to withstand the physical strains imposed upon them by their exacting duties, and it is likely that several of them will be sent home. In order to avoid such interruption in the service as far as practicable in the future, orders have been issued directing the physical examination of all major generals and brigadier generals slated for service in France, in order that those found physically defective or who do not promise to be able physically to remain for an indefinite period in the war zone may be kept at home and given lighter duty, relieved of their commands, or in the case of those belonging to the regular army placed on the retired list if their disability appears to be of permanent character. In connection with this a board of officers, to meet in the office of the surgeon general, has ben appointed for the purpose of examining and reporting upon the physical condition of such officers of the army as may be ordered to appear before the board. The board consists of Brigadier General William H. Arthur, M. C., national army, and Majors Theodore C. Janeway and Charles H. Mayo, M. R. C. Major William J. Mayo, M. R. C., has been ordered to serve as a member of the board during such times as Major Charles H. Mayo may be absent.

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Lieutenant Colonel Charles F. Craig, M. C., is visiting certain camps for the purpose of inspecting the public health laboratory work. Among the places being inspected are Camp Dodge, Des Moines, Iowa; Camp Grant, Rockford, Ill.; Camp Custer, Battle Creek, Mich.; Camp Sherman, Chillicothe, Ohio; Camp Taylor, Louisville, Ky.; and Camp Funston, Fort Riley, Kan.

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Arrangements are being made, in connection with the Council of National Defense, to place members of the army Medical Reserve Corps on duty at State capitals as medical advisers to the governors. Before going to the capitals, the officers selected are coming to Washington, reporting to the council for instruction. Among those already selected for this duty are Majors James N. Baker, Alabama; Charles N. Dowd, New York; William D. Haggard, Tennessee; John W. Keefe, Rhode Island; William C. Lyle, Georgia; L. L. McArthur, Illinois; William J. Mayo, Minnesota; Reuben Peterson, Michigan; Francis E. Shine, Arizona, and William H. Welch, Maryland; and Captains David C. Brown, Connecticut, and Charles J. Miller, Louisiana; and Majors John E. Canaday, West Virginia, and John W. Long, North Carolina; and First Lieutenants Victor H. Stickney, North Dakota; Philip Marvel, New Jersey; F. A. Spafford, South Dakota; Carey P. Rogers, Florida; Rock Sleyster, Wisconsin; Edward P. Davis, Pennsylvania, Joseph R. Eastman, Indiana, and Reid White, Virginia.

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One of the rare instances of an outbreak of typhoid fever in the military establishment since the introduction of typhoid prophylactic measures in 1911 has occurred at Schofield Barracks, Hawaii. Detailed information concerning the occurrence so far has not reached the surgeon general, but a full report soon is expected from a board of medical officers. This board consists of Lieutenant Colonel Horace D. Bloombergh, Major George R. Callender, and Lieutenant Charles M. O'Connor, M. C., and it was directed to make a thorough study and investigation of all the causes pertaining to the outbreak, primary and contributing, and to submit recommendations for the protection of that and other commands in Hawaii from similar occurrences.

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Lieutenant Jerome Wagner, M. R. C., in April, 1917, was placed on active duty as an examiner of recruits in the Eastern Department. A commission in the medical section of the officers' reserve corps sent to him prior to June 3d was refused by him. Doctor Wagner has continued to the present in the performance of duties under the order of last April. His commission in the Medical Reserve Corps expired with the termination of that corps on June 3d. He since has been without a commission, but has been receiving pay as an officer of the army. It is held by the War Department that, upon the issuance of a commission to Doctor Wagner as an officer of the medical section of the officers' reserve corps, in place of that in the Medical Reserve Corps, which went out of existence on June 3d, and his entering upon and continuing in the discharge of his duties as such officer was an acceptance of the new commission and the failure to execute the oath of office promptly does not militate against the conclusion that there is now any existing requirement as to the time when the oath shall be taken. It is held also that Doctor Wagner is entitled to the pay of his office. His commission in the medical section of the officers' reserve corps will be returned to him and he will be required to execute the oath required by law.

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According to a decision just reached by the War Department, California State officials may obtain information regarding men discharged from the drafted army in that State for tuberculosis, which, under the State laws, is a reportable disease, the information being desired for the prosecution of follow up work in such cases. It is held that the Federal authorities shall cooperate as much as possible with the State authorities in the protection of the public health, when such cooperation does not interfere with military efficiency. The decision also will be applicable, in principle, in other States having a law similar to that of California.

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Many of the members of the Dental Reserve Corps commissioned during the past four or five months and not yet assigned to active duty are expressing a desire to know when they will be ordered to service. In some cases, they appear to have anticipated prompt summons to duty and have arranged their professional affairs with that end in view. As a matter of fact, there are more than enough dental reservists awaiting duty to fill the 500 vacancies created by the next draft of 500,000 men, on the basis of one dental officer to 1,000 men. For the present vacancies are filled only as they occur, and the only appointments made outside of that are to meet extraordinary and special needs of the service. Assignments to duty from the list of inactive dental reservists are and will be made in now regular order in relation to the date of original commissioning. More depends upon the location of the reservist, his individual qualifications, and the place where he is desired for duty. An examination of candidates for appointment to the Dental Corps of the regular army began on November 12th at various army posts. The papers will be sent to Washington for marking and rating by a board composed of Major H. E. Johnson, M. C., and Captains J. R. Bernheim and J. R. Ames, D. C.

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Dr. Charles W. Richardson, the well known ear and throat specialist of Washington, has been commissioned a major in the army Medical Reserve Corps, and ordered to duty in the Surgeon General's Office in charge of the subdivision of otolaryngology, section of surgery of the head.

Editorial Notes and Comments

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EDITORS
CHARLES E. DE M. SAJOUS, M.D., LL.D., Sc.D.,
Philadelphia,
SMITH ELY JELLIFFE, A.M., M.D., Ph.D.,
New York.

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NERVOUS AND MENTAL DISEASE AMONG SOLDIERS.

One of the greatest surprises of the war, perhaps the greatest from a medical standpoint, was the large incidence of nervous and mental cases among the soldiers. In the British expeditionary forces, discharges for these disabilities ranked second in number, wounds of course taking first place. One seventh of all discharges were for nervous and mental disease and, leaving out wounds, the proportion became one third. Nervous cases were to mental ones as three to one.

Such a state of affairs should not be surprising, however, upon reflection. The rigid and uniform requirements of war demand of the individual close conformity to a standard. In civil life he can choose his own way of adapting himself to life. The man who so desires can dress in old clothes, wear his hair long, and be generally neglectful to himself; the nomad can wander about the country; those who really wish to do so can get along without working. In the army, however, a man must comply day after day with an unvarying schedule or get into trouble. If he is unable to measure up to the mark a neurosis or a psychosis develops, usually the former. Thus there are three times as many nervous and mental cases among soldiers as among the same number of civilians. This is understating the case when we consider that the figures from civil life include idiocy, senility, etc. If we were to select, by the tests used in enlistment, 2,000,000 men and send 1,000,000 to war and 1,000,000 to civil life we would find among the soldiers more than three times as many nervous and mental cases, how many more we have no means of estimating.

Take the condition known as "shell shock," for example. This should really be called "war neurosis." At first these cases were supposed to have been caused by exposure to severe physical trauma, usually the atmospheric disturbance caused by the bursting of a huge shell. Now it is recognized that, while some cases have this etiology, by far more numerous are those cases in men who have not been through such an experience. Also, while the proportion of officers to privates in the British expeditionary force is roughly one to three, there are twenty-four times as many wounded in the ranks, but only six times as many cases of shell shock. It is rather curious that in large injuries of the central nervous system, war neurosis is rare, showing that mechanical shock to the nervous system, formerly thought to be the chief cause, is a greatly overrated factor.

Two other features are interesting. Shell shock is rare among prisoners, only eight cases being reported in 60,000. It is very rare, also, among the wounded. Practically none of the patients suffering from shell shock give a history of having been wounded. Perhaps the reason for this is that among the causes of war neurosis are the constant strain, anxiety, and fear during preparation for battle and while under fire. When a soldier has been wounded he goes to the rear to a place of comparative comfort and safety. When he has been taken prisoner the tremendous strain of battle is over; he knows that at least he is safe and will not be wounded or killed. In the class of men which we are sending to France, mostly well educated and of a rather high type, we must expect many cases of war neurosis, and preparations must be made to receive them. St. Elizabeth's Hospital in Washington is already full and, although ten new buildings are being added, each to accommodate thirty patients, these will care for only a part of them. The various State hospitals, large general hospitals, and private sanitariums must be prepared to do their share and many base hospitals will undoubtedly have to be built.

MEDICAL BOOK REVIEWS.

The primary purpose of a review of a medical book is to give the reader, a potential purchaser, a comprehensive idea of the work. Incidentally it is an advertisement for the publisher, which is paid for with a copy of the book itself, sent to the editor of a medical journal. The editor gives it to some member of his staff in the expectation, or rather hope, that the recipient will sit down in grim earnest to master its contents, to learn in what way or ways it differs from other books of the same type, and to write a critical essay in which the work is analyzed and its merits and demerits are discussed in a strictly impersonal manner, uninfluenced by prejudice or bias. We are glad to admit from the start that a few such reviewers exist; our complaint is that they are so few in number. It would seem to be a *sine qua non* that the reviewer should at least read the book, and not content himself with the preface, sometimes written for his benefit, and a hasty glance at two or three pages where the book happens to open, for, whatever impressions he may obtain, he cannot analyze the work from impressions gained in that manner. That different opinions should be formed by different readers is natural and right, but expressed opinions should be buttressed by an analysis of the work of the author, otherwise they are of no value to the possible purchaser, that is, to the medical public.

To see what is actually done let us take a few reviews of the same book which have appeared recently in as many medical journals. The first is an analysis a column long, which explains why the reviewer believes the book will be extremely useful to both the general practitioner and the specialist. The second consists of twenty lines, more than half copied from the preface, and gives no reason why the reviewer thinks the book fills a long felt want as a book of reference. The third takes about ten lines to say, with no reasons given, that it is especially valuable for the beginner. The fourth discusses the dedication, and that is all. The fifth gives a part of the table of contents in even less space. The sixth is another analysis of nearly a column that explains why the reviewer believes the volume to have a real reason for existence. The seventh condemns the book as useless or worse for the student and the practitioner, and as a book of reference, in less than twenty lines, but fails to demonstrate why. The eighth takes about ten lines to say that it is of interest mainly to the teacher and student, but is good for the practitioner.

Of these eight reviews, five show no acquaintance with the book, present nothing that could not have been written after a glance at the dedication, table of contents, and preface. Only two, the first and the sixth, give any analysis of its contents. As the seventh is condemnatory we may assume that the reviewer had read the book, though evidence is lacking in the review itself. Byron found occasion to give a scathing rebuke to his reviewers, though not because they had not read his work, and medical writers have often wished for Byron's genius to flay reviewers who write of what they have not read. Such reviews are of no value to the physicians who read them, and are detrimental to the journals which publish them because of their untrustworthiness. The reviewer should be fearless to condemn what he believes to be wrong, but should guard himself against a possible suspicion of malice toward either the publisher or the author, and this can be done only by a careful presentation of the errors in a full and fair discussion. He should be equally cautious in his words of praise, that they are not fulsome, and that they are warranted by the synopsis presented. This synopsis, analysis, discussion, whichever word you like, is the only important part of a review. It is the only part which can guide the reader to determine whether he wishes to purchase or not, and that is the principal reason why he should wish to read the review.

The reviewer has something to say on his side. His task is not easy, if he is conscientious. Many of the books that come to him are scarcely worth reading. They are not bad, they are not good, they are hopelessly mediocre. A thorough review exalts them far above their deserts. He must use discrimination and not treat all books alike. Many others are alike in all essentials, and there is little to comment on except the style of the writer, the arrangement of the chapters, and the binding, as the same synopsis would apply equally well to all. A new edition may differ from an old only in the addition of a sentence or two at the end of a chapter; the preface probably informs him of the substance of the change, which he utilizes as intended, because there is practically nothing else for him to do. He becomes weary in the search for something worthy of review, through the grist of endless medical books poured out by authors and publishers, so perhaps his eyes are dimmed and he fails to recognize the fact when they happen to issue a really new book.

THE PSYCHOPATHOLOGY OF SHELL SHOCK.

It seems that we must accept the term "shell shock" ready made, although it has proved misleading. War neurosis would be a far better term, as many of the patients have never been near the battle line and many more have received no physical trauma of any kind. What is the reason, then, for the bursting into existence of this host of neuroses, presenting such varied and bizarre symptoms? Why do men, nonneurotics, apparently healthy and scornful of "nerves," often men who have won their spurs in previous wars, go to the front in perfect health and return with paralyses, tremors, loss of memory, and the like?

Let us clear away the mists of misapprehension at once by getting rid of the idea of any actual shell explosion causing atmospheric waves and inflicting a trauma on the sensitive nervous sytem. Some few cases do undoubtedly have such an etiology, but in the vast majority of patients the cause is psychical. Let us look upon these cases as we would upon cases of neurosis in civil life, regard them indeed as occurring with the strangest background in history, but still amenable to the known laws of such cases. A neurosis, we know, represents an attempt at escape from an intolerable situation. And what else have we here? Take the simple farmer's boy whose deeds of death have been confined to shooting an occasional rabbit, or the city bred clerk who has worn out his days and trousers on a high stool in a dingy office and who feels faint when he sees a nosebleed in a street brawl. Put these boys and thousands like them in the fiery furnace at Flanders. Let them stand for days in the slime of the trenches, chilly and flea infested, hearing the shriek of the giant shells about them, the ceaseless roar of battle all through the night, never knowing what moment the solid earth will rise about them and whirl them to Eternity on giant wings, never knowing what moment the Germans will plunge over the trenches in irresistible numbers, taking part in a charge, perhaps, and sinking a bayonet in the body of a man and feeling it crunch against the bone, seeing a human head blown from its shoulders and the spouting trunk reel against him bathing him in warm blood. Is it any wonder that these sights and sounds are too much for many of them?

The symptoms themselves indicate the underlying cause. It is said that there have been more memories lost since August 4, 1914, than in all the history of the world, and it is indeed curious that in so many cases the amnesia covers a period exactly from that date on, in other words for the whole period of the war. Then paralyses and tremors develop which, of course, put soldiering out of the question. It is noteworthy that the vast majority of these paralyses and tremors are on the left side, that is they incapacitate the patient as a soldier, but do not prevent him from living and enjoying himself in civil life, especially with the aid of a pension.

Often personal problems, a degradation in rank, financial difficulties, or a critical situation in the family of the soldier will precipitate an attack. It is not to be thought for a minute that these cases are malingerers or cowards. They are the victims of psychical processes of which they naturally have not the slightest conception and are seldom appreciated by the medical man. Quite often actual disgust and loathing of conditions in the trenches play a large part in the etiology. Unexpected and horrible experiences are potent factors. Thus one soldier bayonetted a German in the face and to withdraw his weapon had to tread on his enemy's face. He developed later a habit spasm exactly imitating the muscle contractions he had seen on the German's face and had terrifying dreams in which he went through the scene again. Abdominal pain and contractures are common forms of neurosis after bayoneting an enemy in the abdomen. Some of these shell shock patients have recovered, gone back into battle, and won V. C.'s.

Their conscious selves are full of patriotism, they offer themselves as willing sacrifices to the great god, Mars, but deeper down in the mental life, in the vast unconscious that moves the organism hither and thither at will, there is a mighty protest against the business of killing and being killed and the unconscious fights with its own very effective weapons.

A SIGNIFICANT OMISSION.

Among all the nations at war we have heard of none that has officially enrolled with its army medical corps a Christian Science healer, a chiropractor, a spondylotherapeutist, or their like. Among the thousands who are caring for the sick and wounded there numbers not one of these of high sounding title. We have known Christian scientists to treat a fractured limb, and there are few bodily disorders whose cure is not promised by members of this sect. Nor can lack of patriotism be named in explanation of this strange omission where so many are needed. We have no doubt as to the willingness of these practitioners to do their bit. Yet they have been left out of it by their governments, have been forgotten in the thick of international difficulty as if they never existed.

War may be an insane business, but like troubles of the individual, it makes men see and seek true values in life. Christian scientists and divers other healers of strange names serve an end—else they would hardly exist—among the indolent, overfed, too anxious multitudes in times of peace, but for real ailments on any occasion they offer a scant support and especially in an army. The disciple of Mrs. Eddy would find difficulty in convincing a soldier that shell wounds were a figment of the imagination or even in bracing his nervous system against the terrors of being under fire. Those who heal by violent laying on of hands might be more useful in helping the convalescents back to health, if—and it is a sorry if—their knowledge of healing by laying on of hands, massage, and helpful manipulations of parts were always what it ought to be. We wish many of these were better prepared for usefulness in this time of trial, for they might be of great service in the orthopedic aid to recovery of the wound. The overfed and underworked civilian may survive and even improve under their rude treatment, but the wounded soldier needs intelligent ministration.

SUGAR IN MEDICINE.

The Sugar Commission of the New York Pharmaceutical Conference distributed this week about 40,000 pounds of sugar to the 2,400 pharmacists of Greater New York exclusively for medicinal and pharmaceutical purposes. Few physicians realize how important a part sugar plays in medicine until confronted with such figures. In the United States Pharmacopœia, there are thirty-nine preparations and in the National Formulary there are 179 preparations which contain sugar. The pharmacist has besides hundreds of unofficial preparations on its shelves in which sugar is a component. This 40,000 pounds of course enters only into preparations which are manufactured by the pharmacist himself. The New York Pharmaceutical Conference has done excellent work for the pharmacist in arranging with the United States food administration for supplies of this necessary ingredient.

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Obituary

AMI JACQUES MAGNIN, M. D.,

Paris.

Dr. Ami Jacques Magnin, formerly of New York, died in Paris on November 26th. He was born in 1858 and graduated in 1878 from the University of Geneva, taking the degrees of A. B. and A. M., and from Bellevue Hospital Medical College in 1881. He was intern in Bellevue in 1882. Having practised in New York for several years, he accepted the position as assistant to the medical director of the Equitable Life Insurance Company in Paris and entered upon the practice of general medicine. His versatility as a practitioner was remarkable, as was his knowledge of men. He was particularly well versed in climatology, there being no better practical authority upon the subject in Europe. When the war broke out in 1914 he was working with other American physicians in the organization of the American Hospital in the wooded Paris suburb of Neuilly. At that time Dr. Charles Winchester du Bouchet, who had gained an international reputation, was chief surgeon, the position to which Doctor Magnin later attained. He recognized the importance of establishing a military hospital in Paris under American support and thus was the American Ambulance inaugurated. It was he who selected the building now occupied by the Ambulance and aided in the organization of the surgical staff for the institution from the staff of the already existing American Hospital. Always unsparing of himself, the added burdens of the war, bravely carried from the beginning, have at last overwhelmed him.

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News Items.

Doctor Carrel at the Polyclinic Hospital.—On Monday evening, December 3d, a meeting will be held at the Polyclinic Hospital, at which Dr. Alexis Carel will exhibit a series of lantern slides, demonstrating the work which is being done at the Rockefeller War Hospital.

Lectures on Military Medicine at New York University.—Colonel Louis A. LaGarde, Medical Corps. United States Army, retired, will deliver a course of lectures on military medicine and surgery and camp sanitation at the University and Bellevue Hospital Medical College, the medical department of New York University.

The Harvey Society Lectures.—The fourth lecture of the series will be given at the New York Academy of Medicine, on Saturday evening, December 8th, at 8.30 o'clock, by Prof. A. S. Warthin, of the University of Michigan. His subject will be The New Pathology of Syphilis.

New York Academy of Medicine.—At a stated meeting of the Academy, to be held Thursday evening, December 6th, Dr Lewellys F Barker, professor of clinical medicine at Johns Hopkins University, Baltimore, Md., will deliver an address on General Diagnostic Study by the Internist, which will be illustrated by lantern slides. There will be a general discussion of the subject.

American Army Surgeons to Serve in Rumania.—The Secretary of War has authorized and the Surgeon General of the Army has organized a body of 100 army surgeons for service in the hospitals of Rumania The Department of State has notified the Rumanian Government that this has been done. This detachment is under Colonel Walter D. McCaw, of the regular army, who will report to the American minister at Jassy, Rumania

A War Hospital on Staten Island.—Announcement is made that a site has been selected at Fox Hill, Staten Island, for the erection of a military hospital for the reception of wounded American soldiers, who will be distributed to other hospitals for treatment. The institution will be equipped with from 1,500 to 2,500 beds, and will be used for purposes of distribution only. As the men are received there they will be given a thorough physical and mental examination by medical officers, and then they will be transferred to a general or special hospital.

New Red Cross Hospital in Paris.—The hospital known in Paris as Doctor Blake's Hospital is to have the financial support of the American Red Cross through an agreement entered into by Dr. Joseph A. Blake, the committee of the hospital, the Service de Santé, the United States Army, and the war council of the Red Cross. Under this arrangement the institution is to be used primarily for the care of Americans, although 100 beds are to be retained for the use of French soldiers as long as they are not needed by Americans. It will be open also to sick and wounded Red Cross personnel. The hospital is to be known hereafter as the American Red Cross Military Hospital No. 2.

The National Board of Medical Examiners.—The next examination of the National Board of Medical Examiners will be held at Bellevue Hospital, New York. January 9 to 17, 1918. The certificate of this board confers many advantages; the holder is given a commission in either the Medical Corps of the Army or Navy without further mental examination. Twelve States now recognize the certificate of the board for licensure and as many more will do so as soon as their State examining boards have received authority from the legislatures. All necessary information concerning the examination may be obtained by writing to the secretary, Dr. J. S. Rodman, 310 Real Estate Trust Building, Philadelphia.

Medical Aid Society Elects Officers.—The Aid Association of the Philadelphia County Medical Association held its annual meeting in Philadelphia on November 12th. Officers were elected as follows: President, Dr. Samuel D. Risley; vice-president, Dr. E. E. Mortgomery; treasurer, Dr. John B. Turner, and secretary, Dr. Lewis D. Hadler. The three directors, Dr. I. P. Stratmatter, Dr. William S. Way, and Dr. William T. Hamilton, were reelected.

Meetings of Medical Societies to Be Held in Philadelphia During the Coming Week.—Monday, December 3d, Academy of Surgery, Blockley Medical Society, Clinical Association; Tuesday, December 4th, Laryngological Society, Medical Examiners' Association, Wills Hospital Ophthalmic Society; Wednesday, December 5th, College of Physicians; Thursday, December 6th, Obstetrical Society; Friday, December 7th, Sections in Ophthalmology and Otology and Laryngology, College of Physicians, Kensington Branch, County Society, Physicians' Motor Club (directors).

Examinations for Laboratory Assistants.—The Municipal Civil Service Commission of New York announces examinations for assistants in bacteriological and chemical laboratories, for which applications will be received up to 4 p. m. December 6th. Candidates must be at least eighteen years of age, be familiar with the routine work of bacteriological and chemical laboratories, the making of slides, the preparation of vaccines and media, and the care of various laboratory equipment. Salary $600 a year. For further particulars address the Municipal Civil Service Commission, Room 1400, Municipal Building, New York.

An Auxiliary Medical Corps for Home Service.—A meeting of the War Service Committee of the American Hospital Association was held in New York, on Wednesday, November 21st, with Dr. S. S. Goldwater in the chair. This committee is a national organization which has been instructed by the American Hospital Association "to inform itself of all military facts and requirements in which hospitals may be concerned, to be in readiness to consult with military authorities in relation thereto, and to assist wherever hospital service may be of value to the country." In order to facilitate coöperation between the army and civilian hospitals, the committee suggests the organization of an auxiliary medical corps for home service, to be composed of physicians and surgeons who are ineligible for active military duty. It is suggested that this corps should be made up in the beginning of men holding hospital appointments. It is the belief of the committee that the efficiency of hospital and the adequate preparation of recent graduates in medicine for clinical practice depends in large part upon the maintenance in civilian hospitals of an adequate system of clinical training. The committee has established its headquarters in Washington, D. C., where it will be in charge of the secretary, Richard P. Borden, of Fall River, Mass.

Resolution on Death of Doctor Weil.—The Board of Trustees of the Memorial Hospital passed the following resolution on the death of Dr. Richard Weil:

> Dr. Richard Weil, major in the Medical Reserve Corps, U. S. A., died while on active duty at Camp Wheeler, Macon, Ga., November 19, 1917.
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> By his death the Memorial Hospital loses one of the most highly trained and successful workers of its medical staff, and American Cancer Research one of its recognized leaders. Since 1906 Doctor Weil has been an active member of the staff of the Huntington Fund, and throughout this period of eleven years he was constantly engaged in the problems of cancer research. His contributions in the field of the serology of cancer and in the general problems of immunity gained for him an international reputation. He was one of the founders of the American Association for Cancer Research, and largely through his efforts was founded the *Journal of Cancer Research*, of which he was editor in chief.
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> At the reorganization of the Memorial Hospital in 1913, Doctor Weil assumed the position of assistant director of cancer research and attending physician to the hospital, and in this capacity he labored energetically to establish an efficient organization of the routine and research work of the hospital.
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> In 1915 he resigned the position of assistant director upon his appointment as professor of experimental medicine in Cornell University, but he continued without interruption his experimental work in cancer. Upon the declaration of war he was among the first to offer his services to the Government, and spent the summer at Fort Benjamin Harrison in the Medical Officers Training Corps. Quite recently he was detailed to take charge of a large military hospital at Camp Wheeler, Macon, Ga., and here in the performance of strenuous military service he fell a victim of pneumonia.
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> During his brief but brilliant career he attained eminence as a devoted laboratory worker, a skillful experimenter, a broadly trained clinician, and a forceful writer, while his untimely death places his name among the first on his country's honor roll in the Great War.

Personal.—Major George Baehr, Medical Reserve Corps, has been relieved from duty at the Rockefeller Institute for Medical Research, New York, to take effect at such time as will enable him to comply with this order, and will revert to the inactive list of the Medical Reserve Corps of the Army on or about December 1, 1917.

Major Richard H. Hutchings, Medical Reserve Corps, has been ordered to visit the southwestern camps for the purpose of consulting with the surgeons thereat in connection with matters pertaining to nervous and mental diseases, and upon the completion of this duty will return to his proper station at the base hospital, Camp Jackson, Columbia, S. C.

Dr. A. H. Dunton was elected president of the Cincinnati Medical Society at the annual meeting held Friday evening, November 2d.

Dr. Louis B. Wilson has been appointed director of the Mayo Foundation of the University of Minnesota.

The degree of LL. D. was conferred upon Dr. William Seaman Bainbridge at the annual meeting of the trustees of the Lincoln Memorial University.

The Medical Society of the County of New York.—At a meeting of this society, held on Monday evening, November 26th, the following resolutions were introduced by Dr. John P. Davin:

> Whereas, The Medical Society of the County of New York has for the past 120 years been deeply interested in and devoted much labor to the public health conditions of New York City, and
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> Whereas, The aims of this organization are the same as the New York City Board of Health, namely, the betterment of health conditions in New York, and
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> Whereas, The Board of Health and the medical profession as represented by the Medical Society of the County of New York must cooperate if the best results are to be obtained, and
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> Whereas, For several years the medical profession has had to contend against measures and methods which were inimical to the welfare of those connected directly or indirectly with the private practice of medicine, and such measures and methods were promulgated without the knowledge of the organized medical societies, and
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> Whereas, This condition should now be obviated by the Medical Society of the County of New York by offering to the incoming municipal authorities its point of view on these conditions, and assuring such authorities of our desire to cooperate with them in every way, in order to avoid a continuation of this condition, therefore be it
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> *Resolved*, That there be appointed from the body of the Medical Society of the County of New York a regularly organized medical body of this city, a committee to carry out the spirit of this resolution, as a matter of duty on the part of this society to its members in defense of their rights as lawful practitioners of medicine.

On a motion offered by Dr. Christian F. J. Laase it was decided to hold a special meeting at an early date to act upon these resolutions.

Meetings of Local Medical Societies to Be Held During the Coming Week.—Monday, December 3rd, Clinical Society of New York Throat, Nose, and Lung Hospital, German Medical Society of the City of New York (annual), Utica Medical Library Library Association, Niagara Falls Academy of Medicine, Brooklyn Hospital Club (Section I), Hornell Medical and Surgical Association, Clinical Society of the New York Polyclinic Medical School and Hospital, West Side Physicians' Economic League; Tuesday, December 4th, New York Academy of Medicine (Section in Dermatology), New York Neurological Society, Amsterdam City Medical Society, Lockport Academy of Medicine, Society of Alumni of Lebanon Hospital, New York (annual), Syracuse Academy of Medicine (annual), Buffalo Academy of Medicine, Ogdensburgh Medical Association, Oswego Academy of Medicine, Medical Association of Troy and Vicinity; Wednesday, December 5th, New York Urological Society, Brooklyn for Neurology (annual), Society of Alumni of Bellevue Hospital, Harlem Medical Association, Bronx Medical Association (annual), Elmira Academy of Medicine (annual), Society of Alumni of St. John's Hospital, Brooklyn, Schenectady Academy of Medicine, County of Rockland Medical Society (annual), Long Island Society of Anesthetists; Thursday, December 6th, New York Academy of Medicine (stated meetings), Brooklyn Surgical Society, Practitioners' Club, Buffalo, Geneva Medical Society, Glens Falls Medical and Surgical Society, Physicians' Economic Society of New York; Friday, December 7th, New York Academy of Medicine (Section in Surgery), New Utrecht Medical Society, New York Microscopical Society, Gynecological Society, Brooklyn, Practitioners' Society of New York, Corning Medical Association, Society for Serology and Hematology, New York, Alumni Association of Roosevelt Hospital; Saturday, December 8th.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

TREATMENT OF HERPES ZOSTER.

By Louis T. de M. Sajous, B. S., M. D.,
Philadelphia.

A few cases of herpes zoster have followed and apparently been due to ingestion of certain inorganic poisons, especially arsenic and carbonic oxide gas. In by far the greater number of cases, however, the condition results from the action on certain nervous tissues of either a locally developed bacterial process or of toxic material generated by bacteria in the vicinity or in some more remote part of the body. Occasionally it occurs in connection with infectious diseases such as pneumonia, typhoid fever, malaria, and especially acute cerebrospinal meningitis. It has also been noticed in the early stage of acute poliomyelitis, and the proposal has been made to designate it as acute posterior poliomyelitis. Extension of a tuberculous process from spinal caries has caused it; likewise infiltration by tumors in the dorsal region, and blows and injuries to the skin. According to Ebstein, exposure to cold and autointoxication may play a part in the etiology. The nervous structures essentially diseased in herpes zoster are the posterior root ganglia, the most commonly affected being those between the third thoracic and the second lumbar segments. Head has called attention to the fact that the ganglia most often involved are those receiving visceral sympathetic fibres. The Gasserian ganglion is also frequently diseased, the result being one of the forms of facial herpes zoster. Less commonly, other ganglia, including those related to the extremities, are involved. Norman Sharpe in 1915 reported a case of zosteric disease of the geniculate ganglion of the facial nerve, with extension to the auditory nerve and slight involvement of the glossopharyngeal ganglia and the Gasserian ganglion. Motor paraylsis, when complicating herpes zoster, is ascribed by Gordon M. Holmes, 1915, to involvement of the ventral spinal root lying in proximity to the affected ganglion or to toxic or infective central lesions.

The actual condition of the root ganglia during the disease was conclusively shown by Head and Campbell in 1900 to be an acute interstitial inflammation. At first infiltrated with small round cells, the ganglion later undergoes partial destruction. The sheath is as a rule affected, hemorrhagic extravasation nearly always takes place, and in the more severe cases definite areas of fibrosis or cystic formations may remain as permanent evidence of the inflammation. Extension may occur into the corresponding peripheral nerves and the dorsal roots. Reddening and enlargement of an intercostal nerve, with marked infiltration of the neurilemma, was observed by Daniellsen, and W. F. Robinson noted a perineuritis of the cutaneous nerves. Head found a definite swelling of the neurilemma, with degeneration of the myeline sheath and moniliform swellings on the axis cylinders, in fine nerve twigs in the deeper portion of the skin. In the tissues of the epidermis around and beneath the zoster vesicles, only relatively insignificant changes—infiltration with a few leucocytes and a narrow zone of hyperemia and lymphatic engorgement—are, as a rule, observed.

Infectious origin of a large proportion of cases of herpes zoster is suggested by many peculiar features of the disease. Supporting this view, Sunde, 1913, found Gram positive diplococci in a hemorrhagic Gasserian ganglion in a case of ophthalmic herpes, and in 1916 Magnus found, in a case wth associated motor disturbances, diplococci in a round cell infiltrate in the anterior horn of the cord. Apparently conclusive evidence of the causative infection has been obtained by Rosenow and Oftedal, 1915, who were able to induce herpes of the skin, tongue, or lips, together with lesions in corresponding ganglia, in forty-six rabbits, dogs, and guineapigs by intravenous injection of streptococci obtained from the tonsils, pyorrheal pockets, and spinal fluid of patients with herpes zoster. Elective affinity of these organisms for the ganglia was deduced from experiments in which herpes followed their intraperitoneal injection. The organisms occurring as Gram staining diplococci similar to those found by Sunde, as well as in short chains, were constantly noted in and about the diseased ganglia. Some animals, especially those with pronounced skin herpes, also exhibited herpetiform lesions in internal viscera, and in these the vagal or sympathetic ganglia were found hemorrhagic. While some features of the work and conclusions of Rosenow and his collaborators have been adversely criticized, the fact remains that streptococci were found in the ganglia when absent in the blood and other tissues and that suggestive peripheral lesions simultaneously occurred.

The disease seldom endangering life and but rarely recurring, its treatment is as a rule given scant consideration in textbooks. The attending distress, however, sometimes extremely severe, renders it permissible to inquire whether the course of the affection may not be shortened through appropriate treatment. The known occurrence of an abortive type in which the symptoms pass off in ten days or less, suggests at least the possibility of obtaining such a result. The cause being, as a rule, an infection, the duration will be largely governed by the rapidity with which immunity is established or the infection otherwise counteracted. Complete rest in bed, coupled with absolute mental inactivity, is in the first place indicated to promote resistance on the part of the nervous system and to permit of the best possible defensive reaction by the body tissues at large. Where some underlying toxic or organic condition is observed, the herpes being manifestly secondary, the former should of course receive special therapeutic attention. Development by the body during the attack of power to destroy the harmful activity of infecting streptococci is indicated by the observation of Rosenow and Oftedal that streptococci obtained from the tonsils or other tissues after recovery from herpes zoster fail to produce the customary herpetic manifestations in animals. This, in turn, suggests that a vaccine might be of value to assist the organism in developing antistreptococci resistance. F. Cohen, 1916, has reported a case of recurrent generalized herpes of two years' duration, classed by him as herpes simplex, in which a streptococcus in long chains was isolated from the vesicles and employed as an autogenous vaccine in doses of 100 million to one billion bacteria. Moderate success being obtained, whereas all other measures had completely failed, sensitization of the vaccine was effected by adding to every c. c. of vaccine two c. c. of a polyvalent antistreptococcic serum and heating to 37° C. for twenty-four hours. Seven injections of this sensitized vaccine in doses of 200 million to two billion bacteria were followed by complete recovery. Thus, in herpes zoster, trial of an autogenous vaccine made from tonsillar, pyorrheal, or sinus discharges might prove advantageous in curtailing the disease or reducing its severity. In Cohen's case, indeed, efforts were made to locate the source of infection in the localities mentioned; the infection in this instance, however, evidently did not arise there. In the absence of an autogenous vaccine, simple injections of typhoid vaccine in doses such as to produce a slight febrile reaction would perhaps be of value, assisting the organism by virtue of the increase of temperature and its effect in stimulating defensive activities in overcoming the infection.

(*To be concluded.*)

Clinical Pharmacology of Digitalis.—R. Edwin Morris (*Colorado Medical Journal,* September, 1917) presents a historical sketch of the advances made in the clinical use of this drug and points out that the polygraph and electrocardiograph have been of great help in making more accurate diagnoses as well as in providing means for controlling the administration of digitalis. In all cases it is necessary to push digitalis to the production of minor toxic symptoms which are manifest in nausea, vomiting, slowing of the pulse, appearance of extrasystoles, prolongation of the a-v or p-r interval, the inversion of the T wave, etc. The variability in activity of different specimens of digitalis leaf demands the use of a standardized preparation and the most satisfactory method of standardization is the "cat method" of Hatcher. In this method the activity is expressed as a "cat unit," which is the amount of digitalis, in milligrams, required to kill one kilo of cat. Eggleston's method of digitalis dosage is the greatest advance in digitalis therapy and makes it possible to administer the drug with mechanical precision. The average oral dose for man by this method is 0.146 cat unit for a pound of body weight to be given in twenty-four hours. Of a good tincture this is about 0.146 mils a pound. The patient's weight is taken and multiplied by this factor to get the total dose. This is then given in four fractions at six hour intervals, the first dose being half the total, the second one fourth, and the last two one eighth each. The administration is controlled by polygraphic or electrocardiographic tracings along with the careful clinical observation of the patient. The method produces amazing results. Where the patient has previously had digitalis and some effects persist, fifteen per cent. is deducted from the total dose. Diluted tincture or the infusion can be given intravenously by the same method, using one half the Eggleston dose. Home grown digitalis, including the lutea form, is quite as active as the imported varieties. There is no advantage in any other digitalis preparation over the official tincture or infusion and many of the specialties are vastly more expensive while some are inferior to the official ones mentioned.

Injections of Carbolic Acid, Iodine, and Glycerin in Goitre.—J. E. Sheehan (*Medical Record,* October 6, 1917) reports seventeen cases of goitre treated with injections of five minims of a mixture of equal parts of carbolic acid C. P., tincture of iodine, and glycerin into the most prominent part of the goitre at five day intervals. These injections cause a reduction in the size of the thyroid and a relief of the symptoms without any untoward symptoms. It is advisable to combine the use of the injections with a course of arsenic and phosphates. Sheehan's method is to give five drops of Fowler's solution three times daily after each meal for one week; then ten grains of calcium glycerophosphate, the next week. These drugs are given alternate weeks for eight to ten weeks.

Immune Horse Serum in Epidemic Poliomyelitis.—E. C. Rosenow (*Journal A. M. A.,* September 29, 1917) treated forty-four cases of acute poliomyelitis during an epidemic with an immune horse serum prepared with streptococci isolated from the central nervous systems of paralyzed monkeys. The plan of treatment was to make the diagnosis positive by lumbar puncture and tests of the spinal fluid. The serum was then given intravenously after activation by the addition of one part of fresh guineapig serum to nine of immune serum and incubating at 37° C. for one hour. The mixture was then diluted with 0.85 per cent. salt solution to twice its original bulk. The injection was made at the rate of two mils of the mixture a minute. The dose was three to seven mils of the original serum for a child under two years old; seven to ten mils for those of two to five; and ten to twenty mils for older children. The injections were repeated at intervals of eight to twenty-four hours. Of the treated cases six were moribund when first seen and died; three only of those receiving sufficient serum to give it a true test also died. That is, there was a mortality in treated cases of twenty per cent. if all were included, or of eight per cent. if the moribund cases were omitted. During the same epidemic the mortality in twenty-three cases not treated by the serum was thirty-five per cent. In twenty-two serum treated cases with paralysis before the beginning of treatment all but the three which died and one other had the paralysis checked, and no paralysis developed in any of the sixteen cases treated in the preparalytic stage. The general symptoms of the disease were much alleviated and very promptly in practically every case.

Cartilage Transplantation in Extensive Wounds of the Lower Jaw.—Morestin (*Presse médicale,* August 9, 1917) reports five cases of injury to the jaw in which, to make good extensive losses of tissue, transplantation of costal cartilages was practised with success. Eight to ten months after the transplantation, none of the transplants showed any tendency toward absorption. Esthetically, the results were very gratifying, and functionally the condition was much better than it could have been without the procedure. In all cases there had been double or greatly comminuted fractures, together with widespread injuries of the soft parts.

Starch Iodide in Treatment of Infected Wounds.—A. Lumière (*Presse médicale,* September 20, 1917), after experimentation *in vitro* and on living animals, was led to use starch iodide clinically, especially in wounds of the soft parts the result of abrasion and unassociated with sinuses or deep, inaccessible tracts. Very rapid sterilization of the wounds was obtained. In deep wounds successful results were likewise secured by irrigations of starch iodide after the method of Carrel. The solution employed consisted of soluble starch, twenty-five grams; boiling water, 1,000 grams, and 1:1,000 iodine iodide solution, fifty c. c. This fluid, which contains iodine in a state of extreme subdivision, seems to possess antiseptic power of the same order as Dakin's solution. It is not irritating to the skin and has no deleterious action on articles of clothing.

Röntgen Treatment of Acne Vulgaris.—H. H. Hazen (*Journal A. M. A.,* September 22, 1917) says that acne is conceded to be due to the acne bacillus and the suppuration to the secondary infection with the staphylococcus. Clinically, however, the condition is almost exclusively found in persons whose skins are very oily, with overactive sebaceous glands. It has long been recognized that any treatment which would combat this latter condition of oiliness would go far toward curing acne. The best method for the suppression of the activity of the sebaceous glands is the application of properly measured doses of Röntgen rays, which produce a permanent atrophy of the glands. The rays are given from a Coolidge tube and the dose is gauged so as to be just below that producing erythema, to avoid the danger of causing telangiectases. This dose is provided by a focal skin distance of nine inches, a spark gap of seven and three quarter inches, and a milliampere reading of four without filtration. An exposure is given every three weeks, but it seems probable that the use of one third of this dose given weekly may prove more satisfactory. In addition to the use of the Röntgen rays attention should be given to the condition of the patient's digestion and bowels, elimination of excess of carbohydrate, and especially of chocolate. The comedones are also removed, but there is no other local treatment employed except the free use of soap and water and of small amounts of very weak sulphur ointment when the skin becomes excessively dry. Of thirty-four patients receiving at least two Röntgen exposures, twelve were completely cured, fifteen very greatly improved, four markedly so, and three but slightly. The hair of the eyebrows and scalp must be carefully protected in the treatment to avoid its temporary loss; some tanning of the skin is produced; freckles may appear and if the dose of rays is too small there may be an exacerbation of the activity of the sebaceous glands. These are the chief unpleasant features of this form of treatment.

Treatment of Intestinal Obstruction.—Jabez N. Jackson (*Journal of the Missouri State Medical Association,* September, 1917) advises that in such cases an inviolable law should be to keep everything out of the stomach, that gastric lavage be practised to delay serious symptoms until operation can be done, and that the lost body fluids be replaced by proctoclysis and hypodermoclysis both before and after operation. As to operative procedure Murphy's method with resection of any area of damaged intestinal wall is ideal in early cases in the hands of a good technician, but it takes time and adds shock in late and desperate cases. The newer method of McKenna, of Chicago, of direct surgical drainage of the high intestinal area by a quick enterostomy high up in the jejunum tides the patient over the crisis of acute toxemia. Six or eight weeks later with the patient in good condition the damaged and obstructed area can be resected. Jackson advises that this method be generally applied until its value is proved or disproved by more extensive experience.

Modern Treatment of Syphilis.—J. L. Murray (*Ohio State Medical Journal,* September, 1917) points out that Reasoner has recently demonstrated that soap lather renders the Treponema pallidum nonmotile immediately and destroys it in a few seconds. The treatment should take into consideration the stage of the disease and the type of the lesion. The treatment of the primary stage should be intensive. One method of treatment is to give one decigram per kilo of body weight of salvarsan on three successive days followed by eight weekly injections of mercury salicylate. In the secondary stages these intensive courses are given at intervals of three to four months regardless of Wassermann findings. The author recommends three full doses of salvarsan in the primary stage, the first two one week apart and the third in two weeks from the second. Mercury is begun immediately or preceding the first salvarsan. From one to two grains of one of the insoluble salts is given twice weekly for four doses; then at weekly intervals for six weeks, making ten doses in all. No further treatment is given for two months. The Wassermann is then taken. If negative, another full dose of salvarsan is given and blood is taken twenty-four hours later for a second Wassermann. Even though the Wassermann is negative after the provocative salvarsan injection the second course of treatment is given. It consists of another dose of salvarsan in three weeks and, subsequently, six mercury injections. No further treatment is given but the patient is watched for a year. If positive, the courses are continued as in the first instance, only salvarsan is given at two week intervals. After repeated courses of mercury injections, a short course of potassium iodide is indicated. The giving of mercury pills is considered haphazard and unscientific.

Treatment of Malignant Syphilis.—Charles F. Marshall (*Urologic and Cutaneous Review,* October, 1917) points out that this form of syphilis, which may be defined as a form in which ulcers develop rapidly within a few months of infection and which is characterized by rapid destruction of tissue, responds less to the normal antisyphilitic treatment than any other form. Mercurial treatment is contraindicated during the active period and should be given with caution during the convalescent period. Potassium iodide, especially if used in conjunction with decoction of sarsaparilla, is useful. The essential treatment is tonic. Quinine and iron are useful and a nourishing, stimulating diet is important. Sea air and sea bathing are of great benefit. Opium is often indicated. Locally the ulcers should be disinfected by baths of potassium permanganate, cyllin, or some other nontoxic disinfectant and the subsequent application of dressings and powders of a similar nature.

Treatment of Congenital Dislocation of the Hip.—Henry Bascom Thomas (*Interstate Medical Journal,* August, 1917) divides the treatment into manual replacement, mechanical replacement, and the open operation. The manual method consists in loosening up the adductors and extensors by kneading and stretching, followed by manipulation of the head of the bone into the acetabulum. Evidence of proper position is given by a loud click, both felt and heard, the presence of the head of the bone in the groin, and the resistance offered to an attempt to straighten the leg on the thigh. It is the method of choice if the condition of the anatomical parts and the degree of displacement allow its use. Instrumental reduction is accomplished by means of blades and screws fixed to a specially constructed table. The open operation is done as a last resort in cases which resist the manual method and is never to be advised in double dislocation, its death rate is high and the function is seldom perfect, with frequent ankylosis.

Vincent's Antiseptic Powder in Mastoid and Sinus Wounds.—Guisez (*Paris médical,* September 1, 1917) highly recommends Vincent's powder, a mixture of one part of calcium hypochlorite with nine parts of powdered and well dried boric acid, for local use after operations on the nasal sinuses or mastoid or in traumatic injuries. After operations for frontoethmoidal or maxillary sinusitis or for pansinusitis he always leaves the wound partly open, that the filling of the sinuses with cicatricial tissue may be watched and promoted with appropriate agents. Immediately after a sinus operation, the antiseptic powder is blown in copiously with Kabierske's insufflator. Hemorrhage at once ceases, apparently by virtue of the five to seven per cent. of calcium chloride which commercial calcium hypochlorite contains. At the first dressing, three days later the packing is found odorless and almost free of pus. Later there is no suppuration whatsoever, and the filling of the cavities with cicatricial tissue is greatly hastened, especially in pansinusitis. Traumatic sinusitis, usually troublesome, is healed in four or five weeks instead of two or three months. In suppuration of the ear and mastoid, the powder is of some benefit, but it is especially useful after the mastoid operation, some cases healing in two weeks. After the Stacke operation, use of the powder is indicated where the packing is malodorous from the start, but should not be continued too long lest granulation be promoted at the expense of epidermization. In auricular perichondritis and suppuration of the laryngeal cartilages the powder is rapidly effective. Tincture of iodine should not precede application of the powder, but after a time iodine or hydrogen peroxide may be alternated with it. When the wound surface is dry the powder should be discontinued. In pyocyaneus infections, dilute silver nitrate solution is more effectual than the hypochlorite powder.

Treatment of Inflammatory Phimosis.—Clément Simon (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris,* March 22, 1917) describes an apparatus for the safe and painless dilatation of an inflammatory phimosis, e. g., in that due to simple or diabetic balanitis, gonorrhea, and soft or syphilitic chancre. It consists of a series of three thin aluminum rods seven centimetres long, each bent at an obtuse angle in the middle of its length, and all hinged at this point to a single fulcrum. One half the length of each rod bears a series of notches, while the other half is slightly curved. A rubber band is placed over the notched ends and the three curved ends introduced beneath the prepuce, two laterally and the third above. The prepuce is thus gradually dilated by the action of the rubber band, the force exerted by which can be regulated by transferring it to other notches or, if necessary, by adding other bands. The device may be left on for several hours, if required; as a rule, however, the desired result is rapidly obtained without pain.

Plastic Meatotomy in Meatal Ulceration.—J. L. Hamilton (*Glasgow Medical Journal,* September, 1917) states that phimosis often results in a slight pouting of the urethral mucosa which after circumcision becomes ulcerated from friction on napkins or clothing. Urination being painful, the child retains the urine as long as possible, and between the successive acts of micturition a crust forms on the ulcerated surface, sealing the orifice. In older children, the complaint may be of nocturnal incontinence, due to overflow. Under these conditions, which may persist indefinitely, an operation devised by MacLennan proved very satisfactory. An intestinal needle, employed so that the suture may plug the track of the needle through the glans and prevent hemorrhage, is threaded with catgut, passed into the urethra, and brought out through the glans at one side beyond the ulcerated surface. A similar suture is inserted on the opposite side of the meatus, and by the two sutures the sides of the meatus are pulled apart, the glans being then divided down by scissors or scalpel from the lower margin of the meatus for a distance of an eighth to a third of an inch, according to the size of the ulcer and the tightness of the meatus. A third suture is now inserted through the glans at the end of the incision, and all three sutures are tied with the knots inside the urethra to keep the meatal margins apart. After this procedure the retention of urine always disappears at once, and in a few days the ulcer heals.

Prophylaxis of Postoperative Ankylosis of the Elbow Joint.—Chaput (*Presse médicale,* August 9, 1917) advocates immediate mobilization of the elbow after resection of this joint. Such mobilization is devoid of danger provided the joint is not infected, though absolutely contraindicated if it is. Good results were obtained in this manner in several cases. Interposition of muscle tissue or fat is superfluous when the immediate mobilization method is adopted.

Hay Fever.—Newell S. Ferry (*Interstate Medical Journal,* September, 1917) reports 127 cases treated by the prophylactic pollen injections. Of these nine were treated with timothy pollen and the others with ragweed pollen. Sixty-eight per cent. were relieved, seventeen per cent. were partially relieved and fifteen per cent. were not improved. The average patient requires ten to fifteen injections amounting to three units or three centigrams of pollen to produce immunity and this immunity lasts through the following year, but is diminished greatly in the third year. The treatment of the actual attack with pollens is unsatisfactory as some cases are aborted after a few injections, while others show little or no improvement after ten or more injections.

Adenoma of the Rectum.—Charles J. Drueck (*American Medicine,* September, 1917) regards the medical treatment of adenoma of the large bowel as unsatisfactory. Diet has no effect on the diarrhea or discharge. Surgery offers the only relief. If the tumors are low in the rectum and few in number they may be excised. The edges should be closed with fine catgut sutures. If there are many and the situation of the tumors is somewhat higher it is better to do a resection. If the tumors extend into the sigmoid or colon a resection must be done and that part of the bowel above the region invaded by the tumors is brought down and joined to the lowest loop of the sigmoid. Where the tumors extend above the sigmoid an artificial anus, preferably on the right side, is the best. This will not cure the disease and the affected part of the colon must be removed.

Some Points about Bone Grafting.—Ethan H. Smith (*Pacific Medical Journal,* October, 1917) advises in the insertion of a bone peg into the neck of the femur against its introduction too near the centre of the bone. It may fail in its purpose in that location, there being too much fat—almost a canal—in the centre of the neck. It should be inserted in either the upper or lower portion of the femoral neck. The use of a round peg is unnecessary, a square hole merely being cut in the compact shell of the trochanter with a narrow bladed chisel, and the latter then easily forced through the neck. The chisel should preferably be one graduated in fractions of an inch, that one may know exactly how deeply it is being introduced. In the adult the average distance from surface of trochanter to ligamentum teres is 3.5 and 3.625 inches in the male and female, respectively. Such a chisel can also be used as a gauge in laying out a square peg to be obtained from the tibia. The graft should not be cut from the crest of the tibia because this portion is not nearly so well supplied with blood as bone on the flat surface of the tibia, is irregular in shape, and less safe as a graft on account of the paucity of blood channels. The space at the crest of the tibia, moreover, does not fill in as readily as a slot in the flat wall of the bone. Smith also protests against the use of a medullary bone dowel in the repair of bone, such a dowel preventing restoration of the nutrient vessels within the bone and frequently leaving the bone painful for life. Damaged bone should never be used as a bone graft. In all bone suturing operations the author finds useful untempered steel needles with blunt, conical points, two and one half to four inches in length, and with the eyes heavily slotted on either side to make a channel for the suture.

Tartar Emetic in the Treatment of Malaria.—M. D. Levy and Dick P. Wall (*Interstate Medical Journal,* September, 1917) assert that quinine is not a true specific in malaria. This is evidenced by the fact that the use of other drugs in this disease is growing and that many apparently cured patients return for treatment. The successful use of tartar emetic in the treatment of kala azar and the similarity of the protozoal organisms in kala azar and malaria prompted Rodgers to try this drug intravenously in malaria. Levy and Wall report three cases treated by this method with a two per cent. solution of tartar emetic with a dose of the drug amounting to as much as 2.4 grains. They are certain that even comparatively large doses of the drug have no ill effects on the circulation and that in the tertian form of malaria at least the treatment is inferior to the use of quinine. In the tertian type there is, however, a lowering of temperature and the patient is made to feel better but the plasmodia are not banished from the bloodstream.

Treatment of Ameba Carriers with Emetine Bismuth Iodide.—D. G. Lillie and S. Shepheard (*Lancet,* September 15, 1917) draw their conclusions from the treatment of 104 cases under uniform conditions. The drug was given in the form of ceratin coated tabloids or salol coated pills. Each course of treatment comprised the administration of one dose daily of 0.2 gram for twelve consecutive days. The results were controlled by repeated stool examinations and no case was considered cured unless there were from six to seven negative stools in a period of not less than seven weeks after the end of treatment. In the cases treated with salol coated pills seventy-eight per cent. of those who had not had previous emetine hydrochloride treatment were cured by two courses of the pills; almost seventy-three per cent. of those who had had a previous course of the hydrochloride were also cured by the pills. On the other hand among those who had had no previous treatment seventy per cent. were cured by two courses of ceratin tabloids and only 45.4 per cent. were cured by these among those who had had previous injections of emetine hydrochloride. The salol coated pills were distinctly better than the ceratin coated tabloids, both from the curative point of view and in causing less nausea and vomiting. Vomiting, however, did not seem to diminish the chance of cure and neither the age of the patient nor the length of time that he had been a carrier influenced the likelihood of permanent cure.

Miscellany from Home and Foreign Journals

A Study of Vasomotor Efficiency.—G. W. Norris and F. F. Lane (*Archives of Diagnosis,* July, 1917) adopted as a test of vasomotor efficiency the Crampton test, based on the response of the blood pressure and pulse rate upon rising from recumbency to the erect posture. In health the blood pressure rises ten millimetres Hg, while in disease it either remains the same or falls more than ten millimetres Hg. The heart rate in health is unchanged, while in disease it increases by as much as forty-four beats a minute. In recumbency the pulse is counted until two successive quarter minutes show the same rate; the systolic pressure is then taken by the auscultatory method; the subject rises, and the tests are repeated. By comparison with Crampton's scale a percentage expression of vasomotor efficiency may be obtained. Tests in ten cases of cardiac decompensation before and after treatment, in fifty-eight patients convalescent from various other diseases, and in seventeen relatively healthy subjects indicated that cardiovascular conditions do not affect vasomotor efficiency as much as prolonged infections and other constitutional disorders. After recovery of compensation vasomotor efficiency is surprisingly good, while after acute infection it is surprisingly low, even though the subject is apparently in an excellent physical condition. In the relatively normal subject the efficiency varied according to the general health. In individuals lacking normal stamina, with low blood pressure, latent syphilis and undemonstrable tuberculosis are believed usually to be the cause. The Crampton test is recommended for the diagnosis of physical fitness, in prognosis, and for estimating the efficacy of therapeutic measures.

Types of Pneumococci Isolated from Acute Lobar Pneumonia.—Mildred C. Clough (*Bulletin of the Johns Hopkins Hospital,* October, 1917) in the grouping of 121 strains of pneumococci from various diseases, calls attention to certain points which might be significant if confirmed by a larger number of observations. The percentage incidence of the different types of pneumococci in acute lobar pneumonia was calculated and agreed in the main with other reports, with the exception of the low incidence of Group II, and a corresponding high percentage of atypical Group II strains. Excluding bronchopneumonia, the percentage incidence of the types in lobar pneumonias was about the same in children as in adults. Of the various methods of isolating pneumococci, sputum culture, where the sputum could be easily washed, was preferable to mouse inoculation. Types III, IV, and atypical II occurred in about equal percentage in bronchopneumonia; only one case was due to Type I, and of the various diseases studied, acute and chronic bronchitis, otitis media, sinusitis, etc., only one pneumococcus belonging to this group was isolated, and none of these cases was due to Type II. Pneumonias due to Group IV were fairly uniformly distributed throughout the year, while those due to Groups I and III occurred mainly in epidemics. The mortality of the pneumonias in adults was fifty per cent., while in the cases due to Group IV it was 57.2 per cent., partly accounted for by the greater age of the patients in this group, and partly by the presence of associated diseases. In all of the groups where the latter factor was present, the mortality was higher, and it was also higher where there was bacteriemia. Positive blood cultures were obtained in one third of the cases, and the percentage and number of colonies per c. c. of blood was higher in the cases due to Group IV and atypical Group II than in the fixed types, while complications, aside from sepsis, occurred oftener in the cases due to the fixed types. A study of the leucocyte count showed on the whole a higher count in those cases with negative blood cultures than in those with positive ones, and in the cases due to Group IV and atypical II the count was higher in those that recovered than in the fatal cases.

Malaria in the Rice Fields.—Stanley B. Freeborn (*California State Journal of Medicine,* October, 1917) shows that the cultivation of rice which demands shallow, practically stagnant water throughout the summer months, has increased the number of mosquitoes and malarial cases in California in proportion to the growth of the industry. He says that fifty per cent. of the malarial mosquitoes breed in pools adjacent to the rice fields. They breed in neglected pools for two months or more before the rice fields are flooded, and for another month after the water is drained from the fields. The solution of the malaria problem in the rice fields rests on the elimination of all breeding places outside of these fields before, after, and during the time the fields are flooded, and thorough quinine treatment during the winter months in conjunction with quinine prophylaxis and careful screening during the months when mosquitoes are prevalent.

Secondary Pleurisy as a Favorable Incident in Pulmonary Tuberculosis.—C. Murard and H. Marotte (*Paris médical,* July 28, 1917) report three cases of tuberculosis with severe pulmonary lesions in which an intercurrent pleurisy, with moderate effusion, rapidly reabsorbed without requiring paracentesis, was followed by a period of marked general improvement, with manifest subsidence of and a tendency to fibrosis in the primary lung lesions. In two cases the improvement was permanent, the patients being practically cured at the time of writing, while in the third, more severe and with low general resistance, it lasted but six months, after which the patient began to grow gradually worse again. In all three, the onset of pleurisy was marked by a sudden rise of temperature to 40° C., with vague general malaise, and in one case, sharp pain, dyspnea, and a rise in pulse rate. The cause is taken to be a rupture of a subpleural tubercle of the lung into the pleural cavity, with inoculation of the pleura, followed promptly by a walling off process and early disappearance of the trouble. The ruptured tubercle having presumably been situated in connective tissue, there was absence of the pneumothorax, which would have resulted if the rupture had opened up communication with the pulmonary alveoli. The benefit following the pleurisy is ascribed to antitoxic substances in the effusion, P. Courmont having shown that the serofibrinous fluid effused in tuberculous pleurisy is capable of agglutinating the tubercle bacillus. The temporary functional rest of the lung on the affected side may also play a part. The analogy between such cases and cases of striking benefit from pleurisy with effusion occurring intercurrently in the presence of an artificial pneumothorax, as observed by the authors in a number of instances, is pointed out. In these patients removal of the effusion by puncture was even found to cause distinct aggravation of the pulmonary lesions.

Antepartum Mammary Hyperemia Due to Unrecognized Malignant Disease.—G. W. Kosmak (*American Journal of Obstetrics,* September, 1917) reports the case of a woman aged thirty-two years, seven months pregnant, admitted to a hospital in a rather emaciated, anemic state. Both breasts were greatly engorged, tender and painful, with marked venous enlargement over the chest, neck, upper arms, and abdomen. The consistency of the breasts suggested the ordinary "caked" breasts. Malignant mediastinal disease was considered, but x ray plates proved negative. Spontaneous premature labor occurred, but a few days later a hard, oblong mass, apparently attached to the bowel, was felt in the right hypochondrium, and the liver was found enlarged downward. The patient's condition forbade operation, and death soon ensued. An intestinal carcinoma is believed to have been the primary focus, a history of obscure intestinal disturbance with alternating constipation and diarrhea having been obtained. Rapid extension to the mediastinal lymph nodes during the pregnancy accounted for the most prominent symptom, viz., mammary hyperemia.

Mercurial Anuria.—Milian and Mougenc de Saint-Avid (*Paris médical,* September 8, 1917) report a case in which during the outburst of urinary flow following the anuria, there were noted rather alarming pseudoperitoneal symptoms, viz., abdominal pain and tenderness, pinched facies, sunken eyes, hoarseness, and bilious vomiting. The poisoning had arisen after a copious rubbing of gray ointment over the scrotum and upper portions of the thighs, followed by ingestion of two pills of mercury protiodide. Anuria was complete for two days and almost complete for the following three. The accompanying symptoms consisted in frequent vomiting diarrhea, dyspnea of the Cheyne-Stokes and at times of the Kussmaul type, and marked sensations of pressure on the chest and of general coldness. There was no edema, headache, myosis, nor gallop rhythm. The pseudoperitoneal symptoms referred to, noticed on the eleventh day, are ascribed to dehydration of the system, the patient simultaneously experiencing an unquenchable thirst and the blood being found viscous and rapidly coagulable. The first urine passed showed a heavy deposit consisting of polynuclear leucocytes, leucocytic casts, and erythrocytes, and including also an abundance of staphylococci, to which the elimination of leucocytes is ascribed. The blood urea rose on the eleventh day to 6.9 grams a litre, and only returned to practically normal, 0.5 gram, on the twenty-fourth day. As the patient recovered in spite of the extremely high blood urea, the authors deem that, as in chronic nephritis, urea retention is of little prognostic significance. In the treatment an intravenous injection of sixty grams of glucose in 200 mils of distilled water, given on the fifth day, proved very effective, 120 mils of urine being passed within half an hour after the injection, and the output of the two succeeding days rising to 825 and 1,800 mils, respectively.

Further Studies on the Epidemiology of Lobar Pneumonia.—Ernest G. Stillman (*Journal of Experimental Medicine,* October, 1917) concludes from an extensive study of lobar pneumonia during the past five years that infection with types I and II is caused by either direct or indirect contact with a previous case due to the same organism, although occasionally it is not possible to trace any contact between a carrier of these types and an infected patient. These two types are responsible for the majority of cases. Types I and II pneumococci may be found in the mouth secretions of healthy persons who come in contact with cases of the disease, as well as Type IV, which predominates, Type III, and atypical forms of Type II. Two epidemics of lobar pneumonia in institutions were studied. In each case a Type I pneumococcus was recovered from the patients, from certain of the healthy contacts, and from the dust. Pneumococci of types I and II were received from the dust of homes where cases due to these types had occurred.

Exogenous Foci of Malaria in France.—V. Raymond and Grysez (*Presse médicale,* September 10, 1917), in a military hospital, observed patients exhibiting, after a brief period of fever, complete apyrexia, followed from time to time, without regular periodicity, by febrile attacks lasting a few hours. In the intervals there were noted slight anemia and distinct splenic enlargement, but no gastrointestinal disturbance nor tibial pains. None of these patients came from malarial districts or had had malaria nor had any of them ever left France. Blood examined at the beginning of a febrile attack showed the parasite of benign tertian malaria in three out of four instances. Quinine by mouth in the dose of 1.5 to two grams a day for three successive days brought about cessation of the attacks. Inquiry showed that these men all came from a single army corps that had been stationed several weeks in an inundated area and that all had been extensively bitten by mosquitoes. Study of the mosquitoes from that region showed seven anophelines out of a hundred of the insects. The army corps in question had been preceded by a regiment of African troops, and had also received, a few weeks before, a number of men returned from Salonica, in several of whom malarial recurrences developed. The region referred to not having been malarial before the war, a focus of autochthonous malaria had evidently formed there, the men from Salonica serving as reservoirs of the virus from which mosquitoes became infected. The small number of cases was ascribed to the low percentage of anophelines.

Nervous Unrest in the Infant as a Cause of Failure to Nurse.—H. Charles Cameron (*Lancet*, September, 1, 1917) draws attention to the fact that marked nervousness and hyperexcitability on the part of an infant is a frequent cause of the failure to induce him to nurse. Such infants are not uncommon and it is not recognized that their very nervousness and easy distractibility almost completely prevent the proper operation of the sucking reflex. Continued efforts to force the infant to take the nipple only aggravates the excitability and even if he can be made to take a small amount of milk he will very commonly have pain and further nervous agitation from indigestion. The proper plan to follow in the management of such cases is to try to quiet the infant by keeping him in a darkened room free from noise and to let him have as much sleep as possible. Then, when sound asleep, he should be taken carefully to the mother's breast and the nipple put into his mouth without waking him. The normal reflex will then respond. This should be repeated as often as possible within the proper feeding intervals and the child should be returned to his darkened room without further disturbance In some cases this plan of treatment will not suffice to give the infant enough food and then one should secure the proper degree of sedation by the administration of doses of hydrated chloral of sixty mgm. each twenty minutes before taking the child to the breast. This can be done before each feeding, but it is usually enough to give the chloral only about three times a day.

Bone Changes in Leprosy.—James J. Honeij (*American Journal of Röntgenology*, October, 1917) from a rather exhaustive study of x ray pictures in this disease concludes that, notwithstanding the stage of the disease or even the type, very different lesions are found, varying in intensity and extent, which are apparently irrespective of the general condition of the patient. Every case showed bone and bone salts absorption to a variable extent. Periostitis is common. In the absorption process the epiphysis suffers first and most. Cyst or cavity formation is greatest in the diaphysis. Ankylosis occurs, but not healing of fractures, which requires salt deposit. Changes may begin in the periosteum, articular surfaces, cortex or medullary canal and any or all of these changes may occur in the same set of bones. The bones of the hands and the feet show the changes soonest and to the greatest extent. The causes of these bone disturbances are not agreed upon by observers. The constant inflammation and infiltration of the nerves in nerve leprosy definitely interferes with their function. Bacilli in the blood also cause inflammatory disturbances. Two new points are to be considered: 1. The absorption of bone and bone salts is an early metabolic change. 2. Trophic bone changes with tissue absorption if due to nerve involvement are necessarily earlier than outward manifestations and much earlier than has been realized by investigators. An examination of the urine of twelve cases showed sodium chloride to be in excess approximately one part in a thousand by weight; phosphorus and sulphur by approximately 0.5. Calcium, magnesium, and sodium were present in all specimens; albumin also in all cases.

An Epidemiological Study of Lobar Pneumonia.—Virgil P. W. Sydenstricker and Alan C. Sutton (*Bulletin of the Johns Hopkins Hospital*, October, 1917) examined the sputum of 100 healthy negroes living in the shanties of the Bethlehem Steel Works plant. As the incidence of severe pneumonias is very high there during the winter, it was thought that such a study might throw some light on the problem of healthy carriers. For comparison, the sputum of fifty dispensary cases was examined. The negroes showed twenty-two per cent. of pneumococci of the fixed types, as against six per cent. in the dispensary patients. The percentage of Type IV was about the same in both groups. The high percentage of fixed types found in the healthy carriers parallels the high percentage of fixed type pneumonias occurring among the employees of that plant.

Bacteriology of Purulent Bronchitis.—Adolphe Abrahams, Norman F. Hallows, J. W. H. Eyre, and Herbert French (*Lancet*, September 8, 1917) made careful bacteriological investigations of the sputum, blood, lung, and other tissues in a small group of unselected cases of the very fatal and somewhat epidemic purulent bronchitis of soldiers. While several organisms were isolated in some cases, the one constant feature was the presence of the influenza bacillus along with Pneumococcus lanceolatus. The latter organism was of low virulence for animals when first isolated but became extremely virulent after one animal passage. From these observations the authors suggest that purulent bronchitis begins as an influenzal infection, upon which a pneumococcal infection is engrafted and the latter causes the fatal termination by severe toxemia.

Prognosis in Chronic Enteritis.—C. Laubry and L. Marre (*Presse médicale*, September 20, 1917) present a study of this subject having special reference to the capacity of the affected individuals for military service. The cases are divided into five groups: 1, Colitis with constipation; 2, colitis with diarrheal tendency; 3, dysenteriform and hemorrhagic colitides; 4, cases with systemic reactive manifestations of colitic origin; 5, chronic diarrhea. Colitis with constipation is less serious and rebellious than that with a tendency to diarrhea. Ulcerative colitis is extremely inveterate and may necessitate cecostomy or appendicostomy. Putrid forms of diarrhea are more serious than those due to carbohydrate fermentation, especially when associated with putrefaction of the protein secreted by the inflamed intestinal wall. The patient's general condition is of chief importance in the final decision. Some patients deal poorly with a whole series of important foods and finally reach, spontaneously or through purposive dietetic restrictions, a condition of malnutrition such as to predispose to complications, especially tuberculosis. An unfavorable significance is attached to inability to regain permanently considerable weight under treatment and to repeated febrile movements, whether due to the intestinal condition or beginning tuberculosis. The mental state of the patent should be taken into account, and not too much comfort taken from an apparent neurotic basis. Rectoscopy and examinations of the stools afford valuable prognostic indications.

Proceedings of National and Local Societies

AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

Thirtieth Annual Meeting, Held at Newark, N. J., September 17, 18, and 19, 1917.

The President, Dr. JOHN W. KEEFE, in the Chair.

Fundal Hysterectomy to Reduce the Menstruating Surface.—Dr. GORDON K. DICKINSON, of Jersey City, N. J., stated that there should be not only a minimum amount of mutilation of tissue in operations on the pelvis, but the least possible interference with the circulation, particularly of the sex glands. Prognosis would depend largely upon the full development of the internal secretion. These operations should be as conservative as operations on the brain and thyroid. That which developed the feminine was apparently degenerated by climate and civilization. Surgeons should be most careful in the case of people from the older countries where the call of the germ plasm was less restricted, and where the best feminine development was produced. Slow tedious confinement, relaxed uterus, and infection caused metritis, sometimes fibrofatty, sometimes cirrhotic, sometimes arterial fibrosis. In hyperplasia of the endometrium or in atrophy in the cirrhotic type, there was a tendency to sterility and hemorrhages. The curettage had been done without benefit and, at times, with harm. The most skillful might use chloride of zinc and radium, which, though limited in applicability, was valuable.

Fundal hysterectomy through the vagina was a simple, safe, and effective procedure. A pursestring suture around the anus prevented foul matter from puffing out during the operation. Each labium was then retracted open by a clip. An ounce or more of 3.5 per cent. tincture of iodine poured into the vagina was allowed to remain while the patient was being draped. When everything was ready, a volsellum was put on the cervix and it was brought down. A transverse incision was made anterior to the cervex, the bladder separated from the uterus, the peritoneal cavity was opened, and the fundus was brought into the vagina. We now had an inspection of it and the annexa. Clips applied alongside the uterus slightly compressed the circulation and acted as retractors. Through the substance of the uterus a V shaped incision was then made for various depths, depending upon the extent of the disease as estimated by the hemorrhage. Since the object was the reduction of the menstrual surface rather than the reduction of the uterus this was not made too close to the fornix. After this wedge shaped piece was removed, both fornices should be thoroughly cauterized to insure nonresponse at the menstrual period and the cervical portion should also be touched. The part removed was carefully inspected for malignancy. The two flaps were approximated with a small, sturdy, curved needle and hemorrhage was staunched. The peritoneal surface was further brought together by running catgut, the clips were removed, the uterus was pushed back into place, and the anterior colpotomy wound sutured.

DR. ROBERT T. MORRIS, of New York, said that surgery must be adapted to the individual woman, her wishes with regard to children, her age, the possibility of recurrence of the condition, etc. Referring to the subject of decline, Doctor Dickinson did not distinguish clearly between nation and race. In this country there was a more rapid decline than in other countries, because strong racial types were not developed here. When Nature limited the development of a race she struck at the female sex first among plants and animals. Consequently we found development arrested to a greater degree among the women than among men; very few women were 100 per cent. normal. When the sexes approached each other in type, there was a tendency to represent the other sex. Some of the most valuable members of society among women of the masculine type ought not to breed and we had no business to help them do it.

Dr. ALBERT GOLDSPOHN, of Chicago, stated that some of his obstetric friends objected to having the uterus cut into in order to find out what was the matter. More efficient medical work could be done to help the less severe cases. Tincture of iodine applied to the endometrium about twice a month would avert the necessity of operation. In applying chloride of zinc to the endometrium it was necessary to dilate the cervical canal to about 20 or 24 French with sounds with a lesser curve than in those used to stretch a stricture of the urethra. A good dose of morphine should be given or the cervical canal should be anesthetized with carbolic acid or cocaine. The air must be forced out of the cervix, covered with a swab or absorbent cotton wet with some antiseptic, and then immediately after ample dilatation a syringe applicator wrapped with cotton and dipped into the chloride of zinc was introduced without any difficulty. Treatment of this kind did more good than curettage.

Dr. HUGO O. PANTZER, of Indianapolis, said that Doctor Dickinson's emphasis upon the principle of conservatism led him to call attention to the newest science of menstruation. The ovaries were not the only cause of menstruation; the hormone not only of the ovary but of the endometrium, and perhaps a hormone of the breast were to be considered. Ablation of the entire endometrium inflicted unnecessary violence upon the sexual function and upon the chemism of the entire body, and it was with great hesitancy that either radical or partial measures were instituted in these cases. The immediate effect of a toxemia upon the glands of the body, either a toxemia due to intestinal stasis, or one due to an infectious focus located in the tonsils, the posterior naris, the gums, the jaw, or elsewhere, spelled blight of these glandular organs.

Physical Conditions in Women Warranting Sterilization.—Dr. E. W. HEDGES, of Plainfield, N. J., said that while sterilization should never be lightly undertaken, there were conditions in women in which it would save lives that otherwise would be needlessly sacrificed. Where a woman had had eclampsia in two successive labors another conception should not be risked. In real diabetes fifty per cent. of the mothers died before or shortly after labor and two thirds of the babies were lost; in this condition sterilization should be done. Women with chronic nephritis should not marry or conceive, but if they did both, or if the disease developed after marriage, they should be sterilized. If conception had begun, abdominal hysterectomy should be done at the same time. Pulmonary tuberculosis was aggravated by pregnancy and a fatal termination hastened. Patients with bad heart decompensation should not conceive. Abortion, premature labor, or stillbirth occurred in such cases and a third of the mothers lost their lives. In all the diseases mentioned the children, if born alive, entered life with such a physical handicap that no well wisher of the race could welcome them, and the risk for the mother was so great that it should be prevented. If the fetus was near viability when the patient was first seen, an attempt might be made to tide the case over a short time and then bring on labor. In pyosalpinx if the woman was well to do, let her alone with a nurse, a fountain syringe, and an easy chair, but if she had to earn her living take out her tubes and give her health and sterility. Certain cases of insanity, the feebleminded, and idiots, as well as epileptics should be cared for in institutions, but if such women live at home the question of sterilization should be carefully considered.

Dr. Edward J. Ill, of Newark, N. J., stated that the question of sterilization was very serious; it would be abused just as the removal of the uterus or the removal of the ovaries was. The sterilization of women was a legitimate and proper procedure, but we must be exceedingly careful in the selection of cases. The state had a perfect right to sterilize epileptics, the criminals, the insane, and the idiotic, male or female. Cases of repeated Cæsarean section should be sterilized. He had performed Cæsarean section three times in succession within a couple of years; in this case he thought that was the limit, so he sterilized the patient. He was not sure that we were justified in sterilizing in chronic nephritis.

Dr. Herman E. Hayd, of Buffalo, said that Doctor Hedges's invocation was beautiful and that we should seriously, reverently, and with the fear of God operate upon women, but, it seemed to him that Doctor Hedges suggested an omniscience on part of the surgeon that did not exist in this mundane sphere. For him to assume that a patient with diabetes or chronic nephritis was going to die was absurd and unscientific. That we should possess such surgical qualifications as to carry these patients through the operation without a mortality was equally absurd, in his judgment, and equally extravagant. He believed that sterilization would be justifiable in chronic nephritis and diabetes, provided these women were about to die of some unrelieved condition, such as a perforating ulcer of the stomach, a duodenal ulcer, acute gangrene of the gallbladder, or an acute appendicitis.

Dr. Gordon K. Dickinson, of Jersey City, N. J., said he had never had the courage to sterilize women except for narrow pelves and where the children could not be born except by repeated Cæsarean sections. If we felt the necessity of saving a woman from pregnancy after carefully studying the condition, we should sterilize her, but not until we tried other well known, nonsurgical measures.

Dr. Charles L. Bonifield, of Cincinnati, stated that if the state in its wisdom made laws to prohibit marriage or to sterilize certain women, in obeying these laws we would be considered good citizens, but to make a law for ourselves as broad as the doctor had laid down, he was free to confess that his conscience would not permit it.

Dr. Robert T. Morris, of New York, said that Doctor Hedges's paper required elaboration. He would not think of sterilizing a woman for diabetes until he had found out the cause of her diabetes. Diabetes was not a disease but a symptom. More than fifty per cent. of the people in all the civilized world had evidences of some form of tuberculosis during some stage of their lives. In tuberculosis of the lungs, advancing and uncontrolled, he believed that a woman should be sterilized.

Dr. William E. Darnall, of Atlantic City, N. J., sympathized with Doctor Hedges. He did not believe Doctor Hedges meant to say that every woman in suffering from the diseases he had enumerated should be sterilized, but he did believe there were individuals in each class that should be sterilized.

Doctor Hedges, closing the discussion, said that in the presence of anasarca, rapid heart, dyspnea, and extreme symptoms of poisoning from chronic nephritis he would not hesitate to sterilize a woman. He purposely omitted the milder cases of chronic nephritis. With a mortality of thirty per cent. of pregnant women with chronic nephritis, we were warranted in advocating sterilization of these women.

Operation for the Cure of Complete Perineal Laceration.—Dr. Edward J. Ill, of Newark, N. J., stated that in performing this operation he made an H shaped incision which extended from just inside Bartholini's duct down to, to the outer side of, and behind the ends of the sphincter. The horizontal bar of the H started above the end of the sphincter and continued across the vaginorectal junction. The anterior and posterior flaps were elevated, the ends of the sphincter being carefully denuded. Submucous suture of the rectum by a double line of fine plain catgut was done. The catgut never touched the rectal mucous membrane. Deep silver wire perineal sutures were used and the vagina was sutured with plain catgut.

Prolapse of the Uterus.—Dr. Charles L. Bonifield, of Cincinnati, said that after determining the character and cause of the prolapse the rational treatment was to decrease the weight of the uterus, replace it in its normal position and relieve it of abnormal burdens. Rest in bed and curettage and amputation of the cervix, which was always hypertrophied in these cases, would reduce the weight of the uterus. A Gilliam operation or, if the patient was past the childbearing period, a ventral suspension would hold the uterus in normal position. The uterus might be relieved of other burdens by the proper operations on the posterior vaginal wall and perineum and the anterior vaginal wall. He maintained that it was better to restore a woman to her normal condition by an operation in two steps that required time and care than to mutilate her with one that seemed more brilliant and could be done in less time.

Operative Treatment of Procidentia.—Dr. Arthur T. Jones, of Providence, R. I., stated that few of the operations for procidentia had given the desired results. The selection of an operation was an important point. If the woman was still capable of becoming pregnant a different operation should be chosen from that which might be decided upon in a woman who had passed the menopause. Hysterectomy should not be performed on a woman still in the childbearing period, unless there were other indications than the mere presence of procidentia. No operation for procidentia was satisfactory which did not include the proper vaginal and perineal work, as support was needed below in conjunction with any suspension or interposition operation. In women still within the childbearing period without complications or disease of the appendages, the Alexander operation in connection with proper vaginal work had been very satisfactory in his hands. In women past the menopause the interposition operation of Watkins-Wertheim had been the operation that had given greater satisfaction than any other method of treating this distressing condition.

Cervical Lacerations.—Dr. Francis Reder, of St. Louis, Mo., said that while a cervical laceration of the uterus invited infection like any other trauma, the anatomical position of the cervix and the bacterial defenses of the vaginal secretion were potent factors in frequently preventing an infection of a high degree. In a surgical sense cervical lacerations must be considered portals of entry for infection. Such an infection was manifested in disturbed function of the uterus, tubes, and ovaries, and as a consequence might cause loss of nerve tone in a woman having an unstable nervous organization. The immediate repair of a torn cervix was not usually possible by reason of its deformed and edematous condition, but a cervical laceration occurring six to eight weeks after accouchement, when the tissues had assumed their normal characteristics, especially one that was lateral and extended into the zone of vaginal attachment, should receive surgical attention. No general anesthetic was necessary, the technic was simple, no special aftertreatment was required, and absolute quiet for forty-eight hours only was required.

Acute Dilatation of the Uterus.—Dr. N. Stone Scott, of Cleveland, Ohio, said that a study of the six cases of acute dilatation of the uterus which formed the basis of his paper had led him to conclude that acute dilatation was not so rare as the literature seemed to indicate. It had also suggested an explanation of the apparent infrequency of the condition. He realized that the number was too small and the field represented too new to furnish a basis for dogmatic assertions. Acute dilatation early in pregnancy was markedly different from acute dilatation at term, in that it had no appreciable influence upon the bleeding. The more or less complete hemostasis after the complete separation of the placenta after an ordinary miscarriage depended upon the hemostatic properties of the blood and bloodvessels and this was not materially modified by an acute dilatation. In a uterus at full term emptied of its contents, an alarming hemorrhage would occur if the uterus did not contract and control the bleeding. This was due to the changes in the bloodvessels which had taken place during the pregnancy. It was believed by some authors that acute dilatation was a phenomenon of sepsis. Maier held that acute dilatation would occur only when the muscle wall had been diseased previously. Doctor Scott's theory drawn from his case reports, was that the disease must be in the

(To be continued.)

CLINICAL CONGRESS OF SURGEONS OF NORTH AMERICA.

Seventh Annual Meeting, Held in Chicago, October 22-27, 1917.

The Retiring President, Dr. Frederick B. Lund, in the Chair.

(Concluded from page 1011.)

War Surgery of the Lungs and Pleura.—Sir Berkeley Moynihan, Leeds, England, read an exceedingly interesting paper on this subject, recount-the experiences of himself and others, from which he drew the following conclusions: The approximate mortality from gunshot wounds of the chest at all parts of the line of communication was twenty per cent. The causes of death were hemorrhage as a rule within twenty-eight hours and sepsis after the third or fourth day. The local conditions in wounds of the chest wall and lung were in all respects similar to those met with in wounds elsewhere. The missles were the same, their destructive effect upon the tissues was the same, and the infecting organisms were the same. The lung tissue was more resistant to attack than many other tissues. The opening of the pleural cavity and the resulting exposure of a large serous sac to infection and all its consequences added, however, a danger of the most threatening character. The chief essential in all cases of penetrating wounds was rest. In clean perforating wounds of the chest, rest together with the cleansing and dressing of the wound of entrance or exit would lead to the recovery in the great majority of cases. In cases of "open thorax" the earliest and most complete effort possible must be made to secure closure of the wound after an appropriate toilet. In those rare cases of grave hemorrhage, where hemoptysis was present or when the blood escaped by the wound, direct access to the source of the bleeding must be obtained, when all contingent circumstances permitted, and the wound in the lung must be treated by suture preferably or by plugging of the cavity from which the blood escaped. In cases of hemothorax when little blood was effused and remained sterile, no active measures were necessary unless absorption was long delayed. Aspiration, repeated if necessary, mught then be performed. uterine cornua, where interference with the uterine innervation would be most marked. In three of his patients a placental implantation had occurred in one or the other horn, and in a fourth there was a small fibroid in the same place. Among the cases reported extreme dilatation occurred only in patients who had been recently pregnant.

In cases of hemothorax, when much blood was effused and remained sterile, aspiration after the seventh or eighth day or earlier in cases of urgent dyspnea certainly hastened convalescene, permitted a more rapid expansion of the lung, and prevented the formation of firm adhesions which might permanently cripple the free movements of the lung. In cases of hemothorax, whether the amount of blood was small or large, when infection took place open operation was necessary. Early operation when the Carrel-Dakin technic or Morison method was adopted saved many weeks of tedious convalescence and permitted a more perfect functional recovery. Small foreign bodies or rifle bullets imbedded in the lung often caused no symptoms, became encapsulated, and might safely be left. Large foreign bodies retained in the lung might cause distressing or disabling symptoms for long periods. In such cases removal after resection or elevation of the fourth rib through an anterior incision would allow of the safe removal of the projectile from any part of the lung. Pieces of metal so removed were almost always infected.

The Aims of the Subsection of Plastic and Oral Surgery.—Major VILRAY P. BLAIR, M. R. C., of St. Louis, said that the distressing wounds of the face and jaw bones had attracted particular attention, not only on account of the disfigurement which they caused but because of the difficulty which was first encountered in dealing with them. That difficulty was the logical outcome of an attitude that regarded dentistry and surgery as two distinct and separate professions. As long as this theory was allowed to dominate practice, a man who had an extensive injury of the face and jaw bone had about as much chance for an ideal result as had the man with an open fracture of the limb in the days when the physician and the bone setter could find no common ground upon which to meet. The surgeon had expended much study upon making himself master of the various means of splinting an injured limb, but proper fixation of a fractured jaw could only be accomplished by the use of dental splints. These he could not always apply himself and he had not always sought the help that the dentist could so easily lend. Proper fixation in the early stage was one of the most important points in the treatment. The dentist was not trained to care for the wounded tissues beyond fixation of the bones, yet repair of the soft tissues and proper drainage might be equally important. A few had bridged this No Man's Land between surgery and dentistry, he believed that the majority were pursuing their separate ways and that a patient with a jaw injury would be treated either by a surgeon or a dentist, neither of whom was master of all the problems, and that either the fixation or the care of the tissues would suffer accordingly. It has been the custom to transport these men back to special centres where qualified men were stationed, and in the meantime the patients received what might be called general treatment. We had recently been told that the most important step in the preparation for the care of our wounded was to plan to give them the proper operative treatment within the first twelve hours, and that if this was done the primary union might be obtained in ninety per cent., and that gas gangrene, etc., might by this means be eliminated. He felt convinced that his earlier treatment would accomplish even better results than late treatment where reconstruction must overshadow conservation, and that if the plan of treatment could be started in the earlier hours after the injury it would occasion much less distress to the patient and much less effort on the part of the operator. It was hoped to place in every evacuation, base, and recovery hospital men who were familiar with the problems and technic of dealing with these face and jaw injuries, so that from the first these patients would receive the very best that surgery had to offer. There were many men in this country who had specialized in oral surgery, many of them with medical degrees, who had gone beyond the treatment of the teeth to devote their attention to the peridental structures. These men understood most of the oral problems, but as a rule were not accustomed to doing the major surgery that was required for many war injuries. It was by associating the capable general surgeon with the dental oral surgeon and sending them out as units that the skill could be furnished in multiple. In order to correlate the work and to present the special war problems short course schools had been established by the Surgeon General in several cities where those surgeons and the dental oral surgeons working together would be moulded into working units. Until their services were needed abroad those units were cooperating with the dental surgeons at the cantonments in an attempt to eradicate peridental infections from the mouths of our soldiers. It was hoped by this means to lessen materially the medical casualties on the other side.

Orthopedic Surgery.—Major E. G. BRACKETT, M. R. C., of Boston, thought the problems of the orthopedic surgeon did not differ materially from those of the other departments of medicine except in extent. The quick restoration was an essential element. To avoid the many disabilities which might occur by delayed treatment preparations were made in order that the special care might begin as far back in the line as possible, with the shortest line of communications and with the fewest changes before arriving at that base where the permanent part of the treatment would be given. To insure the early and continuous cooperative care of the men who were to be given special treatment the medical forces, working both in France and the United States were to be guided by the same general plan. For the care of men overseas a number of beds sufficient to meet the demand had been planned and were under way. The hospitals would be built to contain 250 beds each and fitted with the curative workshops. About seventy surgeons were working in the orthopedic hospitals in England under Colonel Sir Robert Jones, and many of them would be detailed to take up the work among American soldiers in France when the need arose. Special provision to supply artificial limbs in sufficient numbers was necessary. In order to supply a sufficiently large number of men who would be capable of responding to this work, special training was being given members of the Medical Reserve Corps who had applied for work in this division.

The second important factor in restoring disabled men to civil life was both administratively and geographically with the hospital. Thus the curative workshops would be built as part of the hospital equipment so that the men, while still confined to the hospitals, might at the same time be carrying on their vocational and curative work, and no time would be lost. The work of the orthopedic rehabilitation must be looked upon as having three distinct phases, yet so closely allied and interwoven that they made one problem: the physical restoration; the industrial reeducation to fit the new physical conditions into the existing social relations which must be resumed; the reinstallation in normal employment. This work of rehabilitation in its three phases was an activity which was most stimulating, for it was not directed alone toward the provision of a temporary emergency, which would end with this military crisis. The need of this same rehabilitative work as a factor in solving our civil and industrial problem had been evident for some time, and already attempts had been made to meet the need through the establishment of such work. Thus the military problem would merge directly into the permanent civil one, and could then be turned over to meet the municipal demands. It would make it one of the lasting contributions which could come out of the disasters of this war.

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Book Reviews.

[*We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.*]

The Practical Medicine Series. Comprising Ten Volumes on the Year's Progress in Medicine and Surgery. Under the General Editorial Charge of CHARLES L. MIX, A. M., M. D., Professor of Physical Diagnosis in the Northwestern University Medical School. Volume V: *Pediatrics,* Edited by ISAAC A. ABT, M. D., Professor of Pediatrics, Northwestern University Medical School; Attending Physician Michael Reese Hospital. With the collaboration of A. LEVINSON, M. D., Associate Pediatrician Michael Reese Hospital. *Orthopedic Surgery,* Edited by JOHN RIDLON, A. M., M. D., Professor of Orthopedic Surgery, Northwestern University Medical School. With the Collaboration of CHARLES A. PARKER, M. D. Pp. 240. (Price $1.25.) Series 1917. Chicago: The Year Book Publishers, 1917.

Like the other volumes of this series this is an excellent mirror of the progress which has been made during the past year in the two fields which it represents. The editors are men distinguished in their respective fields and their abstracts of the literature of their subjects, together with the many editorial comments, reflect the ability of each. It is not possible to select any small group of articles for special discussion, for that would but imply an injustice to many others. Suffice it to say that the best work of the year 1916 has been carefully selected and well presented in the form of abstracts. The work is essentially one of reference and for any one who may be interested in either of the subjects covered should prove of inestimable value.

L'Exploration radiologique des voies urinaires. Lithiases et projectiles de guerre. Par le Dr. Arcelin, chef de service de radiologie à l'hôpital Saint-Joseph et à l'hôpital Saint-Luc. Avec 123 figures et planches hors texte. Paris: Masson et Cie, 1917. Pp. viii-174. (Price 6 fr.)

This volume presents the subject of radiography of the urinary organs in a thorough, precise, and compendious manner. The apparatus described does not comprise many of the more familiar modern apparatus for the x ray laboratory, notably the Coolidge tube. Nevertheless, the author handles his subject more concisely, more thoroughly and in a more up to date manner than does any textbook we have seen. Of especial interest is the application of the technic developed by the practice of localizing projectiles to the localization of calculi. The author describes and illustrates many interesting cases correctly diagnosed as well as others even more interesting that were incorrectly diagnosed. The chapter on the diagnosis by x ray of the exact location of projectiles, especially of those in the loin, is of course replete with examples. The illustrations are mostly schematic. A few reproductions of actual radiographs are introduced. The value of the volume for the general practitioner is impaired by the absence of any sufficient discussion of the collateral means of diagnosis, though justice is done to the value of pyelography. One notes with interest the author's statement that he has never recognized a prostatic calculus.

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Births, Marriages, and Deaths.

Born.

ADAMS.—In Providence, R. I., on Thursday, November 15th, to Dr. Frank Mears Adams and Mrs. Adams, a son.

REYNOLDS.—In New Haven, Conn., on Saturday, November 17th, to Dr. Harry S. Reynolds and Mrs. Reynolds, a son.

THOMS.—In New Haven, Conn., on Thursday, November 15th, to Dr. Herbert K. Thoms and Mrs. Thoms, a daughter.

Married.

JESBERG-OLSEN.—In Los Angeles, Cal., on Tuesday, November 6th, Dr. Simon H. Jesberg and Miss Ruth Olsen, of Brooklyn, N. Y.

LEARY-HOWARD.—In Portsmouth, N. H., on Wednesday, November 21st, Dr. Alfred J. Leary, of Boston, Mass., and Miss Helena M. Howard.

Died.

CLEAVES.—In Mobile, Ala., on Wednesday, November 14th, Dr. Margaret A. Cleaves, aged sixty-three years.

FLETCHER.—In Memphis, Tenn., on Thursday, November 15th, Dr. Burrell A. Fletcher, of Augusta, Ark., aged fifty-seven years.

GOSE.—In Eureka, Utah, on Saturday, November 10th, Dr. Ira H. Gose, aged forty-four years.

HONAN.—In Augusta, Ga., on Sunday, November 11th, Dr. James H. Honan, aged sixty-one years.

KENNEDY.—In Galveston, Tex., on Thursday, November 8th, Dr. Thomas Lubbock Kennedy, aged forty-seven years.

MALL.—In Baltimore, Md., on Monday, November 12th, Dr. Franklin Paine Mall, aged fifty-five years.

MOTTER.—In Dayton, Ind., on Tuesday, November 13th, Dr. Thomas S. Motter, aged eighty years.

QUEEN.—In Ireland, on Wednesday, November 21st, Dr. Dudley W. Queen, Assistant Surgeon, U. S. N., aged thirty-one years.

RANSOM.—In Pittsburgh, Pa., on Monday, November 19th, Dr. Frederick P. Ransom, aged thirty-seven years.

SLOAN.—In Santa Fe, N. M., on Thursday, November 15th, Dr. John M. Sloan, aged sixty years.

STOUT.—In Atlantic City, N. J., on Monday, November 19th, Dr. Hiram B. Stout, of Parkersburg, W. V.

STUCKY.—In Philadelphia, Pa., on Thursday, November 15th, Dr. J. George Stucky, aged fifty-five years.

SUTHERLIN.—In Shreveport, La., on Sunday, November 11th, Dr. William K. Sutherlin, aged fifty-six years.

TAYLOR.—In East Liverpool, Ohio, on Monday, November 5th, Dr. James Taylor, aged forty-six years.

TURRILL.—In Cleveland, Ohio, on Tuesday, November 13th, Dr. George E. Turrill, aged fifty-three years.

VANCE.—In Madison, Wis., on Wednesday, October 31st, Dr. James W. Vance, aged eighty-five years.

WALLACE.—In Oneida, N. Y., on Friday, November 16th, Dr. Jason T. Wallace, aged eighty years.

WEBB.—In Adams, Ind., on Thursday, November 8th, Dr. William H. Webb, aged ninety-one years.

WEBSTER.—In Lafayette, Ind., on Saturday, November 10th, Dr. John C. Webster, aged seventy-six years.

WINCHESTER.—In Charlotte, N. C., on Sunday, November 11th, Dr. Frank M. Winchester, aged sixty-two years.

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Original Communications

TONSILLOSCOPY AND CURETTAGE OF THE TONSILS IN ADULTS.*

A Test of Focal Infection and a Means of Removing Pathogenic Detritus.

BY THOMAS R. FRENCH, M. D.,
New York.

As the tonsilloscope has already been fully described (1) and the code of signs disclosed in it has, we hope, been made moderately clear, it is intended now to demonstrate the actual method, explain further some parts of the study which thus far have only been briefly commented upon, and contribute additional facts which have been revealed since the original communication was presented.

The tonsil classification, which was described in the communication just referred to, divides the tonsils into six groups, or classes, namely, one of health, four of definite disease, and one lying at the borderline between health and definite disease. The borderline or doubtful class embraces the temporarily masked tissues of health as well as definite, though moderate, degrees of disease. As a preliminary it will be instructive to examine and become somewhat familiar with the various classes as displayed in transilluminated tonsils in the external tonsilloscopes (Fig. 1). The fixed shade of red of the anterior pillar of the fauces to be seen while transilluminated with the tonsil *in situ* is of great value in the internal method in determining by contrast the degree of inflammatory reaction in the tonsil. While the anterior pillar cannot, of course, be shown in these boxes, the display, in every other way, is the same as that made by the lamp and the tonsil microscope of the undisturbed tonsil in the throat. With the aid of the external tonsilloscope, therefore, one can familiarize himself at leisure with the actual conditions presenting in every variety of tonsil and so be prepared instantly to recognize them in the necessarily rapid view of the tonsil as it lies undisturbed in its bed in the fauces.

With the exception of the more or less sharply outlined shades of gray or black made by the concrete collections of foreign material, there are only two colors seen in the tonsil during transillumination, namely, amber and crimson lake, or blood red. Uniform amber denotes healthy glandular tissue. The shades and characteristics of the displays of red depend upon the degree of inflammatory reaction in the tissues and that again depends upon the amount and irritating character of the foreign material present. The rosy color may be of a uniformly light or moderately deep shade, or it may be in areas of varying shades set in a field of amber.

It does not require much practice to learn how to recognize the clear amber of the tonsil of health, or to learn how to comprehend the tonsil which is the same relatively deep shade of red as the anterior pillar, indicating the presence of extensive disease. To be able to interpret the peculiarities, shades, and characteristics of the red or red and amber colorings between the two extremes of color necessitates, however, a considerable amount of practice and study. Here lies the only real difficulty in acquiring a knowledge of this diagnostic method. The difference in the colors is due to the fact that one is of health and the other of disease. The difference in the shades of red made by disease is due to the degree of hyperemia. The degree of hyperemia is again the result of the degree of irritation from pathological material in the tonsil. This gives rise to dilatation of the blood channels and the more dilated the blood channels are the deeper will be the shade of red. There is, therefore, really no necessity for seeing foreign material in the tonsil to know that it is there. The dilatation of the blood channels in chronic inflammatory processes, occurring as a result of the presence of necrotic material, causes them to carry an increased quantity of blood which deepens the shade of color. This is shown in transilluminated tissues in varying shades and displays of red and indicates the presence of necrotic inflammatory products somewhere within the tonsil.

All collections of foreign material within the tonsil near the surface show in the tonsil microscope, and when the hyperemia is not too deep they show when located in any part of the gland. To examine the capsule it is necessary, while the lamp is pressed firmly against the posterior face of the tonsil, to introduce the beak of the tonsil microscope slowly but deeply over the top of the tonsil or between the anterior pillar and the tonsil, the pointer near the eyepiece on the microscope indicating the position of the extreme point of the beak when hidden in the tissues. When there are no adhesions, the elasticity of the mucous membranes reflected between the anterior pillars and tonsils will permit, without rupture, a comparatively deep introduction of the beak of the microscope. In this way

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*Read before the Philadelphia Laryngological Society, October 3, 1916.

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a large part of the bases of the tonsils can be readily explored and collections of necrotic tissue under the capsules, commonly found here, can be clearly seen.

The capsule also may be exposed by dislodging the tonsil with seizing forceps or, preferably, a small tenaculum and drawing it toward the median line. This, evidently, puts the connective tissue on the stretch between the capsule and the aponeurotic sheath of the superior constrictor muscle. The lamp is then placed behind the space made by the stretched tissues and at the same time the obstructing anterior pillar is pushed aside with a pillar retractor. Transillumination then shows the space at the base of the tonsil as a band of a lighter shade of color than that of the tissues around it. If there is foreign material under the capsule it will, even without the microscope, usually reveal itself in the form of dark areas in the band of lighter color. The somewhat rare conditions calling for a capsule examination are when, in a systemic disorder believed to be an infection, we fail to find evidences of disease through the free face of the tonsil. Then the infolding of the reflected but nonadherent and elastic mucous membrane between the anterior pillar and the tonsil with the beak of the tonsil microscope or the examination with the lamp alone behind the dislocated tonsil, may reveal the offending foreign material, or, if not, then at least the vivid hyperemia caused by it. The base of the tonsil, where one or more small abscesses may be located, is occasionally the only portion of the tonsil seen to be diseased, the free face showing the warm amber coloring of the tonsil of health.

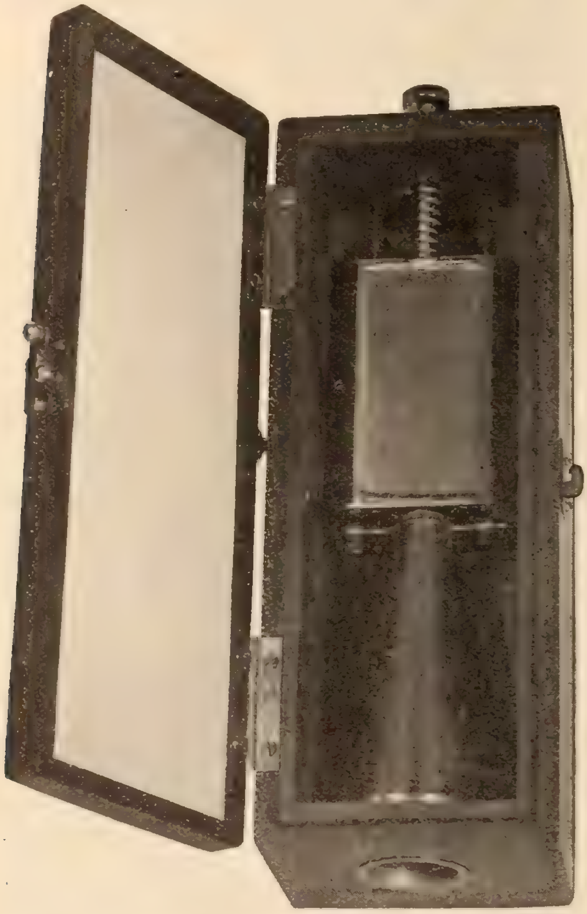

FIG.—The external tonsilloscope. In the demonstration which was made during the reading of the paper, transilluminated enucleated tonsils, illustrating the various classes in health and disease were shown in this instrument. It has been greatly simplified and is now being made inside of a small box as here illustrated. The box contains a tonsil microscope and a pocket lamp so arranged that tonsillar tissues, or excised tissues of any kind, can be quickly clamped between them. The light is turned on by pressing an outside button when the transilluminated tissues may be viewed through the eyepiece of the microscope in the end of the box. Studies of excised tonsils in this little contrivance would seem to be essential for the acquisition of the knowledge needed to understand and instantly comprehend the conditions which are seen in the tonsil *in situ* when the internal tonsilloscope is employed.

To one who has practised tonsilloscopy for a considerable time and has become familiar with the surface appearances associated with the various classes, it is easy to decide by surface examination alone whether a given tonsil belongs to either Class 3, Class 5, or Class 6. Superficial abscesses, which constitute Class 3, usually show clearly by reflected light. Such abscesses may be found in very small and flat tonsils, so small and flat indeed that they are sometimes hidden from view by the anterior pillars and therefore can only be exposed by drawing the pillars forward. The tonsil atrophies very frequently more than the plica triangularis, leaving a thin strip of glandular tissue behind a screen made by the plica. This is often deceptive and gives rise to an appearance of an absence of the tonsils. An investigation with a bent probe will, however, reveal the thin layer of tonsillar tissue behind and firmly attached to the plica; it is innocent looking but is often found saturated with a pathological content capable of infinite mischief. In a number of cases under our observation highly beneficial aftereffects have resulted from the opening of abscesses in very small tonsils which were so completely hidden that it required infolding the anterior pillars and turning the plica forward to disclose them. This fact should not be overlooked, for in cases of facial neuralgia, neuritis, myositis, lowered vitality, and almost any other infection without assignable cause, a careful search behind the anterior pillars in fauces which at first glance would seem to be devoid of tonsils will occasionally be richly rewarded by the discovery of an active focus. It may be of interest to note here that since the publication of the article on The Tonsilloscope a lamp with a very small window at the end has been added to the tonsilloscopic set for transillumination of diminutive tonsils. If the anterior pillar is folded outward, while this small lamp is held behind a very small tonsil, an examination of its contents, even without the microscope, can be made quite as satisfactorily as of the contents of an enlarged tonsil.

The high degree of hyperemia in Class 6, which contains both detritus and pus, usually shows on the surface of the tonsils as a deep congestion which in most cases extends to the anterior pillars. Class 5, which contains detritus only, is almost always indicated by congestion of the free surface but it is of a much milder degree than that of Class 6. We have not yet been able to determine that the other classes have characteristic surface markings. The above facts regarding classes 5 and 6, while interesting and helpful, should not be relied upon entirely and, therefore, with the exception of Class 3, in all the classes the tonsilloscope ought always to be employed. Diagnoses by surface examination alone must, therefore, at least for the present, be confined to Class 3, or superficial abscesses.

Still another diagnostic sign must be mentioned, which while of little importance as an aid when the tonsilloscope is employed, does nevertheless, at times, attract attention to the existence of tonsillar disease, and that is the particularly offensive and characteristic odor frequently found in the breath of individuals possessing tonsils in classes 4, 5, or 6. In such cases the emptying of the tonsillar crypts and pockets demonstrates to the olfactory sense that decomposing material is lodged in open spaces in the tonsils, but a surgical procedure is unhappily not needed to liberate the effluvia, as at conversational distances it may readily be detected. This sign must be regarded as worthy of consideration in our efforts to improve the health and attractiveness of the race.

We now know that the tonsils in a great majority of children are diseased and, therefore, enucleation will probably be practised in them to such an extent that in the coming generations few adults will possess tonsils. That, however, is not true today, for with rare exceptions all adults the world over still have retained their tonsils. For the present it is likely that the tonsilloscope will prove of the greatest usefulness in detecting in youths and adults diseased conditions in tonsils which may have been the overlooked sources of systemic disorders.

The comfort and assistance derived from the use of the tonsilloscope have, during the year of its existence, been very great. Indecision has practically given way to certainty. Except with the borderline class, about which it may not be possible to decide at once, one may always quickly determine whether a tonsil contains pathological and therefore possibly actively pathogenic material, or is free from it. It has been our experience with parents entertaining positive views in opposition to tonsil removal that when, by virtue of the disclosures of the tonsilloscope, they were authoritatively assured that the tonsils of their children contained material which was probably giving rise to systemic disorders, or in which a foundation for future ill health was almost certainly laid, they were either thrown into a position of defense from which it was not possible logically to extricate themselves, or yielded at once to the tonsilloscopic evidence and asked in justice to the future health and proper development of their offspring for radical and immediate action. Diseased tonsils in a child are so great a menace to his future health that they should always be enucleated, for it is not necessary at that stage of life to seek to establish a relationship between possible active foci and systemic diseases. In an adult the conditions are somewhat different and while, of course, it would be ideal to remove every tonsil which showed definite disease, because its presence is a potential source of mischief to the host, we find that for the most part it is necessary to demonstrate to the patient its etiological relationship to some existing systemic disorder before there is hope of the radical operation being even taken under consideration. The problem of how to determine such a relationship in youth and adult life has become a real one, and happily it has been partly solved. A tonsilloscopic demonstration of the presence of pus in the tonsils of an adult not infrequently results in a request from the patient for their eradication, despite the fact that neither definite nor constant symptoms are apparently occasioned by it. The rule is, however, that adults will not request the removal of diseased tonsils even when they are of an advanced type and it is, therefore, the physician's responsibility to determine whether such removal would be of advantage to the patient and would not be likely to be attended with serious risk. If pus is found in a tonsil we do not believe that there will be hesitation, even on the part of the most conservative counselors, to agree upon the advisability of the removal of the glands, and the presence of pus can always be detected with the tonsilloscope. As a result of our observations, we regard it as a perfectly safe statement that the enucleation of extensively diseased tonsils, whether giving rise to systemic disororders or not, will in some way surely prove to be beneficial to the health of the host. Even granting that this proposition is entirely correct we must of necessity weigh the advantages with the disadvantages and in some cases perhaps leave the final decision with the patient. After all proper safeguards have been thrown about the patient we have no hesitation in advising tonsil enucleation in reasonably healthy adults under the age of forty years, but as the conditions may be and usually are materially different between that and old age we approach the consideration of tonsillectomy in such individuals in a very different attitude of mind. Each case should be studied from every angle before a decision is reached that the radical procedure holds out the only hope of permanent relief of symptoms and that the patient in all ways is in a satisfactory condition for such an operation.

The question has often been asked in the past few months: "Of what avail is it to be able to determine that the tonsils are definitely diseased unless it also can be determined whether they contain foci which are active and, therefore, giving rise to some systemic infection?" We, of course, through the gynecologist, urologist, surgeon, and röntgenologist may seek to learn of the possible existence of other foci in the body and thus perhaps reach a decision by exclusion. But there is a way, quite aside from a search through other structures, of determining in a very short time whether an etiological relationship exists between diseased tonsils and systemic disorders the most pronounced symptom of which is pain, and in a somewhat longer time their definite relationship to painless chronic disorders. This consists in removing a considerable quantity of the necrotic tissue in the tonsils by curettage, followed by injections of fifty per cent. alcohol into the cavities from which the necrotic tissue has been removed.

For adult subjects who were willing or anxious to submit to the radical procedure, but whose health was impaired by a bacteriemia caused by waste products locked up in the tonsils, and who were therefore not the best of surgical risks, we have frequently advised and carried out curettage and alcohol injections until enough material, even pus, had been removed to restore much of the lost vitality. Such astonishing improvement in the general health has followed in many cases the preparatory treatment that we have been able to accomplish the final total excision with no more than the customary reaction. Even if it is clear in adults that, all other things being equal, enucleation of the tonsils is desirable, the patients may hesitate to accept or may refuse removal, but they practically never fail to make earnest efforts to rid themselves of as much of the disease making material as is possible with conservative surgical methods. Indeed, the writer has at times in the past year been almost overwhelmed by the demands for conservative surgical assistance from patients who were unwilling to risk the dangers of radical surgical procedures. They may not have been willing to take the best of care of their health in other ways but they all wanted their tonsils curetted. This pronounced characteristic of the nature of man has been one of the interesting revelations since the beginning of the use of the tonsilloscope.

While enucleation is, of course, the ideal way to effect the elimination of pathological material from the tonsils of adults, either because the operation is objected to by the patient or is for any reason regarded as too serious a risk by the surgeon, or because of the known highly satisfactory results often obtainable from conservative treatment alone, the method of disposing of foreign material by curettage must frequently be resorted to. Laryngologists ought, therefore, to take notice of the great amount of this kind of work which lies before them for they must of necessity become expert in tonsil cleaning.

The tonsils are like the storehouses for ammunition. The walls and closed apertures give no outward signs of whether there are loaded shells within. Even if there are, they may in times of peace remain in their stacks harmless for a hundred years. Transported to a projectile and thrown into an enemy's camp they are capable of vast destruction. An ammunition storehouse may look like a palace of peace from without and it is only when a glance is taken within that the nature of its contents is revealed; but even then we cannot, at once, tell whether the stored shells contain high explosives. When in an adult a tonsil is seen to contain foreign material, even though a culture has disclosed the variety, or varieties, of bacteria it contains, it is impossible to decide immediately that it is giving rise to an existing disorder of the body. In many cases, as in duodenal ulcer, neither the surgeon nor the patient is apt to hesitate, when a tonsil is found diseased and evidences of foci elsewhere are lacking, in accepting the presumptive evidence of a relationship and, therefore, if all other conditions are favorble, decide upon the removal of the tonsil. In most cases, however, except those in which deep seated collections of pus are known to be present, as in Class 4 and Class 6, a test of relationship should be made by removing with the curette as much of the necrotic material as possible, and if after a time improvement in the symptoms results there need no longer be doubt of the responsibility of the tonsils. In cases in which there is a relationship, which is unrecognized at first between the tonsils and a systemic disorder, as for instance myositis and arthritis, not infrequently, the effects of the first few curettings is to increase temporarily the intensity of the symptoms. We regard this phenomenon as one of the earliest proofs that the tonsils are acting as causative factors of the conditions expressing themselves in terms of pain; and while the exacerbations caused by the curette are distressing to the patients, they are highly significant guides to the observers. We are hopeful of an explanation from the pathological laboratory of this result of the physical disturbance of bacteria laden detritus in the tonsil; we can but record the clinical observation.

If improvement or a distinct increase of the symptoms does not in time follow curettage, enucleation will probably not be regarded as desirable except on the general principle of getting rid of the remaining potential sources of infection, for when the actual condition in the tonsils is demonstrated to the patient he may elect to have the offending glands removed. In a large percentage of adult cases the diseased conditions are well defined and consist mainly of entrapped detritus, the result of some former inflammatory process or processes which could find no avenue of escape. It is in this class of cases that a test by curettage should be made in order to avoid the chagrin of a failure to relieve symptoms by enucleating tonsils simply because they are diseased. Some day, perhaps, we will be able to determine from a culture of the necrotic tissue in a tonsil, and possibly a culture from lymph nodes elsewhere, whether there is a relationship between such tonsil and an existing systemic infection; but that day is not yet. While we believe we know now that certain bacteria found in the tonsil are prone to become localized in certain structures of the body and are disposed to produce certain disorders by elective affinity, we cannot know, even when a culture reveals the presence of such bacteria, that they are active and are giving rise to infection. Therefore, the foreign material must be removed when possible, often in considerable quantities, before a tonsil devoid of pus can be positively adjudged guilty or innocent of being the cause of a given systemic disorder.

With our knowledge of how the adult laity view the subject of tonsil removal in their own persons, and our knowledge also that present day human nature is doubtless similar to human nature of other days, we must accept the clearly demonstrated fact that the great majority of adults will not take the radical operation into serious consideration except for the most urgent reasons. So, at present, in the main we must strive for the relief of symptoms which, as we now know, will often yield entirely to, or be improved by, tonsil curettage or curettage with piecemeal removal of the tonsils. Our fairly close study, during the past two or three years, of etiological relationships between the tonsils and systemic disorders may have placed us in a position to assist some of our readers to acquire a knowledge of the art of tonsil curettage, for whatever else may be said, it cannot be denied that we have had many and varied experiences in unloading the tonsils of their pathological contents.

One of the greatest obstacles to the thorough curetting of the various cavities in a disordered tonsil is the presence of an adherent plica triangularis which may blanket a half or more of the surface openings of the tonsil. In such cases, after evacuating as many of the crypts and pockets as are readily accessible, the plica should be stripped from the tonsil to permit the removal of the broken down material entrapped beneath it, and also to establish an open door to the blocked crypts which will be found to contain varying amounts of the products of past inflammatory processes. The stripping of the plica from the tonsil is accomplished, first by dull dissection under its free edge until a pocket is formed. Then with a curved sharp separator, inserted into that pocket, the plica can be easily and quickly separated from the tonsil, when it should be wholly removed with punch forceps. This is minor surgical work and can be painlessly done under local surface anesthesia. Except during piecemeal removal, to be described later, the procedure just outlined makes possible as complete an approach to the pathological contents of the tonsil as can be obtained for the curette.

REFERENCE.

1. FRENCH: The Tonsilloscope, NEW YORK MEDICAL JOURNAL, May 20, 1916, and *Transactions of the American Laryngological Society*, 1916.

(*To be concluded.*)

THE FIELD OF THE VARIOUS METHODS OF CARDIAC DIAGNOSIS.

By HAROLD E. B. PARDEE, M. D.,
New York.
(*From the Medical Service, New York Hospital, and the Department of Medicine, Cornell University Medical School.*)

The diagnosis of cardiac disease has become so specialized of late that it should be profitable to review the various methods of examining the heart and to indicate the field of usefulness of each of them. The polygraph, the x ray, and the electrocardiograph are the new instruments which we have acquired, and an attempt will be made to show in what way these are especially able to help us understand the cardiac pathology and pathological physiology.

HYPERTROPHY OF THE HEART.

The diagnosis of hypertrophy of the heart may usually be made by finding an enlarged area of cardiac dullness accompanied by a strong, heaving apex impulse. There are times, however, when the lungs are so emphysematous or the chest wall is so thick, or both, that percussion is a wholly unreliable method of marking off the cardiac borders, and palpation of the apex beat is impossible. In such a case, and also when there are pulmonary conditions which cause dullness merging with the border of the heart, the use of the x ray will be necessary to determine the size of the heart. But even the x ray does not give information as to whether the enlargement is due to hypertrophy or to dilatation, so that this decision must be made on other grounds which will be considered later.

Enlargement of the heart to the right must not be ascribed to hypertrophy or dilatation of the right ventricle nor should enlargements to the left be ascribed wholly to the left ventricle. The heart is not very freely movable to the right or left owing to the attachment of the inferior vena cava to the diaphragm. The ventricles and left auricle lie entirely to the left of this point of fixation, the right auricle alone being to the right of it. It must therefore be obvious that any increase in the size of either ventricle will be evident to the left more than to the right, and in fact can only succeed in moving the right border to a slight extent no matter how great the enlargement may be. The right border of the heart is formed by the right auricle, and only when this is dilated does the heart enlarge much to the right.

The electrocardiograph is the only means by which we can obtain information as to the degree to which each ventricle is responsible for the hypertrophy of the heart and as to which ventricle is predominantly hypertrophied. From a heart in which the right ventricle is predominantly hypertrophied, a record like Fig. 1 is obtained, in which the R wave, the largest of the quick ventricular waves is turned downward in lead I, the lead from the two arms. Predominant hypertrophy of the left ventricle gives a record like Fig. 2 in which this wave is turned downward in lead III, the lead from the left arm and leg. Fig. 3 is from a heart with the normal relation of the two ventricles and has the R wave turned upward in all three leads. Such a heart may be a normal heart and not hypertrophied at all, or it may be as we might say symmetrically hypertrophied so that the two ventricles retain their normal relationship of muscularity. In such a case the question as to the presence or absence of any enlargement must be decided by percussion of the heart borders or by the x ray.

A word should be said as to the value of an accentuated second sound at the aortic or pulmonic areas as an indication of hypertrophy of the corresponding ventricle. This accentuation is usually due to an increase in the pressure within the artery, and may have existed for too short a time to lead to the compensatory hypertrophy of the ventricle which must follow such an increased demand upon the heart muscle. It cannot therefore be taken as evidence of hypertrophy if present at a single observation, though it may be so taken if found to be constantly present over a period of time. An exception to this rule may occur in some cases with thickening of the aortic valve flaps, but the situation can be readily recognized by the absence of an increased blood pressure.

Hypertrophy of the auricle can be diagnosed from the electrocardiographic record by an increase in the height of the auricular wave P. This is seen in Fig. 1 very plainly, and there is no other method by which circular hypertrophy can be recognized.

DILATATION OF THE HEART.

The diagnosis of dilatation of the chambers of the heart is a most difficult problem. How can we tell the degree of enlargement to ascribe to this factor and the degree to ascribe to hypertrophy? Of course when the patient presents the picture of marked cardiac insufficiency, with edema, orthopnea, and cyanosis and loud systolic murmurs at the mitral and tricuspid areas, it is easy enough to say that the enlargement of the heart is largely due to dilatation. In a patient who has never had symptoms of cardiac insufficiency but who has an increased blood pressure or an aortic or mitral regurgitation, it is also easy to say that the presence of an enlarged heart is mostly due to hypertrophy. It is in the intermediate ground that difficulty arises, and it is a difficulty which cannot be entirely surmounted by any means now at our command. We must face it as a fact that we do not know what dilatation really is. We can think of acute dilatation as a loss of tonus of the musculature, but our ideas of the nature of a dilatation which can persist after the heart has regained its ability to carry on the circulation successfully, are extremely vague and unsatisfactory.

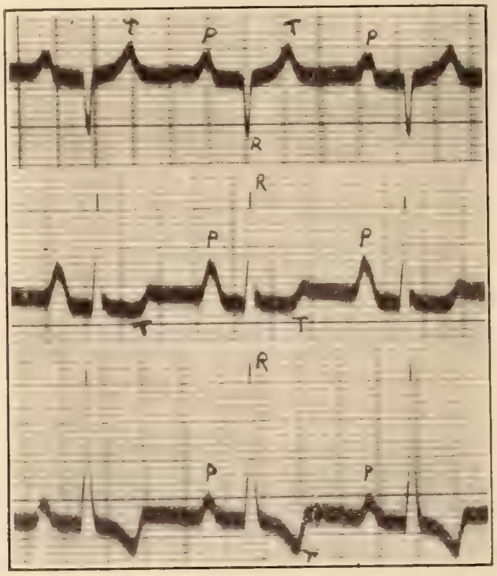

Fig. 1.—In this and all succeeding figures, the distance between the corresponding line of each pair or ordinates represents one fifth of a second. The distance between abscissæ represents 0.1 millivolt. The upper strip is lead I, obtained from the two arms; the centre strip is lead II, from the right arm and left leg; the lower strip is lead III, from the left arm and leg. Record from a patient with mitral stenosis. Note especially the prolonged auriculoventricular conduction time: 0.25 second from the beginning of P to the beginning of R, and the height of P in lead II.

Henderson has shown that up to a certain point dilatation is a beneficial process, in that the stretching puts the cardiac muscle fibres in a more favorable situation to raise the intraventricular pressure by their contraction. But dilatation beyond that point is harmful, i. e., is unfavorable to the muscle fibres, and it is at about this point that we are able to appreciate clinically the presence of dilatation. When stretching reaches this degree the muscle is no longer able to produce its strongest contraction, so that this fact is added to the primary cause of the dilatation, i. e., the valvular lesion, the increased blood pressure, or the diseased heart muscle, to produce a still greater slowing of the blood flow through the heart. Symptoms and signs of cardiac insufficiency ensue at this stage. Which symptoms or signs will be first to appear will vary from patient to patient, and will depend upon the primary cause of the heart failure, but it is reasonably certain that in every patient who has symptoms of cardiac insufficiency there is a dilatation of at least one of the chambers of the heart which has passed beyond the extent which may be considered physiological. Conversely it is true that no matter how greatly the heart is enlarged, the dilatation cannot be in excess of this physiological optimum as long as the circulation is being properly carried on and there are no indications of cardiac insufficiency. It may be true that as the muscle hypertrophies the physiological limit of dilatation increases proportionally. The extent of this increase we cannot determine, and must accept it as a normal component of the hypertrophy.

VALVULAR LESIONS.

The diagnosis of valvular lesions must be made chiefly upon the presence or absence of the characteristic murmurs, though there are certain accessory signs which are of value. The slapping, brief character of the apex impulse in the presence of mitral stenosis is an important phenomenon to observe, and even in the absence of the diastolic murmur should be given much weight as an indication of this lesion. So even more surely is the finding of an electrocardiogram of the right ventricular predominance type of Fig. 1. For if a congenital lesion or chronic obstruction of the pulmonary artery can be eliminated, there is no other condition which leads to a predominance of the right ventricle. When there is aortic regurgitation and a low pitched diastolic murmur at the apex it is often difficult to decide whether this murmur is due to mitral stenosis or is produced by the Flint mechanism. The presence of a crescendo presystolic murmur, a change from the apex heave of aortic regurgitation to a more brief impulse, the absence of the characteristic large pulse pressure of aortic regurgitation, these are the signs which indicate that mitral stenosis is also present; but more certain than these is the finding of an electrocardiogram which does not indicate the left hypertrophy which should be present in an uncomplicated aortic case. When the aortic and mitral lesions are both present then both ventricles of the heart are hypertrophied, so that the electrocardiogram, owing to the balanced hypertrophy which is present, has the R wave directed upward in all three leads as in Fig. 3. The electrocardiogram is also of assistance when there is doubt of the meaning of a systolic murmur at the apex, to help decide whether or not mitral regurgitation is present. The early effect of the regurgitation is to produce a moderate hypertrophy of the left ventricle, so that the finding of the sign of this in the electrocardiogram is evidence for the lesion, while the absence of the sign is evidence against its presence.

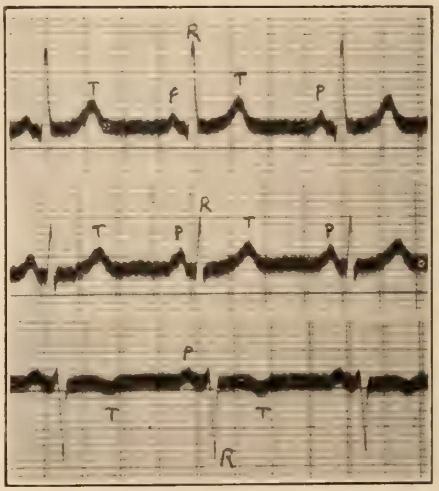

Fig. 2.—Leads I, II, and III from a patient with chronic interstitial nephritis and increased blood pressure.

It is often difficult to tell the importance of the murmurs of congenital origin which are heard in young children. Some of these are unimportant, but others are caused by lesions which are a real embarrassment to the circulation. Pulmonic stenosis, patent ductus arteriosus, and patent interventricular septum are all important in their consequences, and all lead to a right ventricular predominance of marked grade which is plainly shown by the electrocardiogram. Intraventricular bands and patent foramen ovale lead to a murmur or to cyanosis which may cause them to be confused with the more serious lesions, but neither of them lead to a change in the electrocardiogram, so that the record forms a ready means of differentiation.

ARRHYTHMIAS.

In the diagnosis of the arrhythmias one can be fairly accurate without instrumental aid in many cases, but only after careful training and after an understanding of the forms of arrhythmia has been obtained by the use of an instrument or by the careful study of many instrumental records. Presystoles can usually be recognized by careful auscultation of the cardiac sounds. One should never depend upon the pulse in any investigation of an irregular heart though it is, of course, impossible to tell whether the presystoles are auricular or ventricular in origin. Heart block can be recognized if it is of a greater degree than delayed conduction so that more or less frequent dropping of the ventricular response to the auricular impulse occurs, and the rhythm of auricular fibrillation can also usually be recognized by careful auscultation. In any case of arrhythmia, however, errors are liable to occur if neither the polygraph or electrocardiograph are used. Heart block may simulate the coupled beats which are commonly due to the regularly occurring presystole, or vice versa; an extreme bradycardia or very early presystoles may simulate heart block; the rhythm of auricular fibrillation may be simulated by a sinus arrhythmia or by frequently occurring presystoles, or by certain cases of heart block. Morever, without instrumental aid such mechanisms as auricular flutter and that curious condition called ventricular escape in which the ventricles beat independently of the auricles but at a faster rate, will be wholly unappreciated, as will the prolonged A-V conduction time of latent heart block, shown in Fig. 1.

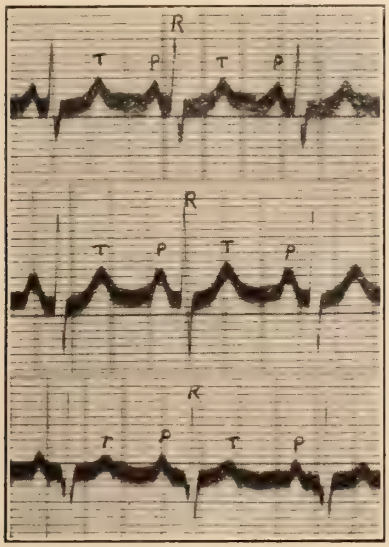

FIG. 3.—Leads I, II, and III from a patient with lobar pneumonia.

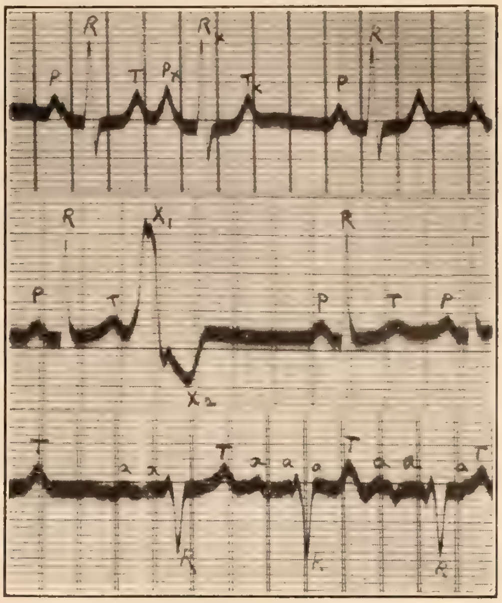

FIG. 4.—Lead II from three different patients. The upper strip shows a premature beat of auricular origin at P*x* R*x* T*x*. The centre strip shows a premature beat of ventricular origin at X_1 X_2. The lower strip shows auriciular fibrillation, with irregularly occurring ventricular beats, and the irregularly shaped wavelets at *a*, due to the auricle. Note that the period following the first T shows a complete absence of these wavelets. It is typical for this to occur at irregular intervals.

Since the different types of arrhythmia are of such different prognostic importance, it becomes most important to use the available methods to clear this point. The polygraph has the advantage of portability and is therefore available in cases where the electrocardiograph is not. It does not seem advisable to discuss here the polygraphic diagnosis of the arrhythmias, as this has been done many times and very well, especially by Mackenzie, but if satisfactory venous and arterial curves can be obtained, and there are only a few patients from whom they cannot be, we will be able from the

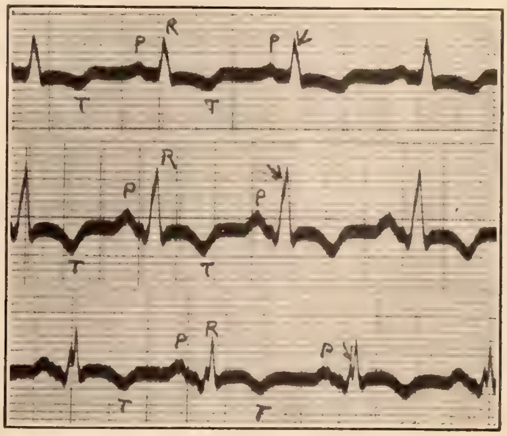

FIG. 5.—Leads I, II, and III from a patient with a severe myocarditis. Note the notching and broadening of Ry and the inverted T waves.

curves to decide the character of the arrhythmia. The advantage of the electrocardiograph is the certainty and ease of obtaining a satisfactory record and the much greater ease of interpretation of the record. Each wave is labeled, as it were, by its form, as to whether it is caused by the auricle or ventricle, and also to a certain degree as to the region of the auricle or ventricle in which it originates. Fig. 4 shows, in the upper row, the record of a presystole of auricular origin; one of ventricular origin is shown in the middle row, and a record of auricular fibrillation in the lower row. It is quite plain that the arrhythmia in the first case is initiated by an auricular wave marked P*x* and equally so that it is not initiated by an auricular wave in the second case. Moreover, the unusual form of the waves X_1 and X_2 which interrupt the rhythm in this second case is characteristic of a contraction of the ventricle which arises in a region of the ventricle itself. Contrast these waves with the usual appearance of the ventricular waves R*x* and T*x* of the premature beat shown in the first row, which arises in the normal manner by an impulse from the auricles. The lowest record shows plainly an absence of regularly recurring auricular waves, and the presence of a rapid series of varying waves marked *a, a,* which is due to the fibrillating auricle. The ventricular waves are of the usual normal form, which shows them to be due to impulses from the auricles, although R is directed downward. They are seen to occur with great irregularity.

MYOCARDITIS.

The electrocardiograph has one further advantage over the polygraph in that, besides making a diagnosis of the rhythm, it gives at the same time information about the ventricular muscle, both as to hypertrophy which has been mentioned and as to myocarditis which will be. This information can not be obtained in any other way. The clinical diagnosis of myocarditis has always been a field more of supposition than of fact. The diagnosis is usually made as a sort of last resort when the cardiac insufficiency or the enlargement of the heart cannot be explained in any other way, or by inference when there is considerable sclerosis of the arteries, or marked adiposity, or a history of "alcoholic, tobacco, or physical excesses." There has been of late years a disposition to consider the presence of auricular fibrillation as a sign of myocarditis and even in some quarters the constant occurrence of presystoles. Pathologists do not encourage this tendency, as many hearts are found which had auricular fibrillation before death and which do not show as much myocarditis as do other hearts which always had a normal rhythm. It may be true that myocarditis is one of the predisposing factors in this condition, but we are not ready to say that it must always be present. Heart block may be taken to indicate the presence of myocarditis since it is usually caused by an inflammatory focus in the A-V bundle. It does not, however, give an idea of the extent of the process because a very small focus will cause heart block if properly situated.

The only means at our disposal for obtaining definite evidence of myocardial abnormality is the electrocardiograph. There are two points in the record which indicate myocardial disease. The most common of these is a change of the T wave, the slow ventricular wave, from an upward to a downward deflection in lead I or lead II or both. A downward T wave occurs normally in lead III at times. This change in the T wave may not indicate a very grave change in the muscle as it can be produced both by large doses of digitalis and by suprarenal extract, but it is never found in records from normal hearts. It is shown in both Fig. 1 and Fig. 5, in the former due to digitalis, but in the latter occurring spontaneously. The second sign of myocardial involvement consists in changes in the group of quick waves which occur early in the ventricular systole, the QRS group. These changes take the form of a notching of the R wave as in Fig. 5, lead III, or a broadening or thickening of the line of ascent or descent of this wave as in leads I and II of this figure. This notching or thickening of the ascending or descending limb of R may appear in one lead of a record from a normal heart, so that we must find it in two leads in order to consider it a sign of myocarditis. It is likely that this is due to a pathological process which involves the subendocardial peripheral branches of the A-V bundle, and for this reason the myocardial process must be quite diffuse.

Before closing, a word should be said about tests of the function of the heart. Many have been tried; none have succeeded in establishing themselves, though there seems to be some promise in two procedures. If the pulse, accelerated by exercise, does not return to its former rate after three minutes, it is considered to indicate that the heart has been overtaxed, and also if the blood pressure taken at half minute intervals continues to rise after the exercise has ceased, it is considered to indicate the same thing. The "functional capacity" is taken to be an amount of work just short of that necessary to produce either of these signs of overtaxing of the heart. This "functional capacity" will usually be fairly constant from day to day when the patient's condition is stationary, but cannot be considered of prognostic importance as it will increase or decrease with the patient's reserve. It seems, however, to be a fairly satisfactory method of gauging objectively the functional ability of the patient's circulation at the time of the observation.

In summary it may be said that though the usual simpler methods of examination will lead to a diagnosis of the cardiac condition, yet that diagnosis will not always be correct owing to the limitations of the methods. We owe it to ourselves to understand these limitations and thus to know when to use the newer instruments of precision, as well as to understand the type of information which these instruments are able to supply. The x ray will give an exact picture of the size of the heart. The polygraph will lead to an exact diagnosis of the arrhythmia and will disclose latent heart block. The electrocardiograph will both give an exact diagnosis of the arrhythmia and demonstrate latent heart block with greater ease and certainty. It will indicate hypertrophy of the auricle; it will indicate predominant hypertrophy of either ventricle, or that such hypertrophy is either absent or is symmetrical, thus throwing a side light on the presence or absence of any special valvular lesion; it will give actual physical signs which indicate myocarditis.

45 East Sixty-second street.

POST PARTUM HEMORRHAGE.*

By Herbert Thoms, M. D.,
New Haven, Conn.

One of the most dangerous and trying complications connected with parturition, is hemorrhage occurring during or shortly after the third stage of labor. The sudden and unexpected occurrence of this accident just when a labor seems happily terminated very often taxes to the utmost the resources and presence of mind of the obstetrician. In a comparatively few moments a patient may pass from a condition of apparent safety to one of greatest danger. It is the duty of every practitioner of obstetrics to be acquainted with the different phases of this complication and to be thoroughly familiar with the preventive and curative treatment of the same.

Some idea of the frequency of post partum hemorrhage may be gained from statistics quoted recently in our own country. Cragin (1) from studies at the Sloane Hospital for Women has reported the findings in a series of 20,000 deliveries and found that one out of every ten women showed abnormal bleeding. That is, ten per cent. of all women lost sixteen ounces or more of blood issuing from the vagina during or shortly after the separation and expulsion of the placenta. Although the assumption of sixteen ounces as an arbitrary figure may seem somehow low, still I think that it is a good figure to remember and to bear in mind that any bleeding following delivery over one pint in quantity should be considered abnormal and the possibility of serious hemorrhage at once thought of. The amount of blood lost during childbirth that we are accustomed to regard as normal would be so startling in any other condition that it would perhaps be well at this time to speak briefly of the physiological processes that are present. At term the blood itself has been shown to be definitely increased both in leucocytes and in coagulability. Also by means of contraction and retraction of the uterine muscle the lumina of the vessels and sinuses are for the most part closed and the control of bleeding established. Slowing of the bloodstream and coagulation also play their part in the process.

The main etiological factors in the causation of post partum hemorrhage are failure of the uterine muscle to contract and laceration of some part of the birth canal. Both of these conditions may be present simultaneously in varying degrees. Among the predisposing causes that are mentioned in regard to the relaxation of the uterine muscle are multiparity; protracted labor; multiple pregnancy or hydramnios; prolonged anesthesia, especially chloroform anesthesia; constitutional diseases; uterine tumors; retained placenta, and placenta prævia. Hemorrhage that is due to laceration of some part of the birth canal is usually confined to the cervix but may extend into the broad ligament or the body of the uterus. This hemorrhage is usually arterial and may require hemostasis by means of suture. Another form of laceration that is rarely mentioned is that involving the veins of the vestibule. I have known these veins occasionally to cause profuse bleeding before hemostasis could be brought about.

Post partum hemorrhage may present itself in two forms—external bleeding, either continuous or intermittent, and hemorrhage entirely with a relaxed uterus. The condition of the fundus as ascertained by external palpation will tell us much. If the uterus is soft and flabby and the outline is not readily made out, hemorrhage may be partly or entirely concealed. If, however, the fundus is firm and shows good contraction, the hemorrhage if present must come from some laceration lower down in the birth canal. Cragin has well observed that "the constitutional symptoms if once seen can never be forgotten—the pallor, rapid and feeble pulse, restlessness, air hunger, pinched face, dry lips and tongue, patient wishing windows open and wishing to be fanned, and the thin peaked nose." However, it is the recognition of post partum hemorrhage in its incipient stage that must be emphasized, and it is only by eternal vigilance in every case of labor that we see and handle that we can feel that we have performed our whole duty in a case of severe post partum hemorrhage with its attendant results.

In the treatment, prophylaxis is most important. In the great majority of cases proper management of the third stage of labor will prevent any abnormal bleeding. The physiological waiting method championed especially by Ahlfeld (2), is being widely advocated. The avoidance of hemorrhage by the energetic methods that are often used, such as kneading or massaging the uterus, frequently defeat their own purpose. Continuous inspection of the vulva and frequent palpation of the fundus at regular intervals, that is, light palpation to determine the level of the fundus and to some extent its consistency is all that is necessary as a safeguard. It is my rule never to leave the bedside of an obstetrical patient for at least an hour following the birth of the placenta even though a competent nurse is in attendance. We need less manipulation and more careful inspection. Vigorous early massage of the uterus may cause partial separation of the placenta, interfere with normal contraction, and cause retention of the placenta and membranes. The delivery of the placenta, although important in this regard, requires too much space for any detailed consideration. However, two points in this regard must of necessity be mentioned: The Credé maneuver should not be inaugurated too early and when this method of expression is used it should be attempted only during a uterine contraction. We should only assist the uterus in performing this function. Other important prophylactic considerations are the administration of fluidextract of ergot immediately following the birth of the placenta; correct hygiene during pregnancy; avoidance of uterine inertia due to prolonged second stage; avoidance of prolonged anesthesia. In placenta prævia, owing to low implantation of the placenta, more or less post partum hemorrhage is always expected.

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*Read before the Connecticut State Medical Society, October 3, 1916.

The curative or active treatment of post partum hemorrhage depends primarily upon the cause of the bleeding. If the lower parturient canal is lacerated and the fundus well contracted, as a rule serious bleeding will come from the cervix. This must be exposed by means of a vulsella or stitch and any laceration present closed by means of chromicized catgut. The great majority of post partum hemorrhages, however, have their origin in the uterine cavity, and here we have four general methods of procedure. 1. We may maintain uterine contraction by means of manual pressure or manipulation. The fundus uteri is grasped through the abdominal wall and manipulated by kneading until it contracts well and the contents are expelled. When this has occurred the hand should be held in a position of continuous pressure upon the fundus ceasing any vigorous manipulation unless the fundus relaxes and begins to rise when it may be stimulated to contraction by kneading as before. 2. We have the use of drugs. The prompt and satisfactory results obtained from one c. c. of pituitrin administered by hypodermic intramuscularly cannot be overlooked. At the onset of any serious hemorrhage accompanied by a flabby, poorly contracted uterus, pituitrin should be used immediately. The action is as a rule almost immediate and although this action may be somewhat transient, still it will "hold" the uterus until some more lasting drug may assert itself. Bearing this in mind it is well to administer one or two c. c. of ergotole hypodermically in the same way immediately after the pituitrin. Pituitrin we may consider solely as an emergency drug and does not in any way compete with the ergot preparations. On account of its rapid action it is indispensable. 3. The third method of combating hemorrhage is by means of the intrauterine douche. For this purpose a sterile douche bag, tube and nozzle—plain glass is preferable—should be carried in the outfit. The douche is of normal saline 110° to 120° F. carefully given, high in the uterine cavity. Boiled water or a two per cent. acetic acid solution may be also used for this purpose. The main point is to give the douche quickly and give it hot. 4. The fourth method is the intrauterine gauze pack. For this purpose plain sterile gauze may be used as the action is wholly mechanical. It is best carried in the outfit in large glass tubes in the form of a somewhat thick strip. A good emergency packing may be obtained from a two to four inch sterile gauze bandage. The administration of the pack is accomplished with the patient in the lithotomy position, perineum retracted, cervix brought down by vulsella and packing introduced by long dressing forceps or looped sponge holder. The one point to remember in packing the uterus is that there should be no space in the upper part of the uterine cavity after the packing is inserted. The pressure of the gauze pack against the wall of the uterus maintains the contraction and thus stops hemorrhage. Therefore the packing must be firmly and thoroughly done. To insure this, one hand may be placed upon a sterile covering over the fundus during the process.

In case the packing does not control hemorrhage from the uterine cavity we may feel quite certain that the packing has not been carried high enough. The packing had better be removed, a hot intrauterine douche given and repacking done with new gauze. The supportive methods in the treatment of post partum hemorrhage are the same as for hemorrhage in other locations. Saline should be administered by intravenous infusion or by hypodermoclysis in the severer grades and water by mouth and saline per rectum in the lesser grades. Morphine is given for its quieting effect, the foot of the bed is raised, external heat is applied, etc.

To summarize briefly: Any bleeding during or shortly after the third stage of labor that measures approximately one pint or more should be considered abnormal and the possibility of severe post partum hemorrhage borne in mind. Energetic methods during the third stage of labor should be abandoned. Continuous inspection of the vulva and light palpation of the fundus is all that is necessary. The administration of pituitrin immediately at the onset of uterine hemorrhage with relaxed uterus followed by ergotole constitutes an excellent method of checking bleeding by means of drugs. The intrauterine gauze pack when used should entirely fill the uterine cavity, care being taken that no dead space remains.

419 TEMPLE STREET.

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THE IMPORTANCE OF AN ANTECEDENT STATE OF UNEASINESS AS THE CAUSE OF CERTAIN NORMAL AND ABNORMAL TYPES OF BEHAVIOR.

BY MEYER SOLOMON, M. D.,
Chicago.

Man is subject to states of what may best be called "uneasiness," or varying intensity and duration, which may arise from one or more of many causes, and which may lead to one or more types of activity of a normal or abnormal nature.

First, let us describe this state of uneasiness. Just as in fever, so here, too, one may recognize an onset, a period of invasion or initial stage, which culminates in a fastigium, acme, or height of the period of restlessness, only to be followed by the decline or disappearance of what we may call the attack. The onset may be rapid or slow, and so, too, the decline may be sudden or gradual. While the attack or period of uneasiness is on, the condition may be variously described by different persons. The individual feels restless, disturbed, under stress and strain and tension. There is a peculiar general state of uneasiness dominating the mind. This state may at times be described in the words of

Janet (1) as a feeling of incompleteness, of insufficiency. At other times one may prefer to describe it in Adler's terms and call it a feeling of uncertainty, of insecurity, of inferiority (2). In many cases the states mentioned by Janet and Adler may be attained in individual cases, especially in the decidedly abnormal types found in that great group of cases which Janet has labelled psychasthenia; in fact, these feelings and conditions described by Janet and Adler may develop into even more marked conditions, such as the feelings of strangeness, unfamiliarity, unreality, depersonalization, and still more marked forms of mental dissociation, leading even, it may be, in some cases, to actual dual or multiple personality. I venture to assert, however, that it is only in the decidedly unstable and neuropathic types of the sort described so well by Janet and to which Adler's theory of organ inferiority seems applicable, that these more pronounced mental states are to be found. These various conditions merge one into the other by an imperceptible series of gradations, there is no sharp dividing line, and the difference is mainly one of degree. In the common forms in which I have observed this condition in patients and in healthy persons, there is nothing more than a condition of uneasiness and unrest. The person is ill at ease, fidgety, cannot concentrate on the task before him, and is so generally disturbed that he does not know what to do with himself. He is fussy, on edge, highly keyed up, so to speak, "flying to pieces," "on the jumps," "ready to go to crash," as different individuals will describe it. It is but natural that while in this condition the person is irritable, and is apt to be cranky, grouchy, easily angered, and not at all himself, as he will tell you. This unenjoyable, disagreeable, annoying, disturbing, painful mental state could be described at much greater length, but I have here given its main characteristics in its simplest form. I venture to state, too, that in this simple form the state occurs now and then in all human beings, but for most of us these periods are relatively infrequent, brief in duration, and not especially impressive because they are so transient and slight in degree. Those who have this condition rather frequently in more prolonged spells and in heightened degree are considerably annoyed by them. In the really severe forms, occurring in so called psychasthenia and in allied states of mental upset, the attacks are so pronounced that they literally wreck the life of the afflicted person, they tear his mind asunder, and reap a rich harvest of abnormal mental states grouped under the so called psychoneuroses and in other pigeonholes of classification.

What are the causes which evoke this mental state in this or that person? They are legion. I shall enumerate some of the chief causes which have come to my attention. A condition of general chronic ill health, perhaps unrecognized by the afflicted one, may be present and tends to bring this condition on more frequently, more acutely, and more severely. Thus in pulmonary tuberculosis, diabetes, Sydenham's chorea, exophthalmic goitre, nephritis with hypertension, in fact in organic disease of any type, especially when of a generalized nature, so that it has its effect upon the nervous system, and hence more especially in organic diseases of the nervous system, such recurrent states are particularly apt to make their appearance. Another great group of causes is to be found in the physiological epochs, such as puberty and adolescence, pregnancy and puerperium, the menopause and the senium. The changes incident to old age are common causes for this condition in persons of advanced years. These periods of increased stress to the body have their effect upon the nervous system, and this in turn produces this disquieting mental state.

Next comes the very important class of etiological factors due to functional instability of the nervous system in individuals otherwise in good health. In this class are persons with neuropathic constitutions or irritable nervous systems, which Adler (3) would class as organ inferiorities. This irritability may be in the voluntary or involuntary nervous system or both. Persons suffering from epilepsy, vagotonia, migraine, hay fever, so called true or genuine asthma, and the like are especially liable to these periods of unrest. Then come those actually suffering from some psychoneurotic or mild psychotic condition, those who are now being labelled neurasthenics, hysterics, psychasthenics, cyclothymics, and the like. To be sure, in the early stages of the more frank psychotic reactions, as well as during their course, such states as are here described, are much too common. We must add to this a group of causes which may occur in any of us and may bring on this condition in any normal person. Here one may mention overwork, malnutrition, insufficient sleep, hunger, and fatigue from any cause.

Next we meet with conscious mental conflicts of one sort or another, financial problems, domestic affairs, sex problems, or what not, and failure to solve them or to come to satisfying conclusions leads to uneasiness, restlessness, and its cohort.

Finally we come to a large and important class of provocative agents concerned with hidden mental factors of one sort or another. Here we meet that frequent condition in which the individual is fatigued or wearied with what he is at the moment doing, and there is need to satisfy some other trend or type of activity, bodily or mental. It may be that a change is needed from too much intellectual work of the same kind, or from too much physical work, too much play, too much idleness, insufficient variety of life, too little recreation, not enough companionship, too much isolation, or one or more of a host of other factors. In short, we have to deal with the nonsatisfaction of some one or more of the trends of man which demand exercise of some kind. The need for variety in daily life, many interests, the appreciation of the harmful effects of too much monotony and routine, the need for recreation, relaxation, for change—all of these and many more come up for consideration in individual cases. These, in brief, are the most important types of etiological agents.

Is the person aware of the true nature of the inciting factor responsible for his particular state of uneasiness? Sometimes he is, but, alas, much too often he is not. In the latter only the physician, by a careful history of individual attacks and by a proper physical examination with a careful evaluation of the complete picture and findings, is in a position to put his finger on the probable cause or causes. One thing, to be sure, the unfortunate person does know for a certainty. He knows that he is being disturbed by periods of uneasiness.

What is the ultimate outcome of individual attacks of this sort? How do they terminate? It will be seen, from what I have said above, that in its simple form, as it occurs in the average person, this condition of uneasiness and restlessness may be looked upon as a state of irritability due to some cause or other, the individual being aware of the state of irritability, but not necessarily of its primary cause. It is but natural that in this condition one shows a lack of selfcontrol, of selfrestraint, and poise. As a consequence, many undesirable types of reaction come to the fore at this time. There is a heightened degree of egocentricity, of selfishness, of disregard of others. Hence it is at these times, just as in conditions of fatigue of any sort whatever, that our baser natures, more brutal types of reaction, come to the front. Baser feelings are apt to dominate at this time. Harsh words, cruel conduct, abusiveness, insult to others, miserliness, jealousy, depreciation of others, and the thousand and one other weaknesses, those little imperfections that make all the difference in the world for ourselves and those with whom we live or associate—these are the defects of makeup and character which now have us in their grip.

Other persons become depressed, unhappy, have a tendency to cry, and on such occasions they are apt to enlarge upon their trials and tribulations, their wrongs, their injustices, their pessimism, their suspicions of others, their railing against the world, or they may condemn themselves, depreciate themselves, accuse themselves, and in general have a feeling of inferiority and lowered selfesteem or of their own worthlessness. Dissatisfactions, anxieties, fears, depressing emotions may now hold sway. The afflicted one is looking at the world through blue glasses. If this feeling of uneasiness or restlessness is at all prolonged, as it is in some persons, for a half hour to several hours or even days, it is but natural to expect that there will be some effort to escape from this condition of instability and disequilibrium. One person will find one avenue of escape; another, another. The same person will find one means of flight from this feeling of unrest at one time, and another at another time. On the other hand, definite habits of a normal or abnormal kind may be developed as means of escape. These outlets, these flights, these avenue of escape or pathways of relief may be purposely sought for and chosen by the individual with full realization of the reason therefor, or, on the other hand, he may be blindly driven into certain directions of energy drainage which afford him the relief desired and bring to pass a termination of his peculiar mental condition.

Let us remember that there is a disagreeable state of uneasiness, of unrest, of irritability, and that in some cases there may be added the mental conditions described so well by Janet and Adler, and it is from this state of mind that the individual must flee. For this an outlet, a discharge, excitement, action of some sort or other is required. Since, unfortunately, in too many cases the cause of the state of unrest has not been discovered by the individual, the proper method of relief from it is not appreciated. Yet, in spite of this, in some cases the person is blindly driven to or by chance seeks just the proper outlet. At any rate, the path of safety which he seeks may be harmless or may actually be very desirable. In other cases, sad to relate, harmful methods of escape may be seized upon, and pernicious habits may be established, the individual resorting to this outlet more and more frequently as the path of least resistance, and in some instances on slighter and slighter provocation.

Some of the desirable flights or avenues of discharge, of excitement, of change, of action, include the following: Religion may be seized upon as the mind preserver, the saviour, the comforter. One person may shut himself up in his room, endeavor to control himself, close his eyes, darken his room, lie down or sit quietly, and do his utmost to bring about a state of relaxation, of calm, of quiet, of peace of mind, of equanimity and equipoise—call it what you will. The individual struggles to get hold of himself, to be himself, to hold himself in check, to be the master of his soul. Another may even confess to those about him that he is not feeling just right, that he is upset, unstable, irritable, not "all there," and will ask, even plead, to be let alone, not to be disturbed. Some may resort to the teachings of Christian Science, the New Thought movement, or some other sect in order to obtain means of attaining this condition of calmness, ease, equipoise, peace of mind.

Others, instead of seeking solitude at these times, seek companionship. They may be in search of nothing more than a change. A walk out in the open, mingling with the crowd, thus satisfying the gregarious instinct, visiting a friend or relative, going to see a motion picture play or to theatre, walking down the main street of the town or city, sitting in the lobby of one of the main hotels, listening to singing or music, going to a meeting of one sort or another, and any number of similar methods, may be the safety valve, the lifesaver, the peace restorer for this or that individual. Still others may find relief by going to the gymnasium, playing golf or tennis or the like, going to a baseball game, joining a card game, yes, even going to a prizefight, a wrestling match, and similar methods of amusement. Others may find their peace in intellectual pursuits—reading a novel, a scientific article or book, resorting to one of their hobbies.

Action of some sort or other must ensue. It may be that the individual is in his state of uneasiness because of overwork, fatigue, hunger, insufficient sleep. Instead, however, of choosing the proper means of satisfying the bodily demands and attaining the needed condition of calm and stability, entirely wrong avenues of escape may be selected. Instead of sleep, or a walk, or food, or mere relaxation, or avoidance of noise, the individual may resort to other methods of attack upon his state of disequilibrium. Some of these may be relatively harmless, but others may be most harmful and abnormal. Thus, smoking, too frequently to excess, may be the flight for one. Another may seek excitement in sex gratification. The use of alcohol may be seized upon by another, and alcoholism may begin in this way and continue indefinitely. Criminal conduct may be entered upon at these times as outlets. Healy (4) in a recent book gives many cases in which such delinquency, often leading to whole careers of delinquency, flowed out of mental conflicts, generally related to sexuality. I believe that cases can be found in which any of the exciting causes here mentioned as possible provocative agents for this state of uneasiness, may be discovered as the basic driving force. Janet (5) has told us of certain peculiar impulsions which may arise in a somewhat similar manner, but in his cases there was a preliminary state of depression and anguish. No one who is interested in this subject should fail to read this short but excellent paper by Janet. He gives examples of impulsions for alcoholic indulgence, excessive eating, walking, and selfmutilations which arose in this way. With his keen insight, he tells us that the impulsions are apparently different in aim but their clinical characteristics are common, consisting in their periodical appearance, irresistability, the satisfaction following the accomplishment, the remorse felt, and the good but useless resolutions. This reminds one very much of the characteristics of tics. In his cases Janet found that the impulsion was preceded by feelings of incompleteness which preceded the impulsions sometimes for days, and at one time, before the impulsions appeared, existed independently. Janet concludes that they are but a part of what he calls "the psycholeptic crisis," to which the impulsions are by accident attached. He adds this significant sentence: "These absurd acts are sought for passionately, simply because they are exciting acts, and these individuals have an urgent need of excitation on account of the anguish which the mental depression produces." I believe that not a few drug habitués owe the origin of their pathological habits to just such causes as I have mentioned, and in more extreme degree to the conditions of mind described with such clarity by Janet and Adler in different terms.

All this is of interest not merely from the purely scientific standpoint, but it has a distinctly practical, therapeutic application. Where pathological avenues of escape have been entered upon, or where domestic unhappiness, attacks of depression, and the like result from this condition, the therapeutic application is of the greatest importance. I doubt not, too, that in some predisposed individuals, outbreaks of the major psychoses begin in this way, so that an attack of depression or excitement of the manic depressive type may not infrequently be traced to such origin. Individualization must be the keynote. A study of the particular person must be carefully made. The cause or causes for the periods of uneasiness must be determined and removed if possible, and harmless or desirable or even definitely helpful means of attaining relief from the states of uneasiness substituted for any harmful habits that may have been established. Analysis and reeducation are thus in order. Other psychotherapeutic methods may be of service in certain persons.

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3530 DOUGLAS BOULEVARD.

TREATMENT OF SYPHILIS WITH ARSENOBENZOL POLYCLINIC.

By CHARLES H. J. BARNETT, M. D.,
Philadelphia,
Instructor in Genitourinary Surgery, Polyclinic Hospital and College for Graduates in Medicine.

Salvarsan and neosalvarsan made in Germany can no longer be obtained, and the profession will be interested in a substitute that will take its place and yet be "made in America." Nearly two years ago Doctor Schamberg, Doctor Raisiss, and Doctor Kolmer, of the Dermatological Research Laboratories of the Philadelphia Polyclinic Hospital, produced a substance which they call "arsenobenzol polyclinic" which is said to be chemically identical with salvarsan, and this product has been and is now on sale through the same agencies that sell salvarsan. This condition, by the way, of having the salvarsan people sell the drug is due to our inexcusable patent laws, which should be revoked at once; every man should write to his congressman and senator and see that this is done.[1] The price of arsenobenzol is $2.50 for a 0.6 gram tube, and if the patent laws upon the German product were removed, and they ought to be, arsenobenzol could be sold for much less. Over 100,000 injections of arsenobenzol polyclinic have now been given and the clinical results have been reported by many men as being just as good as salvarsan and some have even said they have been better with the American product. The toxicity of the drug in the vast majority of the cases in my experience has been practically nil, even less so than neosalvarsan, and the clinical results have been just as good with arsenobenzol as they have been with the German products.

It is my intention to state our experience with this drug in an experience of twenty cases studied in some instances for a period of one year, and to show the results obtained, including the end results of the Wassermann, which after all is the most important point in the consideration of a cure. A patient who, even if clinically well, still has even a weakly positive Wassermann, cannot be said to be cured in the present state of our knowledge.

As will be seen in Table I chancres treated with American arsenobenzol in 0.6 gram doses show that two patients treated with two doses each of arsenobenzol polyclinic have given a negative Wassermann in one case four months after the last injection and in the second case a negative Wassermann over a period of twelve months, at the end of which time it was still negative without any further treatment. Two patients received three doses of the drug and in both cases we obtained a negative Wassermann, in the one over a period of nine months, while in the other the patient never returned after the last blood test immediately following the last injection.

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[1] Since this article was written, the Federal Trade Commission has entered orders for licenses to three American firms to manufacture and sell products known as salvarsan, 606, arsenobenzol, and arsaminol, under the name of arsphenamine

One patient received four doses of arsenobenzol before the Wassermann became negative and was still negative at the end of six months. Another patient took seven injections before the Wassermann became negative and one took nine injections and his blood was still weakly positive. This patient has taken four more injections and the day following the thirteenth injection his blood was still weakly positive; he never returned for further observation. In another case the patient received three injections and the blood was still strongly positive the next day; he did not return for further observation. In the last case the patient received two injections and eight months after the last injection the Wassermann reaction was negative. In our experience with chancres treated with salvarsan and neosalvarsan it has never taken more than five doses to eradicate the Wassermann reaction, while in two cases treated with arsenobenzol in one case it took seven and in another thirteen, and even after the thirteenth injection the patient still had a weakly positive Wassermann. However, on the whole the results compare favorably with salvarsan and neosalvarsan.

Table II in the secondary cases shows two patients treated with six doses, but in these 0.4 gram instead of 0.6 gram was given. After taking six doses the Wassermann became negative and stayed negative for a month; the patients are still under observation. It will be further seen that seven patients received three doses of the drug, three of whom showed a negative Wassermann, one in four months and two even as late as nine months after injections. One case was still medium positive after one year, the patient having refused to take further treatment as advised. We feel sure that if he had we could have obtained a negative Wassermann after a few more injections. Another case had a weakly positive Wassermann after three injections. The patient has since left the city and could not be located. The other patient who had a weakly positive Wasserman two months after the last injection also failed to return for further treatment. One patient received seven injections; his blood becoming weakly positive, he received another injection; he then failed to return for further observation. One man received five injections, his blood being strongly positive after the fourth and he, too, failed to return after his fifth injection. With the exception of the first two patients all the others received injections of 0.6 gram of the drug. I feel certain that these cases compare favorably with cases treated with salvarsan and neosalvarsan.

The technic for the administration of arsenobenzol differs in no way from that of salvarsan, except that the product must be dissolved in very hot water and neutralized as in the use of salvarsan. The patients experience very little toxicity. Most of them can go home immediately after the injection and some even go out and work after receiving their injections. This practice, however, I would not advise except in very urgent cases.

I desire to say that the medical profession of this country owe a great deal to the three men who have perfected this drug and have placed it upon the market. They ought to show their appreciation by using the drug, following up the cases and reporting them. I believe that it is much safer to use 0.4 gram instead of 0.6 gram even though it may require more injections; it is better for the patient and certainly for your reputation when you know that you can give a certain drug in a certain dose and get certain results without fearing toxicity and fearing that you may kill the patient. This should overshadow any other objections that may arise against the drug.

TABLE I.
CHANCRES.

Duration.	Dark field		Wassermann before treatment.	Number Arsenobenzol Polyclinic Injections																										Subsequent Wassermann reaction. Months				
	1st	2d		1	W	2	W	3	W	3d wk.	4	W	5	W	6	W	3rd wk.	7	W	8	W	9	W	3rd wk.	10	11	12	13	W	2	4	6	9	12
4 wks...	..	..	S+	+	..	+	S+	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	—	..	..	..
4 wks...	..	..	W+	+	..	+	—	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	—
47 dys...	—	..	M+	+	..	+	..	+	—	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2 wks...	+	..	W+	+	..	+	..	+	—	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	—	..
3 wks...	+	..	M+	+	..	+	..	+	W+	W+	+	—	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	—	..	..
5 wks...	..	..	S+	+	..	+	..	+	S+	M+	+	..	+	..	+	..	W+	+	—	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
5 wks...	..	..	S+	+	..	+	..	+	S+	..	+	..	+	W+	+	W+	..	+	..	+	W+	+	..	W+	+	+	+	+	W+	W+	..	..	..	..
10 dys...	..	..	S+	+	..	+	..	+	S+	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4 dys....	..	..	S+	+	..	+	..	..	*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	—	..

TABLE II.
SECONDARY SYPHILIS.

Duration.	Dark field		Wassermann before treatment.	Number Arsenobenzol Polyclinic Injections																										Subsequent Wassermann reaction. Months				
	1st	2d		1	W	2	W	3	W	3d wk.	4	W	5	W	6	W	3rd wk.	7	W	8	W	9	W	3rd wk.	10	11	12	13	W	2	4	6	9	12
2 mos...	..	..	S+	+	..	+	..	+	S+	..	+	..	+	..	+	..	—	0.4 grams dose												—	..	..	..	..
3 mos...	..	..	S+	+	..	+	..	+	S+	..	+	..	+	..	+	..	—													—	..	..	..	..
1 year..	..	..	M+	+	..	+	..	+	W+	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	—	..
1 year..	..	..	S+	+	..	+	..	+	S+	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	M+
4 years.	..	..	S+	+	..	+	..	+	—	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	—	..	..	..
?	..	..	VW+	+	..	+	..	+	—	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	—	..
4 years.	..	..	W+	+	..	+	..	+	..	VW+	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
3 mos...	..	..	S+	+	..	+	..	+	M+	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	W+	..	..	..	..
....	..	..	S+	+	..	+	..	+	S+	S+	+	..	+	..	+	W+	VW+	+	..	+	W+	+	..	..	..	..	..	..	..	..	..	..	..	..
3½ mos.	..	..	M+	+	..	+	..	+	S+	S+	+	S+	+	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
....	..	..	S+	+	..	+	..	+	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

*Returned 8 months after last injection and Wassermann was negative.

CONCLUSIONS.

1. Arsenobenzol is the best and safest substitute for salvarsan and neosalvarsan.

2. It compares favorably with the results obtained in primary and secondary syphilis treated with salvarsan and neosalvarsan.

3. It is nontoxic, whereas every one of the other substitutes such as arsenobenzol billon (French) or the diarsenal (Canadian) are much more toxic and in some cases more so than even salvarsan.

4. It is best given in 0.4 gram doses, one week apart. The blood should be tested three weeks after

the third injection and more injections given according to the result of the Wassermann test. The blood should be tested three weeks after subsequent injections. Injections should be stopped when you obtain a negative Wassermann and Wassermann tests should be made at monthly intervals for the first six months. If it continues negative after that, tests should be made each three or six months and then each year during the lifetime of the patient and symptoms of the disease watched for.

812 South Fifteenth Street.

A CASE OF NASAL SARCOMA CURED BY RADIUM.*

By Otto J. Stein, M. D.

Chicago.

Case.—F. L., aged twenty years, presented himself July 2, 1916, complaining of a complete nasal obstruction, profuse attacks of epistaxis, and severe headaches. He was tall, dark complexion, anemic, and poorly nourished. He was a mouth breather. The right eye protruded so that the lids could not cover the ball; anterior nares were excoriated from nasal discharge and the nasal bridge was widened and tissues round about thickened. Altogether this constituted a froglike facies. The right nostril was entirely blocked by a pale colored, fairly hard mass, excepting in spots where there was local necrosis showing areas of sloughing surrounded by hemorrhagic oozing. The tissue bled freely on manipulation and especially so on application of adrenalin. As far as could be determined the tumor seemed to originate from the right ethmoid region. The septum was intact, with no adhesions between it and the tumor. The left nostril was not invaded, being open. The nasopharynx was entirely filled by the tumor plugging both posterior nares. A probe introduced into the left or open nostril could be passed around the mass in the epipharynx. Bleeding always resulted from such instrumentation. The patient suffered acutely from constant headache and the attacks of epistaxis. The right sinuses showed dark on transillumination. The skiagraph demonstrated shadows in the region of the right antrum, ethmoid and nostril. Examination of the eye by Dr. George Suker revealed optic nerve atrophy; no swelling of discs; some tortuous arteries; disc edges blurred; adjacent retinal area of grayish cast. There was a large and painful mass of cervical lymph node on the left side of the neck and a scar which showed incision of former years. There was no family history of malignancy; no cough; no other evidences of pulmonary tuberculosis. Wassermann negative. Nasal obstruction came on gradually some months before presenting himself. A diagnosis of sarcoma was made from the patient's age, the history, general appearance, and local findings. This was confirmed by microscopic examination of tissue removed, which showed small round cell sarcoma. On our refusal to operate the patient disappeared, presenting himself at the County Hospital, where an attempt was made to remove the tumor by way of the anterior nares. The hemorrhage was severe. An infection resulted necessitating an external incision over the right malar region to liberate pus. Sections of the tumor removed demonstrated round cell sarcoma. After six weeks the patient again presented himself to us for relief. His appearance was similar to what it was when first seen, only his condition was worse. He did not look as if he could live much longer; he was very weak and anemic and on account of pain in his head had little rest day or night except what he got from sedatives. He was immediately placed on radium treatment. One hundred milligrams of radium was applied uninterruptedly for five hours on three consecutive days. Nineteen days later this was repeated and continued for six hours each day. Thirty days later fifty milligrams was applied for four hours and sixty days later fifty milligrams was applied on two consecutive days for six hours each. In addition radium was applied to the large painful gland mass on left side of neck. A total of 4,100 milligram hours of radium was used about the nose and 2,125 milligram hours of radium was applied to the enlarged glands. The details of the radium treatment are appended, kindly compiled for me by Dr. Albert Woefel, of the Physicians' Radium Association, who furnished the radium used. In employing the remedy the object was to use large doses over a medium period of time correctly screened and properly applied within the nose and on the face to secure the greatest benefit from crossfiring. The immediate results from this treatment were brilliant. All of the severe pain and the nasal hemorrhage disappeared before a week went by. A week later he was breathing through his left nostril and some air could be detected passing through on the tumor side or right nostril. Three months later respiration through both nostrils was normal and he could blow the nostrils naturally. Inspection showed the progressive shrinking of the tumor and disappearance of all ulcerations. The rhinoscope demonstrated the tumor springing from the posterior ethmoid region.

Radium Treatments of Mr. L., Sarcoma of Nose.

Dates.	*Dose.*	*Screen.*	*Exposure.*	*Position.*	*Mgm. Hrs.*
September 25th, 26th, 27th	50 mg.	I mm. lead black, paper and rubber	5 hours	Right nasopharynx	750
October 16th, 17th, 18th	50 mg.	1 mm. platinum and rubber	6 hours each	Right nasopharynx	900
November 21st	50	1 mm. platinum and rubber	4 hours	Right nasopharynx	200
January 23rd, 25th	50	1 mm. platinum and rubber	6 hours each	Right nasopharynx	600
					2450
September 25th, 26th, 27th	25 and 25	2 mm. lead-black and rubber	5 hours each	Varying positions around orbit	750
October 16th, 17th, 18th	25 and 25	2 mm. lead-black and rubber	6 hours each	In V shaped position on temporal side or right orbit	900
					1650
November 14th	50 and 50 and 25	2 mm. lead-black and rubber	6 hours	On left cervical glands	750
November 16th	50	2 mm. lead-black and rubber	10 hours	On left cervical glands	500
November 17th	50 and 25	2 mm. lead-black and rubber	6 hours	On left cervical glands	450
					1700
January 23rd	25 (flat)	1 5 mm. lead-black and rubber	4½ hours	On upper part of neck	112
January 25th	25 (flat)	1 5 mm. lead-black and rubber	6½ hours	On upper part of neck	163
January 27th	25 (flat)	1 5 mm. lead-black and rubber	6 hours	On neck	150
					425

This would explain the appearance and changes about the right eye, the exophthalmos, nerve atrophy, tortuous veins, etc. The optic nerve and vessels are more vulnerable in the neighborhood of the sphenoid sinuses, but where a posterior ethmoid cell occupies this relative position then the nerve becomes correspondingly more susceptible from this source. From various anatomical studies this relationship of the posterior ethmoid cell to the nerve occurs in a small percentage of cases. Meckel's ganglion, the source of sensory impressions in and about the nose, orbit, and sinuses nestles in the spenomaxillary fossæ just below the posterior ethmoid cell and in front of the sphenoid and back of the apex of the antrum Highmore. A tumor in this region can produce severe pain corresponding to that complained of by the patient.

On last examination of the patient no evidence of tumor could be seen within the nose or nasopharynx, although I believed some still existed within the ethmoid labyrinth. Three weeks after seeing him last he was reported as being confined to bed at home with a rise in temperature, pain in abdomen, nausea, constipation, tympanitis, and a cutaneous eruption over left half of face. He was directed to be sent to the hospital for examination. Disregarding this request he remained at home under the care of his family physician, who reported to me a few days later that the patient was suffering from metastasis and that the malignancy was manifesting itself in the intestines, causing severe pain, tympanitis, vomiting, and great weakness. It was stated that he would not survive this serious sequela. It was further stated that aside from a cutaneous eruption on the left side of face the patient had no symptoms whatsoever referable to his head. After ten days of illness he died. A request for an autopsy was made and granted. I opened and examined the head. Doctor McKerrihan, of the Post-Graduate Hospital, examined the abdomen. After removing the calvarium and brain, exposing the interior of the base of the skull, examination showed no invasion. The entire tegumen of the right orbit, frontal sinuses, and nasal fossæ was removed, exposing the interior of these respective cavities, which showed neither the presence of or any evidence of their invasion. The antrum and sphenoid were likewise free. The posterior ethmoid cavity was large, extending far backward and overlying in part the neighboring sphenoid cell, which was very small. The lining membrane appeared greatly hypertrophied and the optic nerve course was alongside the cell. The middle turbinate was not present excepting a small piece posteriorly. The anterior ethmoid cells had been broken down by previous operation. No tumor could be found anywhere. These findings affirm the previous statement that the tumor had its origin in the right ethmoid region, and owing to the anatomical arrangement present the nerves and vessels were subject to pressure. As far as the head was concerned the patient was cured of his sarcoma. The examination of the contents of the abdominal cavity disclosed, aside from a distended gallbladder, a perforated appendix lying in a bed of pus and exudate. Neither within or upon the surface of the body was found evidence of metastasis. The eruption on the face was herpetic, toxic in origin, and an early manifestation of an infection that was overlooked. The patient most unfortunately came to an untimely death as the result of peritonitis caused by perforating appendicitis.

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*Read before the Chicago Laryngological and Otological Society, April 17, 1917.

77 East Washington Street.

POST BELLUM MEDICAL PROBLEMS: CONSERVATION OF THE RACE.

By Joseph H. Marcus, M. D.,
Atlantic City,
Attending Physician, Jewish Seaside Home.

The terrible war that Prussia has forced upon the world entails such tremendous consequences that all the great social problems will have to be attacked from fresh points of view. The population problem was already becoming urgent in France long before the war owing to the progressive fall in the birth rate. The slaughter of so many young men, the élite of the rising generation, enhances the gravity of the problem, not only by a sudden diminution in the number of procreators but also by a lowering of their average value. Those who have been killed were the best by virtue of their physical qualities of energy, endurance, courage, and intrepidity. It is consequently to be apprehended that there will be a larger proportion of certain degenerate, delicate, tainted subjects in the marriage market who, under normal conditions, would with difficulty have found mates, because they have escaped military service or have been relegated to posts entailing no danger. It is to be apprehended, declares Eugène Apert, the physician to the Paris hospitals, that these effete subjects will now play a large part in the perpetuation of the race, and so exert an unfavorable influence on the mental and physical qualities of the future race. It may, it is true, be urged that as the number of women is comparatively larger than before, selection will be more perfect and the women may raise the level of racial qualities in the same proportion as the penury of males would tend to result to debase it. The reasoning is correct and justifies the belief that this war will not be followed by unduly grave consequences from the point of view of the preservation of the race. Many social measures will have to be dealt with by the legislators; doctors will have to play a not less important rôle in the reconstitution of the race when the time comes for us to be consulted as to details.

More and more the general public experiences the need for consulting the physician on questions concerning fitness for marriage and reproduction and already since the beginning of the war opinions have been asked as to whether certain sequelæ of wounds or diseases contracted on service ought to lead one to counsel against marriage with those so affected. However grateful the women may be to the returned heroes, however happy they may be to welcome them with their glorious wounds and their valiant mutilations, it is their duty to think of the future family. We can reassure them, that in most instances wounds and mutilations are without any influence on the descendants. Are couples where the husband has been more or less gravely wounded likely to have less robust, less attractive children than normal couples? To this question we can unhesitatingly reply in the negative. The firmest believers of the heredity of acquired characters are obliged to bow to facts in respect of amputation of limbs, for the victims, whether male or female, give birth to absolutely normal children. There are thousands of cases to prove this. The offspring of a father or mother who has undergone amputation of a limb, is born not only with the limb properly constituted but without any disturbance or weakness thereof. Congenital amputations are not more frequent in the offspring of amputated persons than in the children of unmutilated parents.

Let us now turn to those whose face or limbs have been mutilated short of amputation, who display huge scars, fibrous bands, ankyloses, scleroses and muscular atrophy, paralysis by division or compression of nerves, or it may be, persistent suppuration or an intractable fistula. It is admitted that sanguinary mutilations repeated for several generations have never determined any change in the descendants. Witness circumcision, which has been applied to all the male Mussulman children for ten centuries since the days of Mohamet and to all Jewish male children for thirty to forty centuries since the days of Abraham; yet it has not prevented Mussulman and Israelite children being born with a prepuce. In Abyssinia, where it has been practised by certain tribes from time immemorial on both sexes, little girls having to undergo the removal of the labia minora, this double prolonged heredity has caused no change. Mutilations of the teeth, lips, ears, scars of the face, etc., as inflicted by many savage races have never been transmitted to offspring. The occasional Chinese women who allow their feet to develop naturally show no trace of the compression to which their mothers and grandmothers have submitted throughout their lives. The race of rat terriers, of which both sexes have the tails and ears clipped, continue to produce pups possessed of these appendages.

Yes, that is so, one hears it remarked, but prolonged suppuration may have a very different effect. In support of this contention we always get the same old story of the cow which had lost a horn leaving a suppurating fistula in lieu of the horn and which gave birth to a calf lacking a horn on that side. Second observation: A man lost his left eye from an abscess of the orbit and he became the father of two sons who both had the left eye smaller than the right. If we admit the authenticity of these two cases, not taking into account the objection that suppuration readily attacks congenital malformations and that it was possibly an ingenerate malformation that was transmitted and not an accidental mutilation, the fact remains that such cases are infinitely rare, so rare that in practice they need not be taken into consideration. If a soldier comes home with a bone fistula, we should not be justified on the strength of these two cases in recommending him to abstain from reproducing the species. There is every likelihood of his child being properly formed. *A fortiori,* when we are dealing with wounds that have completely healed, no matter how deforming they may be. Mention is made, however, of Blumenbach's case of a woman whose little finger was crushed and who gave birth to several children with deformed little fingers. In line with this unique instance, if not of heredity, of an accidental mutilation, at any rate of deformity of children following mutilation of the mother, one may quote thousands of negative facts which practically destroy the value of this one observation. Disfiguring wounds, of the face in particular expose children as yet unborn to no possible risk of facial deformity, they will resemble their father as he was before the wound and not as he was after his wounds had healed.

In practice it may be stated with every confidence that traumatic lesions are never transmitted hereditarily. To this statement of fact objection has been taken on the strength of Blaringhem's experiments. Although these have to do with vegetables, we mention them because they are both interesting and suggestive, and also because he was altogether wrong in drawing the conclusion of the heredity of mutilations. Blaringhem inflicted serious damage on maize plants, he cut them down or twisted the principal stem, that usually ends in a bunch of male flowers. On the stems that continued to grow after this mutilation he obtained more or less pronounced abnormalities, according to the particular plant in the direction of transforming the male ear into a female ear. He observed some female flowers on the terminal flower bunch; exclusively female flowers on the axes that still remained multiple as in the normal male bunch; exclusively female flowers and union of the axes into one big unique axis as in the normal lateral female axis. Last, and this is the most interesting feature, on gathering the seed furnished by these abnormally distributed female flowers he obtained descendants which down to the fourth generation, yielded from eleven to fifty per cent. of sexual abnormalities similar to those of the plants originally traumatized. As will be seen there is no question of the heredity of mutilation. What was transmitted was not the mutilation as such, but a morphological modification of the terminal ear; a consequence of a modification of the nutrition of this ear. It was the modification consequent upon abnormal nutrition of the sexual elements that were transmitted, not the mutilation itself. Blaringhem analyzed the phenomenon very well and showed that "it is the better nutrition of the spikelets forming on the fleshy axes that caused them to develop into female ears."

If in human beings, even important mutilations do not have injurious effects upon the descendants, it is because they interfere in no way with the nutrition of the reproductive elements. To obtain approximately similar conditions in the higher animals to those which Blaringhem placed his maize seeds, we should have to be able to set up stenoses or compression of the vessels of the genital glands, but in this case the disturbance of the sexual elements would be such that it would determine degeneration of the sexual elements and consequent sterility. We can therefore only repeat that in man, mutilations due to traumatisms are not transmitted to descendants and have no injurious effect on the descendants.

If one were to attempt and pass in review all the morbid states from the point of view of suitability for marriage and reproduction, it would open up a wide field in the science of eugenics. We need only remark in passing that the fact of the disease having been contracted on the tented field has no bearing on the attitude of the doctor toward it from the point under consideration. The only remark to be made is that, most certainly, disease contracted by normally robust individuals of a healthy stock as the result of fortuitous strain is less to be feared from the point of view of heredity than the same diseases supervening in the absence of any obvious cause and due solely to the hereditary or congenitally defective constitution. This is not merely a theoretical conception; it has been established by many experiments carried out in laboratories of animal or vegetable genetics, which show that the proportion of well constituted subjects depends far more on the good general condition of the strain to which the parents belong, than to the particular state of the health of the latter. In short, should a debilitated subject crop up in an otherwise robust family or if the subject becomes infirm consequent upon faulty conditions of existence, he is nevertheless capable of engendering offspring which share in the general robustness of the family. There is consequently less to be feared from the point of view of the descendants from a subject who is a weakling as the result of privations undergone in the war than from one belonging to an unhealthy family.

To sum up, the facts are on the whole reassuring. Gravely as the young male population has been depleted in this war we may anticipate that the quality of the race will not be injuriously or permanently affected. If the legislative enactments now under consideration are drastic enough to prove effectual from the point of view of quantity, the losses of our Allies will be made good. It would of course be impious to recall Napoleon's remark that "a night in Paris will make up for it." Years will be required, not to speak of a changed mentality. But already the change is taking place, not only in Parliament, but throughout the nations; the need for fresh habits of life is being felt and even fashion lends its aid by encouraging women in the direction of motherhood. As in previous years, England and France managed to make good their losses, so we may safely predict that after the present war, the population will heal its wounds even more rapidly since these will be treated with that sovereign balm—Victory.

521 PACIFIC AVENUE.

THE OPHTHALMOLOGIST AND THE GENERAL PRACTITIONER.

By MARCUS J. LEVITT, M. D.,
New York,
Adjunct Attending Ophthalmologist, Jewish Hospital, Brooklyn; Attending Ophthalmologist, Jewish Hospital Out Patient Department; Ophthalmologist, Hebrew Orphan Asylum, Brooklyn.

The specialty of ophthalmology has progressed so rapidly in the last decade that it is hard even for the specialist to keep pace with it. While the general practitioner is not expected to know any more about ophthalmology than any other specialty, there are a few diseases and conditions of the eye with which he comes in contact almost daily, and of which I should like to speak in this paper. For the sake of convenience, I will divide the subject into five parts: 1, ophthalmia neonatorum; 2, foreign bodies on cornea; 3, strabismus or squint; 4, fundus examination as an aid to the internist; 5, errors of refraction.

Ophthalmia neonatorum.—In spite of the propaganda that is going on, not only in the United States, but all over the civilized world, against ophthalmia neonatorum, one occasionally sees a baby with one or both eyes destroyed. In my own practice, I have during the last year seen one baby with both eyes destroyed and another with a perforation of the cornea and final destruction of the eye. In both cases gonococci were found. We all know that Credé's prophylactic method of instillation of one per cent. of silver nitrate has reduced ophthalmia neonatorum from ten per cent. to 0.1 per cent.. Ophthalmia neonatorum is not necessarily a gonorrheal infection. The secretion of pus in the eye should be examined for bacteria which can be easily carried out of the eye by any physician. Out of 200 cases of ophthalmia neonatorum, I have found gonococci in only about fifteen cases. The treatment of ophthalmia neonatorum of a gonorrheal origin consists of very frequent cold applications, not ice, for the first forty-eight or seventy-two hours, until the inflammation subsides. Cleanse the eye with boric acid or bichloride 1:10,000. Apply silver nitrate to the upper and lower lid. If the discharge is very profuse, the application must be made twice daily. While argyrol and protargol are extensively advertised, they are inferior and cannot take the place of silver nitrate. Examine the cornea daily. If the cornea looks hazy or has lost its lustre, it is better to call for help so that measures can be taken to save the eye.

Foreign bodies on the cornea are an every day occurrence, and a general practitioner can easily remove them with a little practice. Many patients come to the ophthalmologist with a destruction of the epithelium of the cornea, causing ulcers, leaving maculæ of the cornea and permanent scars, and considerably reducing the acuity of vision. This is usually the result of faulty manipulation in attempting to remove foreign bodies from the cornea. The custom of every pharmacist acting as a good samaritan in removing foreign bodies from the cornea is a most dangerous one. A foreign body of the cornea can be easily removed. Find out with a magnifying glass where the foreign body is. Instil a few drops of three or five per cent. cocaine solution in the eye so that the cornea becomes entirely anesthetized. Have a good light. Sterilize a spud, or if you have no eye spud, you can use a sharp sewing needle which has been sterilized by heating over a flame. If the foreign body consists of steel, iron, or emery, it is most difficult to remove because, besides the foreign body, the brown colored ring that is formed around the corneal tissue must also be scraped off. If there is much infiltration or if an ulcer in the cornea is threatened as a result of the foreign body, a drop or two of one per cent. atropine should be instilled. When there is much irritation and photophobia, a bandage should be applied for twelve hours, and then hot applications every two hours for a day or two. Very often a dark pigment of the iris shines through the cornea and is mistaken for a foreign body by the inexperienced. By oblique illumination such a spot can be easily differentiated from a foreign body.

Strabismus or squint exists when there is a deviation in the direction of the eyes so that visual axes are not directed toward the same object. There are two kinds of strabismus, the concomitant and paralytic. The concomitant can be differentiated in the following way: Request the patient to look at an object or finger held about one metre in front of him, then bring the object nearer to the patient so as to call into action the muscles of accommodation. If one eye fixes the object while the other eye, after following a certain distance, suddenly deviates inward, it is convergent strabismus. If it deviates outward, it is divergent strabismus. When both eyes follow the object or finger to a certain point and one stops after making a few jerking oscillating movements, it is paralytic. It is the duty of the general practitioner to pay attention to the frightened mother when she comes to him and states that her child is crosseyed. Her fear is well founded, as the cross eye may become entirely blind from nonuse. The old adage, "Your child will outgrow it," is not true, as we see too many squinting eyes become blind from nonuse. Convergent strabismus is usually due to hypermetropia in about eighty per cent. of cases. Strabismus up to the first year is not of great importance, as binocular vision in babies is not established until between the sixth and the ninth months. After one year squint is abnormal. Up to two years, it is useless to prescribe glasses as children are apt to injure themselves. Up to that time, and in order that the squinting eye may not become amblyopic from nonuse, it is customary to use atropine in the well eye from time to time in order to make the squinting eye fix for near objects and the well eye for far objects. The sooner squinting children are referred to the ophthalmologist for treatment, the greater chance there is for saving the cross eye either by correcting the errors of refraction or by operative procedure.

Fundus examination as an aid to the internist.—It is useless to go into details about the importance of the fundus examination in internal diseases. One can only appreciate this in hospitals where every case of Bright's disease, heart lesions, arteriosclerosis, pernicious anemia, leucemia, and numerous other diseases is examined for lesions in the retina. Very often the ophthalmologist, after examining the eye ground, reports to the physician that the patient is not suffering from nervous indigestion, but from tabes dorsalis, arteriosclerosis, some form of Bright's disease, or a tumor of the brain, and the treatment of the patient is entirely different from what it was prior to such examination. It behooves the medical man to have the eye ground examined in every patient where there is the least suspicion, as such an examination might help a great deal in the treatment of the case.

Errors of refraction.—That so much refraction should be done by opticians or so called optometrists who know very little about the anatomical, physiological, and pathological condition of the eye, is very unfortunate and a waste of money by the public. Competition between the optician and the ophthalmologist has no equal in the annals of medicine. While the ophthalmologist, a graduate in medicine, struggles for a number of years to become an efficient examiner of the errors of refraction, the optician, a layman, gets there in a few months. Opticians usually undercorrect hypermetropia, overcorrect myopia, and do very little for asthenopia. Many physicians tell their patients, "Your headaches are due to your eyes and you require glasses," but they fail to refer them to an ophthalmologist or an eye clinic. Consequently, the patient goes to the nearest department store to get a pair of glasses, and the results are far from satisfactory.

There are innumerable cases where patients come to me with illfitting glasses or lesions in the retina; since it would be an almost endless task to cite them all, I will endeavor to outline briefly a few cases taken from my history cards.

Case I.—Mrs. M., thirty-two years old, who complained of severe headaches, was referred to me by her family physician. She showed me half a dozen pairs of glasses from half a dozen different opticians, complaining that they had done her no good. She had hypermetropia of about four dioptres, and after giving her the proper glasses, her headaches were relieved. None of her previous glasses corrected the errors of refraction.

Case II.—Mrs. M., fifty-eight years of age, came with a history that three months prior to her coming she had had a severe headache and one morning could not see with the left eye. She wanted to know if I could do anything, as a number of opticians had been unable to fit her properly with glasses. Upon examination, I found the patient suffering from thrombosis of the central vein, due to arteriosclerosis. She was informed that glasses would do her no good and was advised to see her family physician to be treated for her condition.

Case III.—Mr. P., a sailor, twenty-three years old, was referred to me by Doctor C. An examination showed the following: Right eye, normal vision; left eye, can only distinguish light and darkness. Upon examination of the left fundus, I found that the patient had an optic neuritis. He had not seen well for some months past. Wassermann was positive. On board ship patient had a number of mercury injections. Doctor C. was advised to put the patient on saturated solution of potassium iodide, with the result that the patient regained normal vision in six weeks.

Case IV.—Mr. K., nineteen years old, a student in the second year engineering class at Cooper Union, complained of very poor vision and stated that his eyes were getting worse daily in spite of frequent changes of glasses. An examination of his eyes showed that he had a progressive myopia of high degree. Ophthalmoscopic examination revealed a large posterior staphyloma and marked chorioiditis. Besides, the right eye began to show symptoms of detached retina. Proper glasses were prescribed and patient was advised to give up his engineering course at once and to select an outdoor position in order to retain as much vision as possible.

Hundreds of children and adults come to us daily with high myopia and chorioiditis with myopic crescents. They change glasses almost monthly on the advice of opticians, instead of being treated hygienically and directed as to what occupation to pursue. A high myopic must be warned as to occupation. If proper care is not taken, high myopia leads to the detachment of the retina and complete blindness. In many cases of high myopia where there are no retinal lesions, the removal of the lens may give the patient almost normal vision. Many cases of asthenopia should be corrected, not only by prescribing suitable glasses, but also by proper prophylaxis as to change of mode of life or change of scenery. It is, therefore, clear that errors of refraction should not be left to ordinary opticians or optometrists, but to an ophthalmologist who not only knows about the eyes, but is also progressing with the science of medicine. Many cases which come for errors of refraction are found to have lesions in the retina which in all probability is an indication of the pathological condition going on within the body.

In conclusion, I wish to emphasize that it would not be amiss to give students a better course in examining the fundi, and every large hospital having an eye dispensary should permit its interns to examine the eyes to get some idea at least of the external diseases of the eye in order that the general practitioner will have no excuse to say, "I know nothing about the eye," as is frequently heard. The time is not far off when the ophthalmoscope will be to the general practitioner what the otoscope is to the pediatrist.

258 Vernon Avenue, Brooklyn.

Reparation of Cranial Defects by Cartilaginous Grafts.—H. L. Warren Woodroffe (*British Journal of Surgery*, July, 1917) sums up with regard to the reparation of cranial defects by cartilaginous grafts as follows: While no one would maintain that every case of craniotomy should undergo a reparative operation, a very large percentage of such cases show symptoms which can be cured by cranioplasty. While many methods have been suggested, Morestin's cranioplasty by means of cartilaginous grafts is one of the easiest to perform; it can be undertaken at a comparatively early date; it gives a very high percentage of good results; the time of waiting for these results is short; and the operation is no more dangerous to the patient than is a radical cure of inguinal hernia.

Medicine and Surgery in the Army and Navy

MEDICAL PROBLEMS OF THE WAR.*

By Linsly R. Williams, M. D.,
New York.
Deputy Commissioner of New York State.

Medical problems of the war were so numerous and so vast, Doctor Williams said, that it would be possible to point out only some of those which were more pressing. In England and France as well as in this country before the outbreak of the war the men of the small standing armies were under good medical supervision and lived in relatively small groups so that there was little danger of the appearance of any extensive epidemic of infectious disease. In both of the foreign countries there was the sudden mobilization of several million men, coming from all parts of the country and in all conditions with reference to disease. There was no time for careful medical examination and the common practice of isolating fresh recruits for a period of two weeks to prevent the introduction of a disease into the ranks, as done in peace times, could not be carried out. The natural results of these conditions were seen in the lighting up of latent tuberculosis into the active forms; the appearance of diarrheal diseases, brought by carriers and spread by inadequate methods of disposing of excreta and improper water supplies; and the spread by the ill and by carriers of many other diseases, such as pneumonia and meningitis as well as the common contagious diseases. In addition there was not time to immunize all of the men against the typhoid organisms, so that these diseases also broke out to a considerable extent.

Such were the results of the conditions which had to be met by France and England. In this country many months, instead of a few weeks, were being taken to mobilize a vast army and time was therefore available to take steps to prevent a very large proportion of the diseases which always result from bringing large numbers of men together from various parts of the country. Careful physical examinations could be made to exclude tuberculosis and heart conditions; prophylaxis against the typhoid group of diseases could be assured to every man; and measures could be taken to prevent the spread of the common communicable diseases. But even here the methods of civil life could not be practised without serious disturbance to the military problems of training. It was found to be the better plan to await the appearance of a disease in one or two members of a unit and then to subject all of the members of that unit to a daily medical inspection in order to remove promptly all who might have become infected. This was the plan which was now followed in large schools and it had proved satisfactory in the prevention of extensive epidemics. Epidemic cerebrospinal meningitis was perhaps the most serious of the diseases from the point of view of prevention of its spread, for it was now known that for every case there were from ten to thirty healthy carriers. It was now quite possible to detect these carriers promptly and fairly easily by means of cultures taken from the pharynx with the West tube. The proved carriers could then be isolated and treated to remove the organisms. Various methods had been tried to hasten this process, but none had as yet been found which was very effectual. Still the period of isolation could be determined for each man by means of frequent cultures and he could be returned to his unit as soon as he ceased to harbor the organisms. In the case of the respiratory diseases the spread was probably mainly through coughing and sneezing while the men were crowded together. Here, as in the case of meningitis, we were also dealing with a disease the organisms of which were of several types so far as their immunological characters were concerned. Our knowledge of these facts, however, had made possible the preparation of an effective polyvalent meningococcic serum and of a serum effective against two of the types of pneumococci.

There was no more trying problem from the military medical aspect than that of the venereal diseases. It was well known that they were rife among the men, but there was no reliable information to enable us to determine whether they were more prevalent here than in civil life. The total numbers of infected men in the vast armies of Europe were stupendous, but it was a striking fact that with the great increase in the size of the armies there had been a relative decrease in the actual proportional number of cases of these diseases. The method of prevention had not yet been worked out satisfactorily, and it seemed probable that the problem would have to be approached from many different aspects if a solution were to be reached. In addition to the question of the prevention of specific diseases and the control and prevention of epidemics, there was the vast one of general hygienic measures, including personal cleanliness, the cleanliness of the surroundings, and the disposal of waste and sewage. All of these matters were now quite well arranged, both on the fighting line and in the cantonments of this and the European countries. Of course there were still many weak spots in these arrangements, but they did not seem at present to offer insuperable obstacles under the conditions of the war.

The organization for the prompt care and evacuation of the wounded men had undergone many changes, all making for greater rapidity and effectiveness and greatly favoring the chances of recovery and of saving damaged limbs. Perhaps the greatest general problem in this field was the prevention and treatment of infection. This had occupied the attention of many men and there were now several accepted methods of treating wound infection, all of which gave results far superior to those obtained in the early months of the war. It was necessary only to mention the methods of Carrel and Dakin; Wright's physiological method; Morison's method, and the general practice of complete excision of the smaller wounds with their sterilization and immediate suture.

It had been the custom in previous wars to look upon the surgeon as the only one fitted to be of value in the medical service of the army, and he was expected to be able to handle all of the nonsurgical problems which might arise for solution. In the present war it had early been recognized that the specialist might bring his training to bear on the many special problems with results which would be of great value, and now practically every medical and surgical specialty is well represented in the medical organization of the several armies. This had resulted in increasing the numbers of men returned to military duty from twenty-five to forty per cent. at the beginning of the war to sixty to eighty per cent. at the present time. Each specialty had contributed its share in this improvement, but perhaps those of orthopedics and neurology had done the most. Before the orthopedic problem was discussed the lecturer called attention to the occurrence of a number of special problems which the war had brought forward and which were being mastered more or less adequately. These included "trench foot" or frost bite, acute albuminuria, the neuroses and hysteria, the louse problem and typhus fever, dysenteric diseases and the water supply, and many others.

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*Summary of a lecture delivered before the Harvey Society at the New York Academy of Medicine, New York, November 24, 1917.

A field in which truly stupendous advances had been made was that of the reconstruction of the disabled man. The forms of disability were manifold and the problems of restoration were as diverse as the forms of disability. One of the most striking was the reeducation of the blinded men and their training so that they might become selfsupporting in civil life. This reeducation had given marvelous results in France and England and there were many schools, largely supported by private individuals, which were fitting the men for all manner of pursuits. Even the most unskilled men were being successfully taught occupations by which they might make themselves economically independent, and positions were being found for them. Devotion to this problem had brought out a host of improvements. There was scarcely an occupation which could not be entered by a blind man.

The cripple, through loss of one or more extremities, offered, perhaps, the greatest single problem, at least in point of numbers. Here was the great field for the orthopedic surgeon and he had risen to the demands made upon him. In many instances the improvements in artificial members had been made by the men themselves. Vocational training was given to all such men and they were encouraged to become selfsupporting by the practice of having their pensions begin only when they were discharged into civil life. It had been possible to teach them all of the skilled trades and occupations, even when they had previously not risen above the lowest grade of unskilled workers. In fact there was only one commercial pursuit which could now be classed as requiring special faculties which could not be acquired in a few months of training, namely, farming. Along with the fitting of artificial members and their perfection, it had been learned that the most important single factor was the preliminary education of the sensitiveness of the stump and the maintenance of its free mobility. This education was the basis of the future ability to make proper use of the artificial member. The attitude of the cripple toward the public and of the public toward him had undergone an entire change and he was now not shown the sympathy which keeps those of his class among the professional beggars of this country. On the contrary, it was expected of him that as a matter of course he would become as useful a citizen since his crippling as he was before, and in many instances his usefulness had even been greatly increased.

All of these matters of the reeducation of the blind and crippled were entered into in considerable detail by the lecturer and at the close of his address a number of striking pictures of the crippled men at work in factories were shown to illustrate the range of occupations into which they had entered successfully.

WAR AND THE DOCTOR.*

By Charles H. Mayo, M. D., LL. D.,
Major, Medical Reserve Corps, U. S. A.; Member Advisory Surgical Staff, Surgeon General's Office; President of the American Medical Association.

The speaker prefaced his address by a partially humorous but wholly sincere tribute to Major George W. Crile and Sir Berkeley Moynihan and the work they had been doing not alone on the other side but in stirring up interest in this country during the last three weeks by the information and advice they had brought from the front and from England, which was still, to America, "the mother country."

The world was becoming smaller; one hundred years ago it took four weeks to cross the Atlantic, and now it took only six days, so the earth could be said to be only one fourth as large. So when one said today there was no fear of invasion for America, they forgot this fact; also that the conquest of air and water had come; the foe was in our next dooryard. America had the wealth of any two nations in the world, unearned, but acquired in taking the country; the mineral resources, the forests, the great ranges all contributed to and composed this wealth which must be poured out for the relief of those who were fighting for its protection. Everything that could be done was tried to bring about peace, but eventually, with every possible backing, the best President the United States could have had, the only man for the time and the place, entered into the war. It was with pride that it could be realized that the medical men had done their share, offering themselves and their time until today they were so well organized that the necessary quota for the needs of the Army was much more than secured. That work came about through the admitted ability of one man who heard the cry of humanity a year before this country declared war, to whom was due the fact that over 20,000 physicians had sent in their names; that man was Major Franklin Martin, the chairman of the General Medical Board. There were many things that came up that could not be done through the administrative office of the Surgeons General or by the Reserve Corps, but through the Council of National Defense it was early learned that one could get quick action because through this could be reached the whole medical profession that was seething with the desire to do its share. And so it should. They had the advantage of education, they had the knowledge of the world's affairs, they had special training, and if they did not take their place now, who would? Indeed hundreds of our doctors had been on all the fronts long before America entered the war, even including Germany's lines, following out their life work, the prevention of disease. The present war had been carried on over three years with an enormous number of men engaged; only through medical efficiency, not by a difference in the methods of fighting, had this number of men been maintained on the front, for science had taken the place of human endeavor. Flame and gas attack were taken in hand within twenty-four hours after their inauguration, after the first gas bomb exploded. The richest scientific minds in the world were in the medical profession and the medical profession always gave its all. Half its work was gratuitously given to the care of the injured, the helpless, and the poor. It seemed to be a matter of pride with Americans that examination could be made of millions of men and all so cheaply. Was it possible that the cause of this cost being so low had escaped attention? It was because on the four or five thousand examining boards the medical service was given and freely, and day after day the medical members sat on those boards. That was why it was cheap. That was why the organization of the Surgeon General's Office was done so economically. The medical men travelled about, contributing their time, sacrificing their interests, paying their own expenses. It was true that other men gave their time, but the medical men also gave their professional knowledge; it would have cost millions of dollars if they had been paid for it as the country paid for other expert knowledge. It was with sorrow the medical men viewed the high cost of living, the personal advantage being taken by those with expert knowledge of production and distribution so that forty-one per cent. had been added to the cost of living. Had the doctors raised their charges? No, medical advice cost the same today, and free medical service was just as cheap as before!

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*Abstract of an address delivered at a meeting of the Medical Section of the New York State Committee of the Council of National Defense, Waldorf-Astoria Hotel, November 8, 1917.

The medical profession should be enabled to make use of its knowledge of the prevention of disease so as to allow this work to go on. The war had proceeded for three years without the troubles that had brought all the wars of the past to a close and made untimely peace necessary, disease and infection, not injury of man to man. Thus one found medicine the conqueror! All the great diseases no more served to prevent war being fought to a finish. For that reason this war had not been brought to a close long ago. Little Japan fought a great country without losing, through the efficiency of her medical men. With the present knowledge of the prevention of disease, the men of the troops were actually safer abroad than they were at home. But the medical men did not have the power they should to do things for the army, for they were without the proper rank and authority that was commensurate with their obligation to the soldiers. Medical failure from lack of authority was largely the cause of the Mesopotamian catastrophe. Among our volunteers in training for the Spanish-American War about 450 were killed and approximately 9,000 died of disease and infection; in 20,000 in care of the Government in training typhoid fever developed, the records proving again a lack of medical authority. With 20,000 soldiers on the Mexican frontier only one man, who had not been treated, contracted typhoid. Disease could be said to have been conquered if the medical men were given the opportunity to guard against it. The question was how to get power from those in authority to enable the medical men to do their work.

There was no need of any national anxiety about caring for the doctor. He would always get along. His life work appealed to him, which was why he remained in it. He knew that no matter what he did for the salvation of man, the one honored by a monument at the close of the war would be the man who did his best to destroy others rather than the one who did his best to save them, so he was not working for renown or acclaim.

This period of training of the medical men in their country's service had been most wonderful. There were training camps where hundreds of doctors were receiving the benefit of the military work of the last three and a half years abroad, so when they turned to their work they could go on from the point reached by the countries at present engaged in the war. General Gorgas was a wonderful man in the right place and was developing material that after the war would be far better able to cope with the management of the problems that would confront the country than they would otherwise have been. Admirable as the medical profession in its ethics and ideals had always been, it would be a more efficient and wiser body of men for its noble response to duty and its ability to take advantage of the opportunities now offered.

The Navy and Its Health Problems.—Surgeon General William C. Braisted, U. S. Navy, in a recent address before the American Public Health Association, presented the status of the hygienic problems of naval life, past and present. The conditions of ship life were such that in all times, and even with the present day advance in construction, overcrowding of living spaces with consequent unsatisfactory air conditions and possibility of rapid dissemination of disease, have been encountered. Scurvy, which prior to the last half of the eighteenth century was such a terrible menace on extended cruising, was no longer seen owing to the measures suggested by Lind and carried out by Blane. Air conditions were as satisfactorily handled at present as the involved character of construction and the large number of personnel would permit. The ideal cubic air space for an individual could not be achieved, but extensive supply and exhaust systems of artificial ventilation furnished frequent renewals of the air. The death rate in the navy in peace times was materially lower than the rate of corresponding ages in civil life, and this was despite the abnormality of environment, multiplicity of community problems, and the many varieties of individualism that must be corrected for the common good.

The Surgeon General's Office

Expansion Caused by War—Organization of Work by Divisions—Leaders from Civil Life Enlisted—Organizing the Specialists of the Country

MODERN medicine like modern war is a matter of effective organization. In modern war we have highly specialized troops, the bombers, the fusileers, the engineers, and the artillerists, all cooperating closely in every attack. In modern medicine we have the surgeon and the sanitarian, the otologist and the orthopedist, the neurologist and the bacteriologist, each a master in his highly specialized field and all cooperating in the battle with disease. In war we have the general and the general staff to direct and coordinate the efforts of the aviators and the artillerists, the infantry and the engineers. In military medicine we have the surgeon general and his general staff who coordinate the skill, the knowledge, and the patriotism of the entire medical profession for the benefit of the soldier in that incessant war which wages between medicine and disease. Our soldiers have only recently come into direct contact with the enemy seven months after the declaration of a state of war. Our surgeons have been in touch with their enemy, disease, for every minute of that period and the small sick list and the insignificant loss from disease show that their work has been well done.

The mobilization of medicine for war has called to the service leaders in every field. Every specialty is ably represented and the efforts of all are coordinated for the good of all at the Surgeon General's Office in Washington. Here sits Major General Gorgas with his staff, planning attack and counterattack against disease, mapping out intrenchments, and perfecting plans to meet all contingencies.

Photo Harris & Ewing

MAJOR GENERAL WILLIAM C. GORGAS, A.B., M.D., LL.D., F. A. C. S.,
Surgeon General of the United States Army.

The Surgeon General himself is a quiet, unobtrusive man, whose reputation rests on deeds, not words. Goethals built the Panama Canal, but Gorgas made it possible for him to build it, for it was disease that defeated the efforts of the French under De Lesseps forty years ago. It was Gorgas's knowledge of medicine, his skill as an organizer and his remarkable executive ability that, through the application of our enlarged knowledge of the etiology of disease, of sanitation and of prophylaxis, defeated disease and made it possible for Goethals to do the work.

And all the qualities which made possible the building of the canal have been brought to bear on the great and intricate problems of military medicine involved in the mobilization of 2,000,000 men, their transport across 3,000 miles of ocean and their safeguarding against disease at that great distance from the base whence supplies must be drawn.

On April 1, 1917, the Surgeon General's Office consisted of six officers and twenty clerks who occupied four rooms in a corner of the great building of the State, War, and Navy departments, west of the White House. On December 1st the staff included 165 officers, employed 535 clerks, and occupied the whole of five buildings and parts of two others, while two large buildings are contemplated to house the increased staff which will be required to care for the work of the office. Three hundred office rooms are now filled by the Surgeon General's Office, and within three months 400 will be required exclusive of the Library, the Museum, and the Army Medical School.

Six thousand telegrams and 5,000 other communications have been received and acted on and permanently filed in one working day of twelve hours, for there are no bankers' hours for the Surgeon General's Office. It is open for business twenty-four hours on every one of the 365 days of the year. Officers are at their desks as early as seven in the morning and the Civil Service employees forget all about legal limitations of a day's service.

At 7:30 every morning, Sundays and holidays as well as week days, the automobile truck of the Surgeon General's Office delivers the morning's mail to the sorting and distributing room in the Mills Building, at Seventeenth street and Pennsylvania

Avenue. Not later than 9:15 the entire mail is sorted and distributed and laid on the desks of the respective officers of disposition. Every day's mail is acted upon and returned for permanent filing within twelve working hours. The subjects involved include every possible phase of human activity, with the sole exception of the machinery of offensive warfare. The Surgeon General's Office must see that the enlisted personnel of the Medical Department is provided with food, clothing, and equipment, and for an army of 2,000,000 men this means provision for 200,000 enlisted men in the Medical Department. While officers provide and pay for their own food and clothing, the machinery for obtaining and distributing the food must be provided by the Surgeon General's Office. Food, quarters, and hospital clothing must be provided for all the sick and wounded, and the Surgeon General's Office must be able to foresee how many sick and wounded there will be and just where they will be. The Office must provide for ships for the transport of sick and wounded, for hospitals, for hospital trains, for the general hospitals, for special hospitals, for temporary hospitals, for ambulances, and for the transport service required by the Department, the medicines, the surgical dressings, the surgical instruments, the dental instruments and supplies, the veterinary instruments and remedies, the orthopedic appliances, which will be required in the rehabilitation of the maimed and wounded, and, above all, must provide experts in every line to see that the energies of the Department and the resources of the Government are expended so as to obtain the maximum results with the minimum expenditure.

Photo Harris & Ewing

EXECUTIVE OFFICE OF THE SURGEON GENERAL.

The Mills Building, at the corner of Pennsylvania Avenue and Seventeenth Street N. W., Washington. One of five buildings devoted to the executive work of the Surgeon General's Office.

This is a large order, an order far beyond the capacity of any individual, however gifted, but the Surgeon General, by the proper organization of the medical personnel of the whole country, by placing the right man at the head of each particular branch of the work, by investing him with authority and imposing responsibility upon him, has found it possible to do all of this and more, and do it all well.

The central figure of the organization is, of course, the Surgeon General himself, who sits at a flat topped desk in the southeastern corner of the seventh floor of the Mills Building. Next him sits Major C. L. Furbush, M. R. C., who without having the specific title of Personal Aide, acts in that capacity to the Surgeon General. At other desks in the same room sit Colonel T. H. Goodwin, C. M. G., D. S. O., and Captain John Gilmour, of the Royal Army Medical Corps, who have been detailed by Sir Alfred Keogh, director general of the Medical Service of the British Army, to represent the British War Department at the Surgeon General's Office. In adjoining rooms are the desks of Colonel George E. Bushnell, M. C., chief assistant to the Surgeon General, Colonel Deane C. Howard, M. C., and Lieutenant Colonel James W. Van Dusen, M. C., assistants to the Surgeon General. On the same floor Colonel C. U. Dercle, and Major Edouard Rist, of the Medical Department of the French Army, have offices where they are in constant touch with the Surgeon General as representatives of the French Government.

These are the central figures around which are grouped the divisions into which the work of the Surgeon General's Office has been divided and whose task it is to coordinate that work. At the head of each of these divisions is placed an officer, usually a member of the Medical Corps of the regular army, who has specialized in the particular field covered by the division, and with him is associated a group of specialists, in most cases including members of the Medical Reserve Corps, whose services are invaluable in the selection and assignment of physicians from civil life to various specific tasks for which they are individually and professionally suited. To describe adequately the work of one of these divisions alone would require a volume. The NEW YORK MEDICAL JOURNAL for October 27th contains an interesting abstract of the activities of one of these divisions, that of surgery of the head, and similar reports will be published from time to time. But in this article we must confine ourselves to a very brief outline of the method of organizing the work which will be sufficient to show something of the expansion which has been necessary to meet the exigencies of war, and of what care has been exercised in that expansion.

The General Staff

Colonel George E. Bushnell, M. C., chief assistant to the Surgeon General and who in his absence becomes acting surgeon general, has made a great reputation as a specialist in tuberculosis and at the outbreak of the war was in command of the Army hospital at Fort Bayard, New Mexico. Notwithstanding the diversity and multiplicity of his duties as chief assistant to the Surgeon General, Colonel Bushnell keeps in close touch with his specialty through his work as chief of the Division of Internal Medicine, which is referred to in connection with the work of that division.[1]

Photo Harris & Ewing

COLONEL GEORGE E. BUSHNELL, M. C., Chief Assistant to the Surgeon General and Chief of the Division of Internal Medicine.

While there is no such thing officially as a general staff for the Surgeon General, he really has a general staff in Colonel Bushnell, his chief assistant, Colonel Deane C. Howard, M. C., and Lieutenant Colonel James W. Van Dusen, M. C. Each of these officers follows out special lines of work under the direction of the Surgeon General and is at his immediate service at all times for details to investigate, study, and act upon any particular topic which may be assigned to him. While the major activities of the Surgeon General's Office are subdivided and allotted to specific divisions, many questions arise which are general in their character and do not belong to any particular division and such topics are referred to what is in fact though not in name his general staff. One of Colonel Van Dusen's duties, for instance, is the censorship of material intended for publication, a very delicate task and one requiring thorough familiarity with the work of the Medical Corps, a knowledge of military and civil law, and a sound judgment which will enable him to recognize at once those things the publication of which might be prejudicial to the interests of the service.

The British Representatives.

When the Right Honorable Arthur Balfour came to the United States at the head of a special mission from Great Britain he was accompanied by Colonel T. H. Goodwin, C. M. G., D. S. O., of the Royal Army Medical Service, who had been delegated by Sir Alfred Keogh, director general of the Medical Service of the British Army, to represent that service in the United States, and to act as a liaison officer correlating the activities of the medical departments of the two armies. Colonel Goodwin has since that time been attached to the Surgeon General's Office in an advisory capacity and since he chanced to have had an unusually varied experience in the British Army, he has been able to render very material service. He has delivered a series of lectures at the Army Medical School and during the past month alone has delivered twenty-one lectures and addresses in Philadelphia, at Fort Benjamin Harrison, Toledo, Detroit, Ann Arbor, Des Moines, Fort Riley, and Chicago. Before that he had lectured in New York, Baltimore, Chicago, Washington, Fort Oglethorpe, Rochester, Minn., Philadelphia, Pittsburgh, St. Paul, and Minneapolis. A collection of Colonel Goodwin's lectures is now in press to be published by Lea and Febiger, under the title of *Notes for Medical Officers*. Colonel Goodwin has held himself at the disposal of the Surgeon General's Office and appears at his desk in the Surgeon General's room regularly when not absent in the line of duty. Captain John Gilmour, M. C., is associated with him as an aide, and also Lieutenant Colonel J. J. Aitken, of the Veterinary Corps of the British Army.

Representatives of France

Colonel C. U. Dercle, of the French Army Medical Corps, in which he has served twenty-five years, was severely wounded in action in the present war and temporarily disabled. He was appointed to the French Ministry of War, Medical Department, until he had completely recovered from his wounds. He is a member of the Legion d'Honneur, recipient of the Croix de Guerre, and has been cited in orders for bravery. He was made a member of the Association of Military Surgeons of the United States, at the annual meeting held at Fort Benjamin Harrison, Ind., in October. Colonel Dercle came to Washington on July 4, 1917, since which time he has been attached to the office of the Surgeon General of the army. As a representative of the French High Medical Department, he has delivered several addresses, illustrated by interesting moving pictures, regarding the organization and operation of the French sanitary service in this war, at Allentown, Pa., Philadelphia, Fort Oglethorpe, Ga., Fort Benjamin Harrison, Toledo, Detroit, Ann Arbor, Des Moines, Iowa, Fort Riley, Chicago, Memphis, St. Louis, and Washington.

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[1] Since this article was written, Brigadier General Charles Richard, the senior member of the medical corps on the active list, has been assigned to duty at the Surgeon General's Office.

Major Edouard Rist is a member of the French Army Medical Reserve Corps. He has been twice wounded in battle, and he is a member of the Legion d'Honneur, a prominent member of the Medical Society of Paris. He is well known by his works on tuberculosis.

He spent three months in the United States in charge of a scientific mission, and he lately returned to France. During the time he spent in this country he delivered several interesting addresses at Washington, Detroit, Toledo, Ann Arbor, Chicago, and at the annual meeting of the Association of Military Surgeons of the United States at Fort Benjamin Harrison in October, on which occasion he was made a member of the association.

Division of Internal Medicine.

This division is subdivided into three sections. At the head of the division itself and also of the section on tuberculosis is Colonel George E. Bushnell, M. C., chief assistant to the Surgeon General and formerly in command of the tuberculosis hospital at Fort Bayard, N. M.

SECTION OF TUBERCULOSIS.

Associated with Colonel Bushnell in the tuberculosis section are Major Earle H. Bruns, M. C., and Lieutenant W. H. Phares, S. C. N. A. The tuberculosis section has directed the reexamination of all the mobile units of the army. All the men of the regular army have been examined and the examinations of the twenty-sixth, the forty-first, and the forty-second divisions of the National Guard troops have also been completed and reexaminations are now going forward in the sixteen National Army cantonments. The results of these examinations have been very satisfactory. It had been generally expected that not less than one per cent. of the men examined would be found suffering from tuberculosis. So far, however, the figure has been well below one per cent. A complete examination is made, including an examination of the sputum and x ray examinations wherever any doubt arises in the mind of the examiner. These examinations have been carried on by special boards selected mostly from officers of the Medical Reserve Corps, physicians who have made a special study of this disease and whose opinion is entitled to weight. We are much more fortunate than the French in that we have had time to make physical examinations and thus exclude from the service those infected with tuberculosis. The reports which have been given currency regarding the alarming number of tuberculous soldiers in the French Army have been specifically denied by the French military authorities. The chief surgeon of the American Expeditionary Force now in France under General Pershing quite recently reported to the Surgeon General's Office that "so far the cases of tuberculosis have been very very few." Colonel Bushnell and the other members of the tuberculosis section of the division will make tours of inspection to supervise and check up the work of the local examining boards. A hospital of the standard camp hospital type with 300 beds is to be erected at Otisville, New York, on ground belonging to the city of New York, for tuberculous patients and in the spring 200 beds will probably be added of the sanitorium type.

SECTION OF CARDIOVASCULAR DISEASES.

The chief activities of this section of the Division of Internal Medicine to date have been: 1. The examination of the National Guard and the National Army by experts in the diagnosis and prognosis of diseases of the heart and vessels. In this work ninety physicians have been engaged, many of them consultants of the first rank, serving for the most part temporarily as contract surgeons. The results have been highly satisfactory both in eliminating the unfit and in retaining for the service men with sound hearts, but showing accidental murmurs or other insignificant abnormalities. 2. The selection of internists as chiefs and assistants for the medical service of hospitals. Thirty-five chiefs of service have already been assigned to the large hospitals of the cantonments and the three other base hospitals now in operation. Assistants with special training in the modern methods of study of cardiovascular disease have already been assigned to these hospitals. Assistants with practical experience in the serum treatment of pneumonia are now being secured through the cooperation of the hospital of the Rockefeller Institute, where a number will be trained. These are in addition to the supply of assistants with general hospital experience, thus assuring a diversified staff for each of these great hospitals. As the chiefs are for the most part well known teachers of medicine, active instruction, both for their staffs and for the medical officers of the camps, will be a feature of their activity. Staffs of base and evacuation hospitals for foreign service are now being gathered. 3. Special plans are being prepared for a large special hospital overseas for the investigation of the important diseases peculiar to the war and for the care of cases of "soldier's heart," and other medical disabilities by the most approved methods. The personnel of the section consists of Major Theodore C. Janeway, professor of medicine, Johns Hopkins University, Baltimore, and Major Warfield T. Longcope, M. O. R. C., Bard professor of the practice of medicine, Columbia University, New York.

SECTION OF GASTROINTESTINAL DISEASES.

A section of gastrointestinal diseases has been created recently in the Division of Internal Medicine for the reason that the Surgeon General thought it best to assign to duty in each of the large hospitals a gastroenterologist, i. e., an internist who has had special training for, and a large experience in, the diagnosis and treatment of digestive diseases. The response from the gastroenterologists to the call from the Surgeon General has been splendid, many of the leading men in that specialty having given up large practices to serve in the Medical Reserve Corps.

Photo Harris & Ewing
COLONEL T. H. GOODWIN, C. M. G., D. S. O.,
Liaison officer from the Royal Army Medical Corps, representing the British Army at the Surgeon General's Office.

Experience among the allied troops in France has shown that digestive diseases are frequent and an important cause of temporary disability which unfits many men for military duty. According to Major Rist, of the French Medical Service, recently on duty in the Surgeon General's Office, this was particularly true in the early years of the war. It is believed that we shall have a similar experience and specially trained men are needed to care for these cases.

It is expected also, that many men, who have ulcers of the stomach or duodenum, and others who have visceroptosis, which may not unfit them for the ordinary duties of life, but which may disable a soldier in forced marching or in trench fighting, have enlisted or have been drafted in the army. The gastroenterologist in each of the large army hospitals will make the diagnosis of many of these cases, cure most of the ulcers, and build up many of the visceroptotic individuals, so that they may stand the strain of battle; or if they cannot be relieved, soldiers with such disabilities will not be permitted to go to Europe. Since it is estimated that it costs the United States more than $2,000 for the training, equipment, and transportation of each soldier that it sends to France, the importance is apparent of sending only those who are physically fit to stand the most severe service. Minor digestive disturbances from indiscretions in eating and nervous types of indigestion, in addition to the diarrheas, dysenteries, and other gastrointestinal diseases that are among the most frequent of army diseases during war maneuvers, will be cared for by the gastroenterologists, who will be expected to aid, when needed, in the general work of internal medicine in the army hospitals.

Major Seale Harris, of Birmingham, Alabama, formerly professor of the practice of medicine in the University of Alabama School of Medicine at Mobile, and recently editor of the *Southern Medical Journal* and secretary of the Southern Medical Association, has been assigned to duty in the Surgeon General's Office, in charge of the work in gastrointestinal diseases.

Division of Personnel

In April we had 700 medical officers, or seven for each thousand of the fighting personnel. The experience of Great Britain had demonstrated that there should not be less than ten medical officers for each thousand men and when Congress authorized an army of 1,850,000 this ratio was adopted, which meant that 18,500 medical officers would be required. A ratio of one dental officer to each thousand was also adopted, making necessary to have 1,850 dental officers. The veterinary corps required one veterinarian and sixteen enlisted men for each 400 animals in service. These figures brought the total of veterinarians up to 2,500. A total of 25,000 nurses will be required when the army is recruited to the full authorized limit. Three thousand of these nurses are already on duty.

To provide for this enormous increase in the personnel of the Medical Department was the special province of the Personnel Division. The government was committed to volunteer system in the Medical Department. To obtain the required number of medical officers it was necessary therefore to arouse the interest and enlist the cooperation of the entire medical profession of the United States. To do this every avenue of approach to the medical profession was made use of. Over 100,000

Photo Harris & Ewing
CAPTAIN JOHN GILMOUR, R. A. M. C.,
Aide to Colonel Goodwin at the Surgeon General's office.

personal circulars were mailed to the physicians of the United States. Material was supplied to all the medical journals for publication. All the resources of all the organized medical bodies in the United States were brought into play, including the Medical Section of the Advisory Committee of the Council of National Defense. State committees and county committees were formed to make personal appeals to medical men whose attainments and circumstances were such as to make them suitable for service in the Medical Department. The response has been most gratifying for every part of the country and from every phase of medical activity. As a consequence we now have over 16,000 medical officers, and volunteers continue to come in gratifying numbers. The qualifications of every one of these officers are carefully tabulated and his name is indexed by State, by experience, and by his special qualifications. Through these voluminous cross indexes it is possible for the chief of the personnel division to select at a moment's notice specialists in any desired field or with any particular qualifications required. The classification of the officers is carried out to the utmost limit so that it will be possible to make the best use of any special qualification which may be possessed by any medical officer. The work of this division is carried out by Lieutenant Colonel Robert E. Noble, M. C., Lieutenant Colonel Reuben B. Miller, M. C., Major John S. Coulter, M. C., Major Bert W. Caldwell, M. R. C., Superintendent Allegheny General Hospital, Pittsburgh; Major William H. Walsh, Executive Secretary of the American Hospital Association; Captain Charles W. Ayars, and Lieutenant John E. Horn.

The Division of Finance and Supplies.

The Finance and Supply Division consists of a Finance Section, an Accounting Section, a Supply Section, and the Artificial Limb Section. The sections were formerly separate divisions, but in September, 1917, were combined and together now constitute the Finance and Supply Division.

The personnel consists of the following officers: three of the Medical Corps; one of the Medical Reserve Corps; one of the Dental Corps; four of the Sanitary Corps, and the following civilians: one principal clerk; four chiefs of sections; clerks; stenographers and typists. As soon as war was declared, it became necessary to obtain men qualified for assignment as medical supply officers to all the army camps, and additional medical supply officers for the general purchasing supply depots. The latter positions required men skilled in purchasing, disbursing funds, inspections, and the thousand and one items incident to the medical supply business of an army which was expected to go far beyond the million mark during the first year of the war.

Experts in the various lines pertaining to this work were personally interviewed by Colonel Darnall, chief of the division. These included millionaire manufacturers, bankers, warehousemen, clerks, etc. Hundreds of applicants for commissions have been examined, and whenever possible they have been personally interviewed. From this number more than one hundred officers have been commissioned and assigned to the medical supply division, many of whom are now issuing supplies in the rear of the firing line in France. To locate all of these experts necessitated a voluminous correspondence with hundreds of banks, trust companies, wholesale and jobbing houses, railroads, etc. Some of the special units of enlisted men which have been organized have been composed of the most brilliant young men to be found in the financial field.

As its name indicates, this division is the purchasing, purveying, and accounting branch of the Medical Department. Here estimates of funds required by the Medical Department are prepared for presentation to Congress, and the appropriation having been made, here the money is expended. This division has under its immediate control the medical supply depots of the army. Some of these are purchasing depots, others are distributing depots. All of the large purchases are made by the purchasing depots, the supplies being sent directly from the contractors to the distributing depots for distribution, or to the purchasing depots themselves for storage. The activities of all the depots are supervised and coordinated by the Finance and Supply Division. All contracts are sent to it for approval and here all vouchers for the disbursement of funds come for settlement.

Another function of this division is to see that every article of medical property is properly accounted for from the time it is purchased until it is expended or otherwise legally disposed of. While comparison would be invidious it can with safety be said that some of the most important problems of the Surgeon General's Office have been presented to and solved by the Division of Finance and Supplies. While it was possible to accumulate reserve supplies of such things as blankets, beds, bedding, and clothing, it was not possible to accumulate any large stores of a majority of the drugs, surgical dressings, etc., needed by the army, because of their tendency to deteriorate on keeping. Consequently, when war was declared, the medical supply depots of the army began to purchase immense quantities of the thousand and one items which go to make up the equipment of the Medical Department. Two hundred and fifty of the manufacturers whose products were used by the department were invited to attend a conference on Sunday, April 16, 1917. They were addressed by the Surgeon General and by representatives of the Council of National Defense who set before them the conditions which the government was called upon to meet. They were requested to organize committees representing the different lines of goods manufactured with whom the Surgeon General could deal, as representing the whole trade. Six of these committees were at once organized representing the following lines: pharmaceutical supplies, surgical dressings, surgical instruments, dental instruments, laboratory supplies, and hospital supplies. Other committees of manufacture which were organized later deal with cooking utensils and tableware. stationery, and miscellaneous field supplies. Lists of the goods needed at once were turned over to their committees for analysis and report, and the suggestions of the manufacturers themselves were invited as to any modifications in these lists which would be helpful. Some of these committee members remained in Washington for a week at their own expense in conference with the Surgeon General's Office and all of them made valuable suggestions which were adopted. The Committee on Drugs and Chemicals, for instance, suggested some changes in the styles of packages and the adoption of common trade usage in this respect which would make it possible to provide supplies from stocks in hand without making up stock specially for the army. It also suggested domestic succedanea for several of the imported synthetic drugs which were out of the market. The Committee on Surgical Instruments helped in the preparation of a catalog of standard forms and specifications for surgical instruments which by allowing a certain specified latitude made it possible to order any one of a dozen different makes and variations of the same instrument. Each of the committees has continued to cooperate with the Surgeon General in obtaining the supplies needed from its particular line of trade. The manufacturers have all voluntarily given precedence to orders received and have kept prices down so far as the increased cost of material would permit. The Secretary of War has given permission to abandon the long and tedious methods of public biddings, thus making it possible to purchase needed supplies very rapidly and with the minimum of red tape. Through this division pass all the orders of the Surgeon General for all the vast quantities of material by the medical department, with the sole exception of foodstuffs and clothing, and the requisitions for these, which go to the Quartermaster's Department of the army for filling, emanate from the Division of Supply and Finance. There are supply depots at New York, St. Louis, and San Francisco in addition to the supply depot at Washington and the work of all these depots is coordinated in this division. The personnel of the division includes representatives of the Dental Corps and of the Veterinary Corps as well as the Medical Corps and the Sanitary Corps.

Photo Harris & Ewing
LIEUTENANT COLONEL ROBERT E. NOBLE, M. C.,
Chief of the Personnel Division.

The division is in command of Colonel Carl R. Darnall, M. C., and he is assisted by Colonel Edwin P. Wolfe, M. C.; Major A. C. Christie, M. R. C., professor of röntgenology, Army Medical School; Major W. T. Fishleigh, S. C., assistant professor of automobile engineering, University of Michigan; Captain John B. Copping, S. C., superintendent of George Washington University Hospital; Captain Richard A. Wood, S. C., Lieutenant J. C. King, S. C., Dental Corps, U. S. A.; Lieutenant J. G. Moon, S. C., instructor in animal husbandry, Veterinary Department, University of Pennsylvania; and Lieutenant F. W. Lenox, S. C., assistant to Colonel Wolfe, and formerly traffic manager to the Richmond Radiator Company.

Gas Defense Service

The Gas Defense Service at present is undergoing an extensive organization, details of which are not complete. It is a highly technical service and a great proportion of the personnel are chemists, chemical engineers, and industrial experts. There are very few medical officers attached, though Major E. D. Kremers, M. C., is the chief of the division. The Gas Defense Service is to be coordinated with a gas offensive under a director of gas service, an engineer officer, Colonel Charles S. Potter. The Gas Defense Service itself at present is under the Medical Department and includes a field supply section, an overseas repair section, and a field training section, in addition to which the matter of research in connection with gases and the effects of gases on the organism and the treatment of the gassed are closely but informally connected. In addition there is at present a school for gas instruction at Fort Sill, Okla., under the school of musketry. The ex-

Photo Harris & Ewing
COLONEL CARL R. DARNALL, M. C.,
Chief of the Division of Finance and Supplies.

tent of the Gas Defense Service may be realized when it is understood that it contemplates a future strength of over 200 commissioned officers. Major Frank Suggs, M. R. C., and Major Robert Conrad, M. R. C., are in charge of the school for gas defense instruction at Fort Sill.

Captain F. J. Eiseman, M. R. C., former senior noncommissioned officer of the Medical Department, is on duty in the office of the Field Supply Section. There is at each divisional gas school in the large army cantonments one or more medical officers who have been trained at the Fort Sill school and at present are divisional gas officers for the defensive. The remainder of the personnel of the service are officers of the Sanitary Corps and not strictly medical officers. They include Major Bradley Dewey, S. C., director of research with the American Sheet and Tin Plate Company; Captain J. H. Walton, S. C., professor of chemistry at the University of Wisconsin; Captain Frederick A. Dewey, S. C., formerly with the National City Company, of New York; Lieutenant Richard Gibson, Jr., S. C., rubber compounder with the Republic Rubber Company, Youngstown, Ohio; Lieutenant William De Y. Kay, S. C., engineer, of New York; and Lieutenant James S. Wolf, S. C., New York.

Division of Military Orthopedic Surgery

The Surgeon General is arranging for a sufficiently large number of beds in France and in the various reconstruction hospitals planned for the United States to meet fully any demands that are likely to be made on the orthopedic service. As this will require a large number of surgeons who have had especial training in orthopedic principles, and since the number of specialists in this branch of surgery is relatively small, one of the first tasks of the Division of Military Orthopedic Surgery was to secure the necessary men.

Photo Harris & Ewing
MAJOR E. D. KREMERS, M. C.,
Chief of Division of Gas Defense Service.

The orthopedic surgeons of the country have responded enthusiastically to the call. Before we entered the war a group of twenty well trained men were placed in England at the request for assistance made by Colonel Sir Robert Jones and they are still at work there. A number went over with the base hospitals and another large group has just gone, so that at present over seventy men, two thirds of whom are orthopedic surgeons of experience, are in England and France. Still other thoroughly qualified men are giving instruction in the various camps and assisting the camp surgeons in the care of those cases presenting orthopedic problems.

In order to obtain the additional number required to meet the demand a special course of intensive instruction in the fundamentals of orthopedic surgery has been provided for those who have had a general surgical but no special orthopedic training. In the preparation of the outline of the course, as well as in all matters of general orthopedic policy, the assistance of the Advisory Orthopedic Council has been most invaluable. Three such courses are now being given in Boston, New York and Philadelphia by university teachers in the universities and various hospitals of these cities. These men will then be placed in the various camps as assistant orthopedic surgeons under competent supervising orthopedic surgeons for further training and many of them will be sent abroad later.

The Division is naturally vitally concerned in the reconstruction part of the problem. It is not only necessary to reeducate the maimed soldiers in productive occupations, but the public must also be taught that the large majority still possess an economic value and that the State owes them the right to earn their own living. Europe has set us the wonderful example of returning eighty per cent. of her maimed to useful occupations.

The artificial limb problem is receiving most careful attention from the Surgeon General, both in order that the very best types of limb may be furnished those who may require them, and also that the most satisfactory method of distribution be adopted. The Surgeon General has established a laboratory for the study of the many problems concerned in the manufacture and use of artificial limbs. In so far as artificial legs are concerned, probably but little can be accomplished, since our American manufacturers have developed such a high degree of skill in this line. To produce a substitute for the human hand, however, is a problem which from its very nature seems practically impossible of solution; some form of the so called "hook" is at present the most servicable for actual work, and experiments will be made along this line. The manufactures have already shown their desire to cooperate with the Surgeon General to the fullest extent. The work of this division is in charge of Major E. G. Brackett, M. R. C. director, professor of orthopedic surgery, Harvard Medical School; Major David Silver, M. R. C., assistant director, professor of orthopedic surgery, University of Pittsburg; Major Henry R. Hayes, S. C., Captain Paul B. Magnuson, M. R. C., medical director of the Industrial Commission of the State of Illinois, and Captain Horace Morison, S. C.

(*To be Continued*)

Editorial Notes and Comments

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EDITORS
CHARLES E. DE M. SAJOUS, M.D., LL.D., Sc.D.,
Philadelphia,
SMITH ELY JELLIFFE, A.M., M.D., Ph.D.,
New York.

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EXPANSION OF THE SURGEON GENERAL'S OFFICE.

The Surgeon General of the United States Army, or as he is popularly termed, the Surgeon General of the United States, is an institution rather than an individual. The present incumbent of the office, Major General William C. Gorgas, won his appointment by his masterly control of the sanitary conditions in the Panama Canal Zone. The French sacrificed thousands of lives and millions of francs in a fruitless attempt to build a canal, which was built by the United States with very little delay at a minimum cost and with a remarkably small death rate among the workers. Without Gorgas, Goethals could not have done his work. The same wide knowledge of medicine and sanitation and the same ability as an organizer which cleared the way in the Canal Zone for Goethals and protected his workers, are now called upon to solve an even more complex problem on a much larger scale.

The Surgeon General must foresee all the sanitary problems involved in taking millions of men from farms, fields, factories, and offices, mobilizing them in camps, and converting them into soldiers; he must foresee all the sanitary problems involved in transporting millions of men for three thousand miles across the sea and maintaining them in good health at that distance from the base of supplies; and he must provide against all the contingencies likely to arise in these stupendous undertakings. He must further foresee and provide for the sick and the wounded, for the rehabilitation of the crippled and maimed, and their return to civil life as workers rather than as pensioners. Just how this great task is being performed constitutes the topic of an article on the expansion of the Surgeon General's Office which begins in this issue. As will be seen by perusal of this article the Surgeon General has called to his aid the leaders in every medical specialty. Indeed he has gone outside of medicine and enlisted the aid of chemists, of statisticians, of engineers, and of sanitarians, each of whom represents the most progressive element in his own particular field of work. Practically the entire medical profession has been mobilized for war by the Surgeon General's Office and each man has cheerfully given his best.

In the executive offices at Washington will be found men whose achievements in their own specialties have won for them fame and wealth and leisure to enjoy both. These men have cheerfully left their homes, have given up their professional incomes, in many cases of princely proportions, and for the modest stipend of a captain or a major are toiling as they have never toiled before in the mobilization of medicine for war.

No other branch of the army has been so well prepared for war as has the medical service. No other has made a more honorable record of self-abnegation and of devotion to duty. The story of the expansion of the Surgeon General's Office furnishes a key to all the work done in the Medical Department of the army, for it is here that this work has its inception. The results reflect credit alike on the Surgeon General, on the invaluable nucleus for organization furnished by the medical officers of the Regular Army, on the efficient aides whom he has summoned to his staff, and on the medical profession of the United States who have so generously volunteered to serve in the army, for this is one branch of the service in which there are no conscripts.

PATHOGENESIS OF SUPRASTERNAL SUPPURATING ADENITIS.

The only causal factor of suppurating adenitis of the suprasternal lymph nodes is infection. According to the degree of virulence of the agent, various processes result, as simple congestion, suppuration, and massive necrosis with generalized toxiinfection. It is important to understand the origin of the infection, the causes favoring it and its mode of extension and action.

Suprasternal abscess is uncommon and is rarely referred to in the textbooks. It may occur in infancy and in young adults, and this may be said to be the general rule in all types of abscess of the neck, these being met with particularly between the ages of sixteen and thirty years. Poulsen's statistics show that out of a total of 530 cases, 227 occurred before the age of thirty years. One reason for the infrequency of the type of abscess under consideration would logically seem to be the inconstancy of the lymph nodes in the suprasternal space, while the source of infections of these lymphatics will naturally be found in their territory of drainage. It should be at once said, however, that in some instances the starting point could never be ascertained. It is probable that the afferent lymphatics coming to the suprasternal lymph nodes drain the infrahyoid and prelaryngeal cutaneous areas, so that bacteria producing boils or infecting excoriations or slight cutaneous abrasions in these areas, can be carried to the lymph nodes in question. The infection thus extends parallel to the anterior jugular veins and only becomes manifest when it reaches the lymph nodes. These react according to the usual process and if the bacteria cannot be overcome, foci of suppuration arise, a periadenitis follows the adenitis, and all the connective tissue in the suprasternal space suppurates, so that the process forms one vast abscess in which the lymph nodes can no longer be recognized.

Abscess of the neck at whatever point almost always results from an adenitis, but there are exceptions, and it would seem that a direct septic infection of the cellular tissue, for example from a prick, can occur without any infection of the lymph nodes. Finally, if the connections existing between the suprasternal space and the anterior jugular veins be recalled, it becomes evident that a phlebitis of these vessels, followed by a suppurating periphlebitis, might perhaps result in the formation of pus in the suprasternal space.

So far only acute and subacute abscess have been referred to, but it seems certain that the suprasternal lymph nodes are susceptible, like all the lymph nodes of the neck, to become involved by tuberculosis. The fact that this morbid process has not as yet been distinctly demonstrated, it is undoubtedly because the suprasternal lymph nodes are overlooked in the presence of the generally extensive pathological disorders produced by tuberculosis at the base of the neck. Tuberculous infection of these glands is possible in two ways. Either the suprasternal lymph nodes become involved during the evolution of one of these adenopathies which, clinically speaking, may be considered as primary, since the solution of continuity giving admission to the specific bacillus amounts to nothing, while the process in the lymphatics is considerable, so that they simply are the continuation of a chain the preceding links of which have become involved. On the other hand, the enlargement of the suprasternal glands may be merely symptomatic, depending on a tuberculous lesion of the uppermost portion of the sternum.

Finally, besides a cold abscess of the suprasternal lymph nodes, one should consider the possibility of tuberculous abscess having a sternal origin or even depending on a sternoclavicular tuberculous arthritis whose contents are discharged into the suprasternal space.

REPORTS ON THE STATE'S CARE OF ITS DEPENDENTS.

Too much can not be said to grant a better understanding of the plans and methods of administration in the care of the State's dependents. Attention is thus drawn to reform where called for to more sympathetic appreciation and cooperation where the work is already being properly done, and to growing need in the face of progressive conditions. These conditions do not create needs which have perhaps always existed, but investigation makes for wider knowledge and control of them, which must more and more belong to modern effort. Two important subjects have recently been studied by the Committee of Mental Hygiene of the State Charities Aid Association, one of them in conjunction with the New York Committee on Feeblemindedness. Both have been submitted to the Hospital Development Commission and have been published by the State Charities Aid Association. The first of these concerns the care and treatment of the "chronic" insane, whether they shall be retained in the New York hospitals or whether it is better economy to relegate them to merely custodial care of the almshouse type.

The grouping of cases included under the term "chronic" reveals latitude for a flexible system of adaptation to varying needs and conditions, which could not be dealt with upon a fixed basis, such as the exclusion from hospitals. Because of this variety of conditions the need for medical care and the variation in the chronicity itself, the hospital is the only place where means for their care are available. Certain classes of chronic cases require the maximum of nursing and medical care, with special maintenance because of filthy or destructive habits. Others require much nursing care and a little expenditure. A large number of chronic cases are workers who require so little attention beyond supervision and oversight, that they offset the cost of maintenance both of themselves and to a large extent at least of those unable to work. More important still are certain positive, constructive considerations which affect the improvement of these cases. In the first place reeducation work, possible under the present arrangement but necessitating much added equipment and expense if adequately undertaken in custodial institutions, has proved its value in transforming many violent, destructive, or idle patients into useful industrious individuals able to contribute to the State. In hospitals in which chronic and acute cases are treated the physician's interest is kept at high mark by the presence of the acute cases. In hospitals in which chronic cases alone were treated his interest would be difficult to maintain and these patients would be decidedly the losers, for many of them may recover or suddenly show change for better or for worse, and thus need watching and constant care. They need also the intensive care which will keep them at a level of efficiency and away from deterioration. Other practical economic advantages are pointed out in favor of the present system, which by its adaptability to this variety of conditions allows of greater benefit to patients, medical interest, and the State itself.

The other question under investigation is that of the presence of defective delinquents and the institutional and legislative needs. A careful survey of statistical tables furnished by a large number of officials and authorities leads to the summary conclusion that "about one third of the feebleminded transgress the law and nearly one third of all delinquents are feebleminded." Through such a conclusion these committees endeavor to stimulate legislative action and the enforcement of such measures as have been previously suggested but not brought to fruition. This large percentage of individuals both retard the machinery of reformatories and of prisons and themselves receive no benefit but are perhaps actually injured by an environment in which they cannot be made to fit. There are many of these defective delinquents in such institutions as well as at large, and their numbers demand prompt attention. The investigation recommends as institutional needs: "1, an institution for female defective delinquents, and 2, an institution for male defective delinquents;" as legislative needs: "1, special provision for the discovery and diagnosis of mental deficiency of delinquents in reformatories and in the courts; 2, legislative provision for the interchange of inmates between correctional and custodial institutions under the State Board of Charities; 3, legislative provision enabling institutional authorities to retain defective delinquents indefinitely."

These two reports indicate a more intelligent comprehension of social problems of this sort and a more practical application of public thought and responsibility. In such questions, the medical body must be leaders. Fresh stimulus is aroused and appeal made by such actual knowledge of conditions, of the possibilities for destructiveness or constructiveness abroad in society or in institutions, as well as appreciation of the actual adaptation to the problems involved, and their working out.

PUT YOURSELF IN HIS PLACE.

There is a saying that imagination is the ruin of an ill balanced mind, but the saving grace of a well balanced one. How many physicians with well balanced minds in daily practice deliberately bring imagination to bear upon the problems that confront them? How many of us, for example, deliberately try to put ourselves in the place of our patients, try to analyze their mental attitudes, our effect upon them, in short, imagine ourselves the other half of the equation, a layman in search of benefit from a medical man?

The practice of medicine is not all gall, as some of our detractors would have the public believe, but it is divided into three parts: the patient, the therapeutic method, and the physician. Medical colleges and hospitals do their best for four, five, or six years to train the student to be a doctor of medicine; he has the opportunity of learning, if he will, all the therapeutic methods from Hippocrates and Galen down to Swift and Ellis, but how much thought is given to the patient himself? The father of medicine taught and the youngest practitioner knows that different types of men require different sized doses of medicine and even different remedies for the same disease. What has been neglected is the mental attitude of the patient towards the source whence cometh his help. This neglect has been formal, so to speak. Individual physicians feel, more or less acutely, according to their own makeup, the psychology of their patients and modify their methods of approach accordingly. But any suggestion looking towards the serious study of such questions has met with a taboo, the same taboo which has always hung over the psychical side of medicine, the taboo which has been the opportunity of occultism in the form of Christian Science, faith healing, and the like.

Let us consider for a few minutes the patient himself. Perhaps he has not had occasion to seek medical advice since the time when overindulgence in green apples brought forth the antidotes of castor oil and paregoric. He has been suffering for several months with a slight cough which has grown somewhat worse, so that he has finally consented to see a physician, a vague idea of consumption in his mind. He is impatient of delay, which he is inclined to think is a stage trick, intended to convey an idea of large practice, regards cynically the women in the waiting room—"Probably all neurasthenics," he tells himself—minimizes his complaint to the doctor, protests against disrobing, and is generally antagonistic and inclined to look on the whole thing very much as the scoffer who goes into the fortune teller's booth to waste an idle half an hour. Such a patient presents a distinct problem. If handled incorrectly, he goes away pooh-poohing doctors and belitting things about which he knows nothing. But he may be dealt with so that his mind will open up to the truth and an *entente cordiale* will be set up. He is only a type. There are many others —the "little bird" class who travel from one doctor to another, carrying tales; the chronic patient who sees the doctor for constipation, diarrhea, headache, pain in the back, anything; the giggling girls; the pimply youth; the crying child; the querulous senile—all these and many more go to make up the physician's daily life. It is his business, and should be handled efficiently. To do the most benefit to the patient, to spread abroad a correct conception of medical practice, and to secure and retain the practice to which his training entitles him, it is necessary for the physician to put himself in the patient's place and treat him first of all as a psychological problem, second as a collection of symptoms, and third as the expression of a reaction against a toxic process.

THE DOCTOR AND THE DRAFT.

We have the authority of the Surgeon General of the United States for stating the relations of the doctor to the draft, which go into effect on December 15th, as follows: All physicians of draft age are subject to draft who have not received and accepted commissions in the Medical Reserve Corps prior to December 15th. The fact that they have applied for commissions does not affect their status as subject to the draft. If a physician is drawn he may apply to his commanding officer for a commission in the Medical Reserve Corps, submitting the necessary information as to his professional and personal qualifications. If these qualifications are satisfactory to the Surgeon General, the physician will be given a commission in the Medical Reserve Corps unless there is a larger number of applicants for commissions than are needed in the service, a contingency not likely to occur.

PHYSICIANS IN THE ARMY.

Leslie's Weekly for December 1st reproaches the physicians of the United States for what it considers a failure to live up to their obligations and opportunities in joining the army medical service. The charge that the physicians have failed to realize their obligations in this respect is refuted by the Surgeon General of the United States, who, in response to question from the Editors of the New York Medical Journal, said that he had no fault to find with the medical profession. The figures given by *Leslie's Weekly* are inaccurate. More than 18,000 physicians have applied for enrollment in the Medical Reserve Corps, of whom over 15,000 have received their commissions. Besides these there are 1,446 medical officers in the National Guard and about 700 medical officers in the regular army, making a total of over 17,000 physicians now in the army as medical officers, with many others on the road to active duty. Nor does this represent the total of America's contribution to the medical service. There are 755 officers in the Medical Corps of the navy and 771 in the Reserve Corps and 211 in the Public Health Service, which is a most important branch of the military medical service, though not officially under the secretary of war. The total number of physicians therefore in the service of the United States for war duty is something like 19,000. Moreover, there are fully 1,000 physicians from the United States who are serving in the British and French hospitals either with the army or with the Red Cross. Such surgeons as Carrel and Blake, though not listed on the payroll of the army, have contributed services which are invaluable and America may well be proud of the part which her physicians are playing in the war.

NEW ALCOHOL REGULATIONS.

The food conservation law which prohibited the manufacture of alcohol, except for nonbeverage purposes, and the new war tax on alcohol used for nonbeverage purposes have not only caused a great increase in the cost of alcohol and consequently in the retail price, but has also resulted in the imposition of certain vexatious regulations, which will meet the doctor at every turn when he desires to make use of alcohol. Numerous conflicting regulations have been issued by the Bureau of Internal Revenue, and these regulations have been changed from time to time so that the minor officials themselves are frequently at sea regarding the ruling. The latest information is to the effect that no alcohol can be sold, even on a doctor's prescription, as such, but only in the form of medicated alcohol or denatured alcohol, the two being from a legal point of view quite different. Denatured alcohol contains substances which unfit it for use in medicine either internally or externally. Medicated alcohol can be medicated by the pharmacist himself according to any one of nine formulas. The formulas involve the dilution of the alcohol in some cases, and in all cases the addition of certain substances such as carbolic acid, formaldehyde, mercuric chloride, alum and camphor, lysol, or liquor cresolis compound which make it unfit for beverage use.

News Items.

The Navy Needs Medical Officers.—Surgeon General William C. Braisted, United States Navy, calls attention to the fact that the Navy is still in need of well qualified medical officers. The Medical Corps of the Navy is at the present composed of 755 medical officers, with 771 additional officers available in the Naval Reserve Corps.

How Local Health Boards May Prescribe and Dispense Habit Forming Drugs.—Pursuant to the provisions of Chapter 431 of the Laws of 1917, the New York State Commissioner of Health has just promulgated regulations under which habit forming drugs may be prescribed and dispensed by local boards of health. These regulations are published in full in the December 8th issue of the *Weekly Bulletin* of the Department of Health.

Narcotic Hearings by Legislative Committee.—The legislative committee appointed by the legislature of the State of New York to investigate the subject of habit forming drugs resumed its public hearings on Wednesday, December 5th, at City Hall, New York. At this hearing a number of addicts appeared. Later hearings will be devoted to physicians and pharmacists, and all physicians who are interested in the subject are invited to attend.

The Neurological Surgical School of New York.—This school, which was organized by order of Surgeon General Gorgas, United States Army, was opened on December 3d with a lecture by Dr. George S. Huntington on the Anatomy of the Nervous System. The course, which will last ten yecks, was arranged for the purpose of giving to Medical Reserve Corps officers an intensive course in neurological surgery. Dr. Charles A. Elsberg is director of the school and Dr. Frederick Tilney will give instruction in nerve anatomy and methods of neurological examination. Many distinguished specialists in neurology and surgery will give instruction at various hospitals and at the College of Physicians and Surgeons.

Selective Draft Medical Boards.—The new selective service regulations provide for the creation in every State of a number of medical advisory boards. An officer of the Medical Reserve Corps of the Army has been assigned as medical aid to each governor to assist in the work of organization. The purpose of the medical advisory boards is to provide for the reexamination of the registrants by competent men, specialists in various lines, to whom local boards may refer all doubtful cases as to physical qualification and before whom registrants who are not satisfied with the finding of the local board may request to be sent. Dr. Charles N. Dowd, of New York, has been appointed medical aid to the governor of New York.

The Clinical Association of American Peroral Endoscopists.—This association was organized in Philadelphia on November 1, 1917, for the purpose of studying diseases and accidents in respiratory and upper digestive tracts and borderline conditions and their treatment, medical and surgical, by direct inspection. The association also aims to impress the value of bronchoscopy and esophagoscopy as diagnostic method of precision. The officers are: President, Dr. Chevalier Jackson, of Philadelphia; vice-president, Dr. Hubert Arrowsmith, of Brooklyn; secretary treasurer, Dr. Henry L. Lynah, of New York. Members of the executive committee are Dr. Wolff Freudenthal, of New York, and Dr. Samuel Iglauer, of Cincinnati.

Meetings of Local Medical Societies.—Monday, December 10th, New York Ophthalmological Society, New York Society of Medical Jurisprudence (annual), Williamsburg Medical Society, Brooklyn (annual); Tuesday, December 11th, New York Academy of Medicine (Section in Neurology and Psychiatry; New York Obstetrical Society; Wednesday, December 12th, New York Pathological Society; New York Surgical Society; Alumni Association of Norwegian Hospital, Brooklyn (annual); Medical Society of the Borough of the Bronx; Richmond County, N. Y., Medical Society; Brooklyn Medical Association; Thursday, December 13th, New York Academy of Medicine (stated meeting); German Medical Society, Brooklyn; New York Celtic Medical Society; Friday, December 14th, New York Academy of Medicine (Section in Orthopedic Surgery); Clinical Society of the New York Post-Graduate Medical School and Hospital (annual); New York Microscopical Society.

National Committee for the Prevention of Blindness.—The annual meeting of this committee will be held in the Russell Sage Foundation Building, 130 East Twenty-second Street, New York, Wednesday afternoon, December 12th at 4:30 o'clock. Hon. William Fellowes Morgan will preside, and the speakers will be Prof. George B. Fryer, of Shanghai, and Mr. Gordon L. Berry. Mr. Berry's address will be illustrated with lantern slides and motion pictures.

No Typhoid Fever Around Fort Leavenworth.—Reports to the United States Public Health Service from Surgeon Robert L. Wilson, who is in charge of sanitary work in the civil district surrounding Fort Leavenworth, Kan., state that not a single case of typhoid fever occurred in the district during the month ending November 14. The fact that such a record is possible is attributed to extensive antityphoid inoculation, close supervision of drinking water supplies, and improvement in methods for waste disposal.

Pneumonia Prevalent in New York.—Figures published by the Department of Health of the City of New York on December 4th indicate a marked increase in the number of deaths from pneumonia. The following weekly record for the past three years shows a steady increase in the number of deaths since the first of November:

	Last week in October	*First week in November*	*Second week in November*	*Third week in November*	*Fourth week in November*	*First week in December*
1915	71	83	99	108	141	165
1916	144	149	159	159	162	184
1917	155	150	164	188	233	249

While the outbreak of pneumonia cannot be called an epidemic, the matter is receiving the serious consideration of the health department.

American Firms Licensed to Make Salvarsan.—The Federal Trade Commission has entered orders for licenses to three firms to manufacture and sell the product heretofore known under the trade names of Salvarsan, 606, Arsenobenzol, and Arsaminol, and hereafter this drug will be manufactured and sold under the name of Arsphenamine. The Public Health Service has prepared rules and standards for the manufacture and testing of Arsphenamine, and will supervise its manufacture. The three firms which will be hereby permitted to manufacture and sell Arsphenamine are: Dermatological Research Laboratories, of Philadelphia; Takamine Laboratory, Inc., of New York; and Farbwerke Hoechst Co. (Herman A. Metz Laboratory), of New York. Before the war began the patented drug was sold at $4 per dose, which is approximately $3,500 per pound, and speculatively it has brought as high as $35 per dose. While the price of the product is not fixed at this time by the commission, the right to fix prices is retained, and a price of $1 per dose to the Army and Navy, $1.25 per dose for hospitals, and $1.50 per dose for physicians are the prices at which some, at least, of the licensees have stated that they intend to offer the licensed drug.

Health Conditions at Camp Wheeler.—Major General William C. Gorgas, surgeon general of the army, recently took a trip to Camp Wheeler, Macon, Ga., for the purpose of making an investigation of health conditions there. He was accompanied by Colonel Dean C. Howard, of the Regular Army, recently health officer at the Canal Zone, where he was in charge of civil sanitation; Major Victor C. Vaughan, Marine Officers' Reserve Corps, recently professor of hygiene at the University of Michigan; Major William H. Welch, Marine Officers' Reserve Corps, recently professor of pathology at Johns Hopkins University, and Major Theodore C. Janeway, Marine Officers' Reserve Corps, recently professor of medicine at Johns Hopkins. It was found that there had been a sharp epidemic of measles, about 3,000 cases, and at the time of Colonel Gorgas's visit there were 300 cases of pneumonia in the hospitals. During the past month there had been about sixty deaths from pneumonia. A few cases of meningitis, scarlet fever, and mumps were also reported. There are over 22,000 men at this camp, and Colonel Gorgas attributed the outbreak of disease to the crowded condition of the camp and the exposure of the men to cold without suitable clothing. He recommended that more space be given each man and additional shelter; that no new men be brought into the camp until the epidemic had subsided; and that an observation camp be established, where all new arrivals will be kept under observation until the main camp is free from infection.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

TREATMENT OF HERPES ZOSTER.

By Louis T. de M. Sajous, B. S., M. D.,
Philadelphia.

(*Concluded from page 1049.*)

In the preceding issue special reference was made to that form of herpes zoster, the primary or idiopathic variety, in which infection of the posterior root ganglia is believed to play a leading rôle. The significant observations of Rosenow and Oftedal, in which streptococci from the tonsils and peridental tissues of zoster cases caused apparently herpetic skin lesions in animals, were mentioned and the possibility suggested of using bacterial vaccines clinically with therapeutic advantage. In 1913, V. Raymond and Lot, of Paris, had already cultivated a gram positive coccus from the blood of cases of zona and six days later had noted vesicular, papular, and crusted lesions on the thorax, including an area near the spinal column, in these animals. Upon sacrificing the latter, hemorrhagic lesions, as well as a few of the organisms themselves, had been found in the affected ganglia. These investigators also published a report of a case of experimental production of zona in man, a zosteriform eruption appearing thirteen days after injection into a human subject of a six day old culture of the previously cultivated coccus.

Apart from any attempt at bacterial therapy, measures calculated to increase the resisting powers to infection and to favor return of the inflamed neural tissue to normal are manifestly indicated. Complete physical relaxation through rest in bed, coupled with absence of mental strain and as much as possible the throwing off of business or other preoccupations, can undoubtedly, as in the acute infections in general, be of marked assistance in overcoming the morbid process. Free evacuation of the bowels seems all the more advisable in that absorption of toxic material from the intestine has been considered the main etiological factor in certain cases, and in any event there is a possibility that toxic absorption may, through irritation of nerve tissue, enhance the ill effects of infection in the structures directly involved. In this connection calomel, followed by a saline, is serviceable; subsequently, the bowels should be kept acting by mild saline treatment each day if necessary. The diet should be such as will place no unnecessary burden on the digestive and assimilative functions; immoderate eating in these cases has, in fact, been repeatedly observed to cause a marked increase of the pain.

According to Artault, 1915, early use of a blister over spinal nervous structures believed affected may cut short the disease; if it is applied before the eruption has appeared, development of the latter, he states, is often prevented. Various systemically acting drugs have been given in the hope of favorably influencing the morbid process. Thus, arsenic is used, frequently in the form of Fowler's solution in doses of three to six minims three or four times a day. Zinc phosphide in doses of one sixth to one third grain every two or four hours has seemed beneficial to some, though its mode of action, if there is any, is as yet far from clear. Combined administration of zinc phosphide and quinine has been advised. Probably more removed from empiricism, in the light of present day knowledge in pharmacodynamics, is the use of one of a series of analgesic drugs; concerning some of these at least it has been said that, while relieving the pain, they may also exert a favorable action on the disease process. That these two actions are not necessarily unrelated is illustrated in the effect of salicylates in rheumatic fever, in which these drugs both allay the pain and curb the morbid condition. Apart from the supposed direct action of the coal tar analgesics on sensory nervous structures, as well as from any possible direct antiseptic effect of the salicylates on rheumatic infection, we may note that in 1902 Wiechowski showed experimentally antipyrin, salicylates, and related drugs to cause a prolonged constriction of the intracranial vessels. To this action has been ascribed, at least in part, the relief from most forms of headache procured by these drugs. Assuming that the same vasoconstrictor action may be exerted in the case of a hyperemic Gasserian or spinal ganglion, a possible explanation of any actual benefit from these drugs in herpes zoster would thus be suggested. Gottheil, 1913, has noted distinct benefit in severe cases from early and long continued use of acetylsalicylic acid or the salicylates, including antipyrin salicylate. According to Thomson, 1914, nothing equals the administration, for severe pain in zoster, of dram doses of fluidextract of ergot, a drug considered essentially a vasoconstrictor. Zinc phosphide has also been credited with analgesic power in this disease. Where all the less dangerous remedies fail, morphine may have to be employed. Dabney, 1914, has substituted codeine, one half grain hypodermically.

In the local treatment, an obviously important measure from the standpoint of functional rest of an irritated and inflamed part is the prevention of all peripheral irritation which would react on the affected ganglion. This is all the more urgent in that even slightly irritating applications may augment the size and severity of the surface lesions. Prevention of local infection being also a desideratum, the best procedure perhaps is to use no local remedy at all, but to apply, where practicable, a protective shield consisting of a ring of some soft material, enclosing cotton and passing around and outside the affected area, with a sheet of cardboard supported over it to prevent contact with the bedclothes. Strapping with zinc oxide and rubber adhesive plaster, or the use of a fairly tight bandage dressing, a measure evidently calculated to reduce painful hyperemia, has been warmly recommended. Where some bland, sterile dusting powder, such as talcum or starch powder with ten per cent. of finely powdered boric acid, a mixture in equal parts of talcum powder and zinc oxide, or zinc stearate, is employed, it is well in addition to apply over it a tightly held layer of muslin or other form of binder in order to prevent all rubbing of the affected surface. Rupture of the vesicles being undesirable owing to the possibility of complicating infection of the inadequately protected underlying tissues, aqueous applications, which might lead to maceration, are as a rule to be avoided. Less cleanly than dusting powders, freely applied, is the use of an ointment, especially zinc ointment or Lassar's paste. Under the latter, which contains five grains of salicylic acid to the ounce, together with petrolatum, zinc oxide, and talc, the lesions, according to W. F. Robinson and R. Hirschler, 1914, tend to dry up and heal without rupturing.

The possibility of allaying pain in zona by external application of analgesics raises a question as to the mode of action of this procedure, if the ganglion is itself prominently involved in the inflammation. In the first place, in the traumatic variety of herpes zoster, the nerve involvement is held to be wholly superficial, apparently only the nerve terminals being affected. The common "idiopathic" type of the disorder is classed as a descending acute neuritis which after a time reaches the peripheral terminals, the close of this period marking the moment at which the skin lesions appear. The manifest pathological changes found in the cutaneous nerves, including even the finer twigs, in these cases insure at least partial relief from the pain upon peripheral use of analgesics and local vasoconstrictors. In the milder cases with pain, camphor mixed, e. g., in Anderson's dusting powder with three parts of zinc oxide and twelve parts of starch, may prove serviceable. Alcoholic solutions of 0.5 to three per cent. phenol, menthol, or resorcinol, to be allowed to dry on and followed by a dusting powder, have also been recommended. Probably most efficient is cocaine, one per cent. in an ointment, or one of the allied local anesthetics. A solution containing 2.5 per cent. of cocaine and one per cent. of adrenalin is recommended by Fabre. A mild galvanic current, the high frequency current, and ionic medication with quinine sulphate seem also at times to have procured distinct relief.

Perforating Wounds, with Entry and Exit Wounds Present in the Skull.—H. E. Gamlen and S. Smith (*British Journal of Surgery*, July, 1917) says that wounds of the above type have been comparatively rare, especially since the universal adoption of the helmet by the British troops, but a certain number have passed through their hands. Biparietal perforating wounds, usually caused by a rifle bullet, have perhaps been the most common examples of this type, and often in the cases that arrive here, surprisingly little damage appears to have been done to the bone or brain. In one case a shrapnel ball had passed through the brain from one parietal region to the other, and was found by x rays to be lying between the temporal muscles and the bone on the side opposite to that by which it had entered. Beyond slight apraxic symptoms the patient seemed little the worse for his injury, and was able to walk a few weeks later.

Nitrous Oxide Analgesia in Obstetrics.—W. C. Danforth (*American Journal of Obstetrics*, October, 1917) reports on 476 cases. He generally begins using the gas at the end of the first stage of labor, though often slightly earlier in multiparæ, especially if the pains cause actual suffering. The advisability of beginning the gas very early in the pains is emphasized. The operator should keep one hand on the fundus, that the oncoming contraction may, if possible, be felt before it is appreciable to the patient as pain. Three to ten inspirations of the gas at each pain are, as a rule, required though in a few cases administration throughout the pain is necessary. In a minority of cases, oxygen was added to the gas. Where violent, expulsive pains rendered laceration imminent, a little ether was added during delivery by allowing the gas to pass through a vessel containing ether. Delivery was thus effected with minimum damage, and rarely with any recollection of it on the part of the patient. No case of fetal death fairly chargeable to the analgesia occurred in the series. There was notable freedom of the mother from mental and physical exhaustion after labor. The analgesia should be used for a period not exceding three hours. Cyanosis must and can be avoided. Where the baby is born cyanotic, the mother should be allowed to inhale pure oxygen for a few breaths before the cord is tied.

Treatment of Alopecia by Ultraviolet Rays.—W. H. Dieffenbach (*American Journal of Electrotherapeutics and Radiology*, September, 1917) reports three years' experience with an ultraviolet ray quartz lamp utilizing three and one half amperes on a 220 direct current. Practically all forms of alopecia respond to a greater or less degree to the treatment, even alopecia senilis showing favorable results and alopecia areata and trichophytina always responding rapidly. The effects of the ray are classed as bactericidal, hyperemic, and desquamative. The bactericidal action is only superficial, unless the exposures are very often repeated. The rays are particularly safe in treatment of the scalp, as no effect on the brain or its membranes need be feared. The superficial hyperemia appears in one hour to one day, according to the age of the patient, and may be intensified to a dermatitis resembling sunburn and lasting three or four days. The distance from lamp to skin is ten inches, and the initial time of exposure fifteen minutes in blondes and twenty to twenty-five minutes in brunettes and gray persons. The younger the subject, the less the exposure. A given area can be treated but once a week, though with due local protection other parts can be treated on the same or following days. The eyes are protected by colored spectacles, and other exposed parts by zinc oxide plaster or two layers of towels. Hair that might obstruct the rays must be held away from the area to be treated, a bathing cap with appropriate windows being convenient. In recent cases a single treatment at times yields a cosmetic cure; in others a dozen exposures are required for satisfactory changes. Patches of ringworm are quickly cleared by the rays; sycosis more slowly. The desquamation from prolonged exposures relieves comedones, acne, eczema, and psoriasis.

Edema in Chronic Parenchymatous Nephritis.—Albert A. Epstein (*American Journal of the Medical Sciences*, November, 1917) believes that edema in chronic parenchymatous nephritis is due to the loss of protein from the blood serum through the continuous albuminuria causing a decrease in the osmotic pressure of the blood, which favors the absorption and retention of fluid by the tissues. Accordingly the indications for treatment seem to him to be to increase the protein content of the blood and thus help it regain its normal osmotic power and to remove or cause the reabsorption by the tissues of the excessive lipoids. The restoration of the protein content may be accomplished by a massive infusion or transfusion of healthy blood accompanied by the removal of an equal quantity of blood from the patient, or by the proper administration of a high protein and fat poor diet. The articles he uses in such a diet are lean veal, lean ham, whites of eggs, oysters, gelatin, lima beans, lentils, split peas, green peas, mushrooms, rice, oatmeal, bananas, skimmed milk, coffee, tea, and cocoa, with restricted fluids and only enough salt to make the food palatable. The daily amount of calories runs from 1,280 to 2,500 and the daily amount of proteins from 120 to 240 grams; of unavoidable fats, from twenty to forty grams; of carbohydrates, from 150 to 300 grams. Other articles of food are added gradually as conditions allow. The method is slow and requires persistence, but he states that the effect is very salutary. The protein content of the blood increases, the lipoidemia subsides, and there is a progressive increase in the excretion of urine and a gradual disappearance of the edema.

New Dietetic Treatment of Diabetes Mellitus.—P. J. Cammidge (*British Medical Journal*, April 21, 1917) calls attention to the great frequency of the occurrence of chronic catarrh of the upper alimentary tract in diabetes and the fact that in the majority of such cases alimentary rest treatment generally gives very good results. They are, however, very prone to relapse unless attention is given to the catarrhal element in the subsequent dietetic management. In that class of cases in which there is marked pancreatic deficiency, as shown by interference with the digestive functions of this gland, starvation treatment is of no material benefit and, as the digestive functions for all classes of food are impaired it is best to adopt a diet which will insure adequate nourishment and not to worry about traces of sugar in the urine. In the hepatic type of diabetes a carbohydrate free diet makes matters worse and starvation is of less value than giving a diet with an abundance of green vegetables and dextrinized starches or pure dextrose. Other food may be added after a time. In the so called gouty type, or in that with disturbance of both pancreas and liver functions, a brief period of starvation may be of help, but satisfactory results can be obtained by limitation of the protein and carbohydrate intake for a few days and then giving one or two vegetable days and an occasional porridge or potato day. The subsequent diet should be adjusted to the patient's tolerance for protein and carbohydrate and the purins should be kept as low as possible. Patients in whom the nervous factors predominate respond well to alimentary rest followed by a diet rich in the green vegetables to supply an abundance of salts. Small doses of magnesium are also of much service. Allen's fasting treatment gives results which cannot be obtained by any other means, but it must be used with judgment. By its use coma and acidosis of severe degrees should be among the rarest complications of diabetes. This treatment should not be made a routine, but in every case the addition of protein to the diet should be made in accordance with the patient's ascertained tolerance for this food. It should be added slowly to a point where the protein nitrogen of the food just equals the nitrogen of the urine plus one gram daily for that lost in the feces. Fat should not be added to the diet until the patient has recovered a considerable tolerance for both protein and carbohydrate. Finally, the whole diet should be materially reduced at regular intervals to prevent overtaxing the patient's defective metabolic functions. If carbohydrate tolerance remains low one or two vegetable days should be prescribed each week.

Shock as Seen in War Surgery.—Edward W. Archibald and W. S. McLean (*Annals of Surgery*, September, 1917) point out that recent English work has demonstrated in shock a serious loss of plasma into the tissues, with consequent rise in the hemoglobin count and the viscosity of the blood in the vessels. In shock produced by histamine, Dale and Laidlaw showed that one half of the plasma had disappeared into the tissues. The same is true in cholera shock. Marshall has found an increase of twenty per cent. in the hemoglobin count in patients in one casualty clearing station. On the other hand, obvious edema post mortem is not always, or even often, seen unless large amounts of saline have been infused. The authors suspect it may be in traumatic shock what Krehl suggested was the case in fever, that the extra water is retained chiefly in the cells themselves and not in the tissue spaces. By exclusion, therefore, it appears that the trouble begins in the vast capillary system, that enormous area of marshy ground in which fluid has such a chance to stagnate. It is known with fair certainty, from the work of Cotton, Slack, and Lewis, that the capillaries possess active contractility. Dale and Laidlaw believe that in shock produced by histamine the tone of the capillaries is lost and blood stagnates. For the present, Archibald accepts this as the point of primary failure in traumatic shock. Pallor, followed in bad cases by cyanosis, is an outstanding feature in their observations. The veins no longer receive enough blood. If they did shock could be overcome by gravity and compression, which, as a rule, cannot be done now. Consequently, the failure in the venopressor mechanism according to Y. Henderson is a secondary effort; likewise the gradual failure of the heart and of the coronary supply, all of which assist in the establishment of a vicious circle. The capillary failure leads to insufficient oxidation, which results in asphyxial acidosis or, as Henderson puts it, "The acid substances thus formed cause the proteins of the tissue to imbibe water from the blood in much the same manner that fibrin swells in dilute acids. Hence the fatally rapid transudation of fluid from the bloodvessels."

Radiant Light and Heat in War Wounds.—William Benham Snow (*American Journal of Surgery,* September, 1917) believes that there is no condition in which radiant light and heat plays a more important rôle than in the treatment of otitis media, as discovered by Dr. Herbert F. Pitcher, of Haverhill, Mass., more than a decade ago. Despite the fact that it has been published again and again, it has not yet been generally recognized by the medical profession. It is a striking evidence of the hesitation of physicians to adopt methods that seem so simple, even when they have been demonstrated to be of great practical value. In conclusion Snow says that it cannot be urged with too much earnestness that light should receive a proper acceptance in therapeutics. For relief of infection and pain, and the prompt healing of wounds there is no agent so efficient today.

Acetozone as a General Surgical Antiseptic.—C. Gore-Gillon and R. T. Hewlett (*British Medical Journal,* August 18, 1917) find that this is a very efficient bactericide and antiseptic for use in the treatment of war wounds. It may be used in strengths of from five to ten grains to the pint for wet dressings and irrigations and to saturate gauze. It can also be used in the stronger solutions by Carrel's method. In very septic cases the strengths may be raised to twenty or even sixty grains to the pint. The solution keeps fairly well, but should be made fresh every week. Bacteriological tests showed that it was markedly germicidal toward Staphylococcus pyogenes as well as the anaerobic Bacillus mycoides, which is a spore bearer. Its germicidal power is considerably reduced, however, in the presence of serum, broth, or pus, but it still remains fairly efficient.

Typhoidin.—John N. Force and Ida M. Stevens (*Archives of Internal Medicine,* March, 1917) report a method for rapidly preparing a stable preparation of typhoidin. Intradermal injection of 0.05 c. c. of a 1:10,000 suspension of typhoidin in phenolated saline produced in human beings definite reactions lasting forty eight hours. In their series, out of eighteen normal persons, seventeen gave a negative reaction; from twenty-six with a history of typhoid, nineteen gave positive reactions, one a doubtful, and six negative, four of whom had questionable typhoid histories. From 152 cases previously vaccinated, twelve out of fifty-six vaccinated during 1916, three out of eleven vaccinated during 1915, thirteen out of twenty-nine vaccinated during 1914, and twenty-six out of fifty-two vaccinated during 1913, gave negative reactions. Of thirteen cases showing a negative reaction to the skin test before vaccination or revaccination ten gave positive reactions after vaccination or revaccination. It was shown that the revaccination of previously vaccinated persons giving negative skin reactions produced local or general reactions no greater in intensity than the vaccination of normal persons and much less severe than the reactions produced by the revaccination of persons showing positive skin reactions. It seems that the routine administration of three doses of typhoid vaccine is not always sufficient as a protection against typhoid. The authors feel that the test may be used as a measure of protection against typhoid.

Application of the Typhoidin Test.—Frederick P. Gay and Albert R. Lamb (*Journal of Laboratory and Clinical Medicine,* January, 1917) say that the criterion of a positive reaction is the presence after forty-eight hours of a definite indurated papule plus a reddish areola of at least five millimetres. In their series of 154 cases, seventy-five per cent. giving a definite history of antecedent typhoid gave positive reactions; from seventy-five to forty per cent. of those that had been vaccinated against typhoid also gave positive reactions, and as a rule in decreasing correspondence with the length of time since immunization. The percentage, 14.28, of presumably normal individuals with no history of typhoid or typhoid vaccination who give a positive typhoidin reaction corresponds closely with the figures reported by others. Emphasis is placed on the purpose for which the test is employed. As the reaction occurs in those persons who are known to be more or less perfectly protected against typhoid, the test was originally designed as presumptive evidence of protection in the individual case when positive. The author suggests that no matter what the final understanding of a positive typhoidin test may be, use of its absence as an indication for revaccination certainly errs on the side of safety in discovering those persons who in spite of typhoid vaccination do not show indications of a reaction to the typhoid bacillus, and who are consequently presumptively those particular individuals who under ordinary conditions of infection will be found to be the least protected.

Liquid Tight Closure and Treatment of Wounds.—Walter H. Taylor and Norman B. Taylor (*Lancet,* September 22, 1917) obtained excellent results in the treatment of heavily infected wounds by passing a catheter into them, packing the wound opening tight with gauze to prevent the rapid escape of fluid, and then connecting the free end of the catheter with an irrigator containing eusol, which was run into the wound at frequent intervals and under considerable pressure. The treatment was wasteful of fluid and dressings and caused much soiling of the bed. To obviate these disadvantages a simple rubber cup was devised, having a soft, concave suction ring for adhesion to the tissues, an inlet and outlet tube, and a projecting cuff which could be opened for the inspection of the wound. This apparatus was applied to the margins of the wound where it was made to adhere watertight. A rubber tube was passed from the inlet opening down to the bottom of the wound; around this was packed some rubber tissue, and the outer end was connected with a Y tube for alternate injection of the eusol and siphonage of the wound. The whole was then bandaged firmly to the limb to prevent stretching of the wound by the fluid pressure. With a head of about four feet fresh eusol was allowed to fill the wound and was then drawn off after an interval through a long siphon reaching the floor. This plan of alternate distention and collapse of the wound cavity permitted access of the antiseptic to the deepest recesses and the results proved the great value of the method, quite aside from the saving of fluid and dressings, absolute cleanliness of the bed and the freedom from pain from changing the dressings. The rubber part of the apparatus is described and illustrated.

Caisson Bronchoscopy in Lung Abscess Due to Foreign Body.—Chevalier Jackson (*Surgery, Gynecology and Obstetrics,* October, 1917) concludes respecting this procedure as follows: While caisson bronchoscopy was unsuccessful in finding the foreign body in this case of Jackson's, the usefulness of the method in the exploration of the interior of lung abscesses, and the safety of such exploration when carefully done, were demonstrated. That a larger foreign body, or one not in an eccentrically located pocket, could be so found seems probable. The usefulness of the new malleable ended forceps in conjunction with ordinary straight forceps in position at endoscopically known stations. Numerous other points though not entirely new are important, especially: 1, the absence of reaction following careful bronchoscopy under local anesthesia in adults; 2, lessened absorption of pus owing to improved drainage following dilatation of the strictured orifice of the abscess cavity; 3, the corrosion of steel in the lung, without disintegration sufficient to permit coughing out, probably because of the firm enclosure of fibrous tissue; 4, the localizing effect of the anteroposterior and lateral röntgenograms with the bronchoscope and forceps at various stations of which the endoscopic landmarks are known.

Emetine in the Treatment of Bilharzian Hematuria.—Diamantis (*Journal d'urologie,* August. 1917) points out that bilharziosis in itself causes but little subjective inconvenience unless tissue proliferation due to elimination of the parasitic ova happens to take place near the ureter or in the prostatic urethra. The great danger in this disease is the urinary infection which sooner or later becomes superadded. Specific treatment, however. is possible only in the uninfected stage, in which the patient merely exhibits hematuria at the close of micturition and occasionally a distinct parasitic anemia. While in already infected cases, except in the presence of only a catarrhal cystitis without infiltration of the floor of the bladder or the prostate, emetine had no favorable action, the author found it to have a striking effect in the uninfected cases, a series of about twenty intravenous injections of the remedy yielding a complete clinical cure. The drug does not produce its effect as a hemostatic, for it had no action on hematuria in a case of tumor of the bladder; in bilharziosis the hematuria does not reappear when the drug is stopped, and furthermore, it causes the ova to disappear from the urine. It must therefore act as a specific, and if it does not kill the worm, it at least arrests the formation of ova. The initial amount given is 0.02 to 0.03 gram, the dose being then increased rapidly to 0.05, 0.07, and 0.1 gram. Small doses are inefficient. The injections are given at intervals of two or three days, until a clinical cure results; this usually requires fifteen or twenty injections, though one case recovered under eight injections. In children the drug is given subcutaneously. In some patients, recovery is already of twenty-two months' standing. No serious result has attended the use of the large doses mentioned, though dizziness is regularly produced, together with marked lassitude, coated tongue, swollen gums, and salivation, which rapidly pass off when the drug is discontinued.

Intravenous Injection of Soluble Salts of Quinine and Cinchonine.—Leonard Rogers (*British Medical Journal,* September 22, 1917) conducted a series of experiments to determine the suitability of some of these salts for intravenous injection in man. He found that the dihydrochloride, urea, and hydrochlor sulphate of quinine and the dihydrochloride and acid hydrobromide of cinchonine were highly soluble and had no immediate effect on blood serum in the strongest concentrations. The acid hydrobromide and bisulphate of quinine caused very slight precipitation in serum in 1:10 solution and none in 1:100. The remaining salts produced turbidity even in dilute solutions. None of the salts caused any increased tendency of the blood to clot and all of the more soluble ones were found to be relatively effective in destroying water paramecia, quinine acid hydrobromide and the dihydrochloride being the most active. Experiments on animals showed the soluble salts to be relatively nontoxic by intravenous injection. The dihydrochloride and the acid hydrobromide were also given to man in a few cases of malignant malaria and of the latter a safe dose was found to be from 0.6 to one gram in ten per cent. solution, while half as much of the former usually produced marked cinchonism. One or two cases are recorded in which the intravenous injection of quinine was immediately effective in preventing death from coma. It is suggested that quinine be tried intravenously, followed by the prolonged oral administration after the acute attack has been controlled.

Repair of Injuries to the Skull by Perforated Plates.—A. B. Mitchell (*British Journal of Surgery,* July, 1917) says that for some time past he has been in the habit of repairing gaps in the skull by the use of very thin perforated silver plates. The silver is rolled out a little thinner than an ordinary visiting card and is then punched with holes one eighth of an inch in diameter, as close together as possible. This has the following advantages: Being very thin the plate can be readily adapted to the convexity of the skull; the perforations have the advantages that they lighten the plate; they admit of the escape of blood and other fluid, so as to avoid compression by accumulation between the plate and the dura or brain; and they provide a simple means of fixing the plate in position. The technic of the procedure is as follows: The plate, which can be cut to any required size by strong scissors, is applied thus: A large flap of scalp is turned down; the opening in the skull is explored, any foreign body is removed, adhesions are freed, and bleeding is arrested; the periosteum is now carefully raised from the skull for about half an inch all round the gap; the plate, cut the necessary size and shape, half an inch in diameter larger than the opening it is desired to close, is now slipped under the reflected periosteum and fixed in position by a series of catgut sutures which, by the aid of a fully curved needle, are carried through the periosteum and out through any of the perforations in the plate which are most convenient. In this way the plate is securely fixed in position and cannot slip. The scalp flap is now sutured in position and a drainage tube inserted at the most dependent angle for twenty-four hours, otherwise a hematoma is very likely to form.

Miscellany from Home and Foreign Journals

Gas Bacillus Septicemia Following Parturition.—Stuart Graves (*American Journal of Obstetrics,* September, 1917) notes that Welch's gas bacillus, which has infected many gunshot wounds during the present war, has also been shown responsible for or playing an important rôle in a number of cases of puerperal sepsis and of sepsis following abortion. In a recent case, examined six hours after death from septicemia following acute endometritis and free of external evidences of emphysema, Graves found the Bacillus aerogenes capsulatus in various internal organs, with numerous gas bubbles but no evidences of cellular reaction in the tissues. The utmost precautions to prevent infection in surgical obstetrics are advocated. Blood cultures and a blood count should always be made when septicemia is a possibility. Radiography is also of advantage for diagnostic purposes in early suspected cases. The old opinion that gas bacillus infection is fatal is erroneous. The prognosis is improved directly with early diagnosis and treatment.

Cerebrospinal Fluid in Acute Anterior Poliomyelitis.—John A. Kolmer, Anna E. Freese, Toitsu Matsunami, and Berta M. Meine (*American Journal of the Medical Sciences,* November, 1917) state that in the recent epidemic of poliomyelitis in Philadelphia the examination of cerebrospinal fluids yielded the following results: The majority of the fluids were water clear, or but faintly opalescent, when viewed against a black background, but one or two per cent. of blood free fluids presented distinct turbidity. Xanthochromia and excessive fibrin formation were not found. About ten per cent. of the fluids presented a small fibrin coagulum after standing several hours. Seventy-seven per cent. of the fluids from all stages showed an increase of total cells; in eighty per cent. of these the counts were not above 100 cells per cubic millimetre of fluid. An increase of the total cells was found in the preparalytic stage, and this increase was present in ninety-five per cent. of cases for at least three weeks after the onset of the paralysis, after which the number of cells gradually decreased. In over ninety-six per cent. of fluids from cases after the onset of paralysis the small lymphocyte variety of cells predominated. Polymorphonuclear cells predominated in less than one per cent., and in over eighty-eight per cent. constituted less than a fourth of the cells present. An increase of protein was found in thirty-two to forty-two per cent. of fluids, different tests for protein yielding different results. During the acute stages the fluids of forty to fifty per cent. yielded a colloidal gold reaction of the luetic and meningitic zone type. All yielded negative Wassermann reactions. The balance of these fluids produced no precipitation at all, or but slight changes in the 1:10 and 1:20 dilutions. The potassium permanganate reduction test yielded positive reactions of indices over 2.3 with the spinal fluids of forty-one per cent. of cases examined from the second to the twenty-first days after the onset of paralysis; a high reduction index indicates an increase of protein in the fluid, and therefore may aid in the diagnosis of acute poliomyelitis. Every fluid was found to contain sufficient dextrose to reduce Fehling's solution in some degree; partial reduction of the amount of dextrose was suspected several times on the basis of a qualitative test. Increased permeability of the meninges was indicated by the presence of natural antisheep hemolysin in the fluids of sixty-six per cent. of cases in the acute stages, and both the hemolysin and a hemolytic complement in thirty per cent. Both of these substances were absent in the fluids of control persons. Substances inhibiting saponin hemolysis were not found in the fluids of cases two to twenty-one days after the onset of paralysis. A definite and absolute diagnostic criterion or laboratory test with the cerebrospinal fluid in acute anterior poliomyelitis has not yet been discovered. A clear or slightly opalescent fluid flowing under pressure, sterile as examined by smear and culture when collected aseptically, poor in fibrin, reducing Fehling's solution, and containing an increased number of cells chiefly of the mononuclear variety, are the most constant findings. An increase of protein and a high potassium permanganate reduction index strengthen the diagnosis, while a colloidal gold reaction of the luetic and meningitic zone types and the presence of natural antisheep hemolysin are helpful diagnostic data.

Wounds of the Spleen.—J. Fiolle (*Paris médical,* August 25, 1917) states that the diagnosis of splenic wounds is always difficult, as the clinical signs are variable and at times paradoxical. It is a mistake to think that early signs of internal hemorrhage must necessarily follow. Almost never, in the first few hours after the injury, is there the least sign of bleeding, unless there is a crushing injury with tear of the pedicle, causing death within a short time. On the second to the sixth day, as a rule, the pulse suddenly becomes frequent and weak, signs of anemia become marked, and the subject unexpectedly succumbs. Dullness in the splenic region or lower in the abdomen due to blood is inconstant and difficult to make out. Some splenic wounds exhibit symptoms of peritonitis and simulate trauma of the alimentary tract by causing sharp pain, abdominal muscular spasm, weak pulse, pinched features, oliguria, and retention of feces and gas. The diagnosis is best based on the nature, site, and direction of the wound. Radioscopy is significant if it reveals a foreign body that has penetrated to a depth of seven to twelve centimetres from the posterior wall. Even in doubtful cases and in the absence of anemia, celiotomy is indicated, lest the subject, apparently in good condition, suddenly succumbs to hemorrhage. The only possible contraindication is the added presence of injuries of other organs so extensive as to imply certain death. The incision should vary according to the site of injury and the probable injuries to other organs. Fiolle has had good results from a posterior incision following the eleventh and twelfth ribs. Splenectomy should be effected whenever practicable. Packing is a makeshift measure, and suture is to be avoided, even where the splenic wound is very small.

Fevers Similar to Enteric Due to Intermediate and Other Microorganisms.—Aldo Castellani (*Journal of Tropical Medicine and Hygiene,* August 15, 1917) states that in the Balkan and Adriatic zones he has observed a number of cases of fever resembling enteric, but due to bacteria similar to those causing typhoid, and paratyphoid, a bacterium similar to the colon bacillus and to intermediate and other bacteria. Among the bacilli very similar to Bacillus typhosus, not clotting milk nor producing gas in any sugar, he found Bacillus lunavensis, Bacillus pritnitzi, Bacillus fœcalis alkaligenes, and others. In the second group were placed organisms culturally and biochemically identical with the A or B paratyphoid bacilli but not influenced serums of animals inoculated with common strains of these bacilli, even after a number of subcultures. Four additional groups were constituted of various other organisms, the groupings being based on behavior as regards milk coagulation and fermentation of lactose and other sugars. The finding of one of these organisms in the blood does not prove it to be the cause of the symptoms, for repeated examinations may reveal true typhoid or paratyphoid bacilli in addition, and occasionally in true typhoid the blood shows streptococci, staphylococci, and coli like and intermediate germs, probably admitted through the intestinal ulcers. In certain cases, however, the intermediate germs are the real cause of the fever; in such cases both blood and stools generally contain them and the blood shows specific agglutinins which slowly disappear after the fever, all examinations for typhoid and paratyphoid bacilli meanwhile remaining negative.

Syphilis and Cardiac Disease.—Gaucher (*Bulletin de l'Acadêmie de médicine,* October 2, 1917) asserts that all lesions of the aortic valve or root of the aorta which do not follow the acute endocarditis of rheumatic fever are of syphilitic origin. Careful examination of aortic cases with vague pains supposed to be rheumatic often reveals signs of tabes, in particular loss of the patellar reflex. Some cases of hemiplegia ascribed to syphilitic cerebral arteritis are in reality due to embolism arising in an incorrectly interpreted or undiscovered aortic lesion. Sudden death is nearly always due to syphilis, whether taking place through aortitis and embolism, perforating myocarditis, or angina pectoris. The latter, when due to inflammatory changes and atresia of the coronaries, is regularly of syphilitic origin, a statement proved by the anamnesis, the serum reaction, and especially by the often very effective action of treatment with mercury and iodides. Cardiac rupture with sudden death is due to gumma of the myocardium. Lesions of the bundle of His and the permanently slow pulse are of syphilitic nature, as are also, as a rule, hypertrophic myocardial sclerosis and the associated interstitial nephritis. From clinical observations Gaucher is likewise convinced that some instances of mitral insufficiency are due to syphilis, vague, so called rheumatic pains are of no etiological significance and often upon inquiry a former syphilitic infection will be admitted. In the absence of acquired syphilis, congenital syphilis may also be a cause of obscure or overlooked heart lesions.

Causes of Abortion.—G. D. Royston (*American Journal of Obstetrics,* October, 1917) presents, as a necessary premise for successful prophylaxis of abortion, a preventable condition in the majority of instances, a statistical study of 178 cases. More than twenty per cent., and probably over twenty-five per cent., of all abortions are induced. Sixty per cent. of the latter result in more or less permanent sterility. Less than one third of aborting syphilitic women give any history or show any physical signs of the disease, which is therefore properly to be detected only by a routine Wassermann reaction in obstetric gynecological patients. Abortion among syphilitic women occurs in over sixty per cent. of their pregnancies. Renal deficiency interrupts pregnancy only when such as to cause symptoms, e. g., lassitude, headaches, insomnia or somnolence, vague discomfort, rise in blood pressure, and irritable uterus, together with a drop in the phthalein output. Such a condition indicates impending abortion, but is often amenable to treatment. Extragenital factors may also produce abortion and must be investigated if subsequent pregnancies are to result in living children. Some lesion in the genitalia will be found in sixty-five to ninety per cent. of all women who abort. Poor general nutrition influencing an interruption of pregnancy is usually only a symptom of syphilis or impairment of the heart, lungs, or kidneys as an underlying condition.

Acute Syphilitic Meningitis.—S. A. Kinnier Wilson and A. Charles E. Gray (*British Medical Journal,* September 29, 1917) review the literature of this little recognized complication or manifestation of syphilis and add the report of a case of their own observation. They point out that this form of meningitis may closely simulate acute cerebrospinal meningitis as well as the tuberculous form and that the differential diagnosis may prove extremely difficult. Syphilitic meningitis of the acute form may occur as an exacerbation in a case of congenital syphilis; it may develop during the secondary stage of acquired syphilis with or shortly after the eruption; or it may occur in the tertiary stage. In the first and third types there are usually other evidences of syphilis, but in the second these may be wholly wanting. Such was the case in the patient coming under observation, who presented the history of a fairly rapid onset and the clinical picture of an acute cerebrospinal meningitis, except that he had no fever. The course of the disease led to the suspicion of incorrect diagnosis, for there was no fever at any time; intraspinal injections of meningococcal serum did not bring about improvement; the condition remained stationary, neither improving nor progressing; and the spinal fluid was primarily not turbid and it never grew any organism. A spinal fluid Wassermann was negative, but a short while later a second test of both spinal fluid and blood proved positive. The injection of antimeningococcic serum produced an increase in the cells in the spinal fluid and a change from a lymphocytosis to a polynucleosis which further confused the primary diagnosis. Under vigorous antisyphilitic treatment with mercurial inunctions and intraspinal mercurialized serum the patient made a perfect and rapid recovery.

Wounds of the Kidney and Renal Hilum.—Patel (*Paris médical,* September 29, 1917) states that war wounds of the kidney alone, as well as wounds of two or more organs with the renal injury the main feature, have been rather uncommon. Two cases he has seen had shell fragments in the renal pelvis, and both presented precisely the clinical picture of stone in the kidney. Neither had presented any sign of severe hemorrhage at the time of the injury, though urine was believed to have issued from the wounds for a time. Both had been treated conservatively. The author, after exact x ray localization, removed the shell fragments by pyelotomy, both patients recovering. A third patient, with a shell fragment in the substance of the kidney, died of infection and hemorrhage before operation was feasible. In the diagnosis of renal wounds, the site of the injury—in the lumbar or lower thoracic region—is an important indication. Copious hemorrhage through the wound is only vaguely significant. Hematuria is a valuable sign, but was absent in one case in which the vascular pedicle had alone been injured, without tear of the pelvis or deep laceration of the kidney tissue. The absence of all peritoneal reaction in both of the cases, reported in detail, indicated that the peritoneum had escaped injury. Nephrectomy in two cases is justified on the ground of hemorrhage requiring immediate intervention. In one of these cases the hilum had been wounded and in the other packing or suture would probably have failed or serious secondary hemorrhage followed. A conservative operation is advocated only for superficial injuries of the renal substance. Nephrectomy was extremely well borne in both instances, polyuria setting in at once after the operation.

New Complement Fixation Test in Leucorrhea.—Louis D. Smith and F. Lee Stone (*Journal A. M. A.*, October 27, 1917) call attention to the fact that the proof of a gonorrheal origin in leucorrhea is a matter of very great difficulty in a large proportion of cases, if not usually impossible by clinical and microscopic examination. By means of a new complement fixation test applied to the leucorrheal discharge they believe that it will be possible to make a positive gonorrheal diagnosis in the majority of cases. The test is made by collecting some of the discharge on a cotton swab, transferring it to about two mils of sterile normal salt solution and grinding it thoroughly in a mortar. The slightly turbid suspension is allowed to stand overnight and then heated to 56° C. for half an hour. Positive and negative controls are used. Using ten tubes, two mils of normal salt solution are placed in each and the tubes are arranged in two rows of four and two of single tubes. One minim of the discharge suspension is added to each of the first tubes in the first and second rows; then three, five, and seven minims are put in the second, third, and fourth tubes of both first rows, respectively. Seven minims are put into the single tube of the third row. Then one minim of standardized antigonococcic serum is added to each of the tubes of the first row and to the single tube in the fourth row. Then to all tubes with the exception of the single one of the third row complement, in the form of guineapig serum, is added as in the Wassermann reaction. All tubes are then incubated for half an hour at 37° C. and sheep corpuscles and antisheep amboceptor are added and the tubes reincubated. The degree of inhibition of hemolysis in the tubes of the first row marks the degree of positiveness of the test. The test was tried in forty-seven cases and the results compared with the other available evidence for or against gonorrheal leucorrhea. In only two having evidence of gonorrhea was the test negative. In the other cases the results agreed with the other evidence.

Bacteriological Examination of the Blood in Irritable Heart.—Grace Briscoe and Lyn Dimond (*British Medical Journal,* August 18, 1917) call attention to the fact that several observers have reported finding organisms in the blood of cases of irritable heart. They made two series of observations, in the first of which they also obtained a number of positive cultures. They were subsequently able to determine that most, if not all, of these were due to contamination. A second series of cultures was therefore undertaken with an improved technic, and one which had been shown to eliminate practically all danger from contamination. In this second series, which included ninety-six observations on forty-three cases, all of the cultures remained sterile, except a few which later became contaminated from the air when the flasks were opened. It was concluded that there was no evidence of bacteriemia in cases of irritable heart.

Periarteritis Nodosa.—Oskar Klotz (*Journal of Medical Research,* September, 1917) states that only forty authentic cases of this rare condition are reported in the literature, to which he adds two. In both his cases the arterial trouble was associated with an acute attack of cold and tonsillitis and some degree of muscle and joint soreness. One case gave a positive Wassermann; the possibility of syphilis was clinically eliminated in the other. Klotz reviews the previous reports, and states that syphilis is not the etiological factor, though it may make the tissues more susceptible to bacterial invasion. Members of the streptococcus group are probably the most important bacteria as the exciting factor, although perhaps no one member of the group is alone responsible. In describing the pathology, he says that the lesions are found along one or more arteries and their branches, being distributed by way of the periarterial lymphatics. The process is inflammatory. It begins in the outer part of the artery, and hyaline degeneration of the media is usually associated with it. Intimal involvement is only secondary through the disturbance of inflammatory or degenerative conditions in the outer arterial coats. Secondary aneurysms with rupture sometimes occur, and there may be nutritional disturbances of the parts supplied by the vessels, caused by thrombosis of the involved arteries. Attempts were made to reproduce the disease in rabbits, using the three types of streptococci, Streptococci mitis, salivarius, and anginosus, which were isolated from the two cases. It was not possible to reproduce the characteristic lesion in the arterial wall which is seen in human cases, though individual reactions similar to those in periarteritis nodosa were produced by the inoculation of the streptococci.

AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

Thirtieth Annual Meeting, Held at Newark, N. J., September 17, 18, and 19, 1917.

The President, Dr. JOHN W. KEEFE, in the Chair.

(*Continued from page 1058.*)

Acute Dilatation of the Uterus (*continued*).—Dr. HUGO O. PANTZER, of Indianapolis, wished to report briefly a case occurring in his practice recently. The woman, thirty-eight years of age, was operated on for appendicitis and had had continuous bleeding for six weeks. She had been married many years but was never before pregnant. The breast changes were indifferent; a diagnosis of pregnancy was doubtful. On dilating the uterus he found the phenomenon described by Doctor Scott and was not sure for a moment that he had perforated the uterus. Then he thought he felt a perfectly intact wall with the instrument. On opening the abdomen from above he found the uterus relatively small and not perforated. He removed the fetus through the opening made in the uterus.

Dr. EDWARD J. ILL, of Newark, N. J., had heard of this a number of times, but he had never seen it. When he thought he had a case of this sort it was that the curette or sound was passed through below the os internum, low down, through the posterior wall of the uterus into the peritoneal cavity. In Doctor Pantzer's case he believed there was a perforation of the uterus low down behind or at either side. He had seen a crochet needle go into the cellular tissue behind the uterus.

Dr. WILLIAM H. HUMISTON, of Cleveland, Ohio, said that in a case he was demonstrating to a class, the patient having had several attacks of appendicitis and had one then, he introduced a dull curette which kept going in without any effort. He found he had perforated the uterus after having told the students how to avoid it. He removed the placental tissue, opened the abdomen, and found a puncture in the posterior uterine wall. He removed the appendix, sewed up the hole in the uterus, and cleaned out a few clots in the pelvis. The patient recovered.

Dr. JAMES E. DAVIS, of Detroit, said that when a muscle was stimulated, with the electric current for instance, the muscle bellied out. If the application of the electric current was continued until extreme irritation was reached, the muscle would lengthen. The enzymes or hormones produced by the epithelium of the chorion in pregnancy brought about a marked condition of edema in early pregnancy. These two conditions might explain what took place. During the first three or four months of pregnancy, according to Young, the epithelium of the chorionic villi threw out an enzyme as a result of which first edema and later on marked dilatation of the bloodvessels were produced. This edema might extend throughout the body, making that condition which was usually regarded clinically as some error in the kidney condition, but it was really due to the enzymes produced by the trophoderm layer of the chorion.

Dr. J. HENRY CARSTENS, of Detroit, said that as a result of profound anesthesia the muscles of a firm uterus became relaxed. It was not the type of dilatation seen in the heart muscle, but a relaxation in which the muscles became flabby. A sound introduced into the uterus simply shoved the uterus up and it seemed ballooned when it was not. The uterus was normal in size and its walls were thin.

Dr. VAN AMBER BROWN, of Detroit, asked Doctor Scott if marked anemia preceded pregnancy in any of his cases. That had been given as one cause of dilatation of the uterus.

Doctor SCOTT, replying to Doctor Brown, said that he would not say that none of his patients had anemia, but some of them did not have bleeding of sufficient moment to produce anemia. Some were young, healthy women and were not anemic. In closing the discussion, he said that the question of the anesthetic causing dilatation of the uterus could be excluded.

Carcinoma in the Stump of the Cervix Following Suprapubic Hysterectomy.—Dr. EDGAR A. VAN DER VEER, of Albany, N. Y., stated that carcinoma of the cervix following suprapubic hysterectomy was not an indication for panhysterectomy exclusively. The dangers of a panhysterectomy were greater than the risk of the spread of carcinoma to the cervical stump if it was promptly treated. Every cervix should be carefully examined before hysterectomy was done, particularly in women who had borne children. The patient on whom hysterectomy has been done should be advised to report promptly any vaginal discharge; curettement should be done and the scrapings should be examined. Removal of the cervix per vaginam was preferable to opening the abdomen when the disease was not too far advanced, and when there was a discharge. The myomatous uterus should be examined at operation as a routine measure.

Recurrences in Carcinoma of the Cervix.—Dr. X. O. WERDER, of Pittsburgh, stated that recurrences five to eleven years after operation had been reported from time to time from various sources, most of which had followed the older methods of operative treatment. Weibel's investigation at the Wertheim Clinic had shown in 185 cases surviving the five year period thirteen recurrences, or seven per cent. He had twenty-seven cases, or 45.76 per cent., living at the end of five years in fifty-nine cases of cancer of the cervix, operated upon by the radical cautery operation. In eight of these cases, or twenty-nine per cent., recurrences were reported from five to nine years after operation. The five year recoveries after the cautery operation, therefore, showed better results than those of Wertheim who was credited with 42.5 per cent. of cures, and the late results after five years were decidedly less favorable. This difference was explained by the more unfavorable material dealt with as compared with that at the large European clinics. Nearly all late recurrences occurred in glandular structures in which metastasis must have existed at the time of operation and had remained quiescent for years before active development. The greater frequency of late recurrences following the cautery operation was, therefore, accounted for by a larger portion of lymphatic involvement due to a more advanced stage of the disease at the time of operation. As only a small proportion of the regional glands liable to invasion from the original cancer focus could be extirpated, this procedure was not believed to have a material influence in reducing the percentage of late recurrences. It might be argued, on the other hand, that an agent which caused cancer metastases to remain dormant for so many years in such a large percentage of cases, must have had some specific effect on the cancer cells not present in the other operative procedures. Some product seemed to result from the intense heat in contact with living tissues which, while not absolutely destructive, rendered the cancer elements harmless in many cases for years.

Dr. EDWARD A. WEISS, of Pittsburgh, stated that in 1898 Doctor Werder performed and described the so called combined operation for cancer of the cervix. Two years later Wertheim described the same operation, and when his attention was called to this he gave Doctor Werder priority, but in none of his subsequent writings had he given Werder credit for the operation. Doctor Werder observed that the mortality was high and the morbidity very great, in this operation, so twelve years ago he began to do what he now called igniextirpation. His results in mortality and morbidity had been remarkable as compared with those from the old operation.

Doctor WERDER, closing the discussion, said that during the last two or three years he had found carcinoma in the cervix in four cases following removal of the uterus some time previously. In most cases operation for cancer of the cervix had been preceded a number of years by hysterectomy for fibroid. Hence in cases of uterine fibroid he was beginning to consider removal of the cervix. In suprapubic hysterectomy he inspected the cavity of the uterus for evidence of carcinoma which he had found in several instances. It was also advisable to do a preliminary curettement to be quite sure of the condition of the cervix. Suprapubic hysterectomy was far superior to a panhysterectomy, with these precautions, and it was accompanied by less mortality.

Clinical Observations on Radium.—Dr. DOUGLAS C. MORIARTA, of Saratoga Springs, N. Y., stated that the value of radium as an adjunct to surgery or as a palliative measure in inoperable cases was not properly appreciated in certain cancerous conditions. In a case of cancer of the rectum in which the patient lived only a few months, the rectum and sphincters which had become functionless again functioned after the use of radium, to the great comfort of the patient and his attendants. While it was believed by clinicians and physicists that the gamma rays were active only at a distance of from three to five centimetres from the points of application and that beyond this distance they would stimulate the growth, Doctor Moriarta believed that the action of the gamma rays might be influenced or stopped by the individual infection or by a peculiar resistance of the tissues. In a case of procidentia in which the uterus was four by six inches in size and the everted cervix presented the appearance of a large cauliflower, five inches in diameter, radium was applied. The growth was relieved, the cervix assumed its contour, and the uterus diminished in size and receded to its normal position in the pelvis. In another case, a negress, forty-six years old, had a fibroid six years old which was undergoing cancerous degeneration. The abdonimal cavity was entirely filled and the uterus and extended to the ensiform. After the application of radium for five months, the growth was reduced to about four inches in diameter and was movable. The distance from the point of application of the radium in the first instance was from twelve to fifteen centimetres and in the latter case about thirty centimetres.

Mixed Cell Tumor of the Kidney in an Infant.—Dr. WILLIAM E. DARNALL, of Atlantic City, N. J., said that while these tumors were considered malignant, they might be benign. Pathologists had apparently never definitely decided whether they were to be classed with carcinomas or sarcomas. Metastases occurred, though late in the course. Adrenal rests in ectopic portions of kidney, ovary, testicle, liver, mesentery, lungs, or bones might give rise to adrenal tumors. Until the etiology was more definitely known no classification would be satisfactory. Pathologists had apparently named the type of tumor according to the tissue cells in which it was observed. Many varying types of cells were found in different portions of the same tumor; therefore every part of the tumor should be examined. The term hypernephroma had been applied to them but hypernephroma might mean almost anything that was a kidney tumor. Improved technic might lower the high immediate mortality from operation. Recurrences took place, it was said, in from seventy to eighty per cent. of the cases. The only hope of saving more of these cases was in early diagnosis and operation. Metastases developed in a large proportion.

Dr. JAMES E. DAVIS, of Detroit, stated that more thorough pathological examinations of post mortem material would reveal more cases of this particular type. Embryonal rests in the genitourinary system or the generative system or in the kidney, were not uncommon findings. These might remain for years and might do no harm, but all at once some condition in the metabolism might cause them to begin to grow very rapidly.

Dr. E. GUSTAV ZINKE, of Cincinnati, said that after an experience of nearly half a century and a study of all of the hypotheses with reference to the origin of malignant growths, he was vividly reminded of the theory of embryonal origin of cancer that had been more or less abandoned. Some embryonal cells became shut off from the rest and remained inert for years. Then, as the result of an accident, a fall, a blow, or some irritation, they became active and the result was a malignant growth.

Dr. GORDON K. DICKINSON, of Jersey City, N. J., said that it was forcibly brought out a year or two ago by Doctor Carstens that severe continued irritation would not always produce carcinoma. Cohnheim's theory of embryonal origin might in the near future be proved true. Irritation and traumatism might enter the field for another type of carcinoma, and the chemical factor.

Gallbladder Trouble Complicating Disease of the Internal Genitals.—Dr. J. Henry Carstens, of Detroit, stated that pelvic trouble, especially fibroid tumors and pelvic adhesions and displacements, were frequently accompanied by gallstones. Five women, it was stated, had gallstones to one man. Inquiry might reveal that women with gallstones had had puerperal fever, septic conditions following labor, or miscarriages, and were confined to bed for four to six weeks. Even if no symptoms were complained of by the patient, gallbladder trouble could usually be detected by palpation. No patient, with even simple pelvic disease, should be operated on unless a full diagnosis had been made of all abdominal troubles, if that was possible, and in doubtful cases the incision should be large enough so that the whole abdomen could be explored. Where gallbladder disease existed, it should be operated at operation for other pelvic troubles, provided that the patient's life was not endangered by prolonging the operation.

Gallbladder Surgery.—Dr. Joseph H. Branham, of Baltimore, said that although removal of the gallbladder was not followed by very serious conditions and drainage was not a dangerous procedure, yet the gallbladder had certain functions and drainage always caused a certain amount of damage to this organ. Operative procedure should not be resorted to until proper medical and hygienic treatment had proved ineffectual. Such treatment generally consisted of proper diet, remedies to keep the flow of bile free and as near as possible normal, and more especially such a course of exercise as would restore the tone of the abdominal muscles and, if possible, the normal contour of the abdomen. The surgical treatment of gallbladder disease had been developed only recently. The advantages of cholecystectomy over cholecystostomy were: 1. It was followed by a greater number of permanent cures. 2. Secondary operations were very rarely needed. 3. Malignant conditions, to be detected only by microscopic examinations, were not infrequently found upon removal of the gallbladder, and thus the danger of malignant development was prevented. Cholecystectomy was also better where there were marked diseased conditions, such as irregularities of the mucosa, the presence of gallstones, fibrous thickening of the gallbladder, or stricture of the cystic duct. Its greatest advantage was that it did away with the adhesions which always followed drainage and were a source of discomfort and danger.

Left Fallopian Tube and Intestinal Stasis.—Dr. Douglas H. Stewart, of New York, said that in any abdominal operation, a concealed gonococcus infection might set up a salpingitis and ileus even though an uneventful recovery might appear fairly certain. His essay was based upon the histories of two patients whose Fallopian tubes showed no change except such as might be expected to occur from an excess of nutrition; a portion of the tubes adhered to the anterior wall of the rectum, formed a band there, obstructed the fecal flow, and at the same time derived a new and an additional source of blood supply. This obstruction being rigid and unyielding and outside of the lumen might be differentiated from Houston's valve, but it was very evidently on the outside of the rectal wall. By it the bowel was converted from a more or less perfect cylinder into a structure whose cross section might be represented by an arc and its chord. The bowel ballooned both above and below the band as a result of fatigue and muscular exhaustion due to the partial but constant resistance of the obstacle. Any surgeon, coming across it during his exploration of an abdomen, would simply term it a band, would cut it, and would relieve all the symptoms, without troubling himself to determine the nature and origin of that band, or even to dignify it with its proper anatomical name. Both of the patients were well past the menopause, yet the new blood supply derived in a sort of parasitic manner prevented atrophy of the adherent portion of the tube. Removal of the hypertrophied section relieved all adverse symptoms.

Ductless Glands in Gynecology and Obstetrics.—Dr. Samuel W. Bandler, of New York, stated that the action of most of the internal secretory glands of the body was now fairly well understood. Therapy that was most efficient in hyposecretion was not so efficient in hypersecretion. Gland therapy was more difficult if more than one gland was upset in the cycle. If the whole cycle of glands was upset, therapy was doubtful. The value of gland extracts was enhanced by the use of drugs which had been found of value. Thyroid extract and ovarian extract so far had been proved most successful when administered by mouth and by hypodermic. Gland extracts were of value for diagnosis.

The Thyroid in Gynecology.—Dr. Herman E. Hayd, of Buffalo, recommended thyroid extract in the treatment of the hemorrhages in women, the causes of which were obscure, until a diagnosis could be established and the best kind of subsequent treatment decided upon. One patient, a woman, forty-three years old, with three children, for the past ten months had had a continuous dribbling and loss of blood, and at times had to go to bed, as the hemorrhage was excessive. Thyroid extract was prescribed and curettage was suggested for diagnostic purposes, but the patient did not take this good advice, and continued to bleed. Doctor Hayd was called and found her in a very nervous condition with the usual symptoms and picture of prolonged and exhausting hemorrhages. Vaginal examination showed the os closed and the uterus in good position and apparently not much larger than normal. A tentative diagnosis of myxedema was made and thyroid extract in increasing doses was given. The bleeding at once became less, strength began to return, and after four weeks another vaginal examination was made, when the os was found open, and a myxematous polyp, the size of a small plum, was protruding, which was easily removed without anesthetic. The woman was now well, with good color, full of energy, and weighed 160 pounds. The thyroid in two grain doses was continued, with five grain tabloids of Blaud modified, for some weeks. Doctor Hayd did not believe it was a mere coincidence that this polyp was found expressed out of the uterus during, but independent of, the thyroid treatment. The bleeding was at once influenced and notably decreased after a few days of thyroid medication. She took four grains, three times a day.

He could detail a number of encouraging experiences in the treatment of prolonged menstrual bleeding with thyroid therapy when a previous curettage did not bring about the expected relief. Perhaps some of these cases were due to a general fibrosis of the uterus, or to some disturbed circulation in the organ, and not to a thickened and softened endometrium where curettage was usually effective. In the amenorrheas of young girls, where the periods were irregular, scanty, or absent, he had of late years relied upon thyroid feeding in gradually increasing doses, in conjunction with good hygiene, proper living, and exercise.

Interrelationship of Female Sex Glands and Pituitary.—Dr. James E. King, of Buffalo, said that the literature of the ductless glands was at present concerned largely with theory. Cushing's work was a valuable contribution to our understanding of pituitary pathology. Certain disturbances of secretion existed which were not dependent upon cellular pathology. These showed varied clinical manifestations which it would be possible to classify after further study and observation. In the study of the physiology of the ductless glands, the interrelationship of all must be kept in mind. The pituitary influenced metabolism in growth of bone and disposal of the carbohydrates. Its influence upon the sex organs had been repeatedly demonstrated, and it was an important factor in the phenomena of puberty and in the sex life of women. The secretion might also influence mental characteristics, as seen in the hyper and hypo stages of acromegaly. The clinical picture of the less evident forms of pituitary dystrophy would vary somewhat with the age when the perversion occurred. Occurring before puberty, menstruation either failed to appear or was irregular and scanty, and there was evidence of disturbed carbohydrate metabolism. A diagnosis of infantile uterus was usually made. The perversion occurring after puberty was evidenced by menstrual disturbance and rapid increase in weight. Married women who suddenly gained greatly in weight, with menstrual disturbance or amenorrhea, represented an interesting type. They were obsessed by a belief in their pregnancy. There was high sugar tolerance. The designation of this syndrome as the pseudocyesis of hypophysical dystrophy was suggested; also the possibility of maternal love in the lower animals being the result of pituitary secretion. The therapeutics of glandular perversions at present were unsatisfactory.

President's Address.—Dr. John W. Keefe, of Providence, R. I., said that it would not be difficult to show, from the history of medicine, that the education of the mind had always accompanied the education of the hand, the hand being, to adapt a phrase of Burton Sanderson, "the scientific instrument of the surgeon." When the mind languished, the cleverness of the hand was diminished, and when the hand failed in its ministrations the mind ceased to grow. So the surgeon, if he would be a skillful craftsman, must be first a skilled thoughtsman. The surgeon's manual dexterity applied to the diseased human body the principles of anatomy, physiology, and pathology. Converting his concepts into acts, he thus became the mediator between the theories of the schools and the lives of his patients. Let us, therefore, banish from our minds, if indeed we ever entertained it, the superficial and quite erroneous view that mechanical facility alone was the chief attribute of a successful surgeon. How far, think you, would mere manual dexterity have carried a Murphy, a McBurney, a Bigelow, or a Senn, did they not possess also the wide sweep of intellectual vision which opened to them hitherto unexplored fields for research and gave them that mental alertness which was the prerequisite of their notable achievements? The hand, the eye, the mind, working in mutual helpfulness, constituted the ideal surgeon.

Influence of Pregnancy on the Development, Progress, and Recurrence of Cancer.—Dr. William Seaman Bainbridge, of New York, cited two cases of malignancy in pregnancy which seemed to indicate a distinct influence of pregnancy upon the initiation, progress, and recurrence of cancer. In the first case, recurrent carcinoma of the breast, there was a previous history of amputation of the right breast fourteen months earlier. When first examined, the patient, a primipara, was nearly five months pregnant, and had a large mass in the right axilla and another above the clavicle, with metastases in the right lung. The patient and family refused to submit to the termination of pregnancy, and despite indicated treatment the disease extended rapidly and fatally in less than a year. The child was born at term and lived one month. In the second case, sarcoma of the eye, the patient, a mother of two children, was pregnant seven months when first seen. At this time she had a small growth which was promptly excised with an apparently safe margin of healthy tissue. There were three other successive operations for rapid recurrences and extension of the disease, all within a period of two months. Termination of the pregnancy had been refused and a healthy child was born at term. One month later the patient succumbed.

In the first case the growth above the clavicle was probably not malignant until pregnancy took place; from the history of the second case it would seem as if the beginning of the development of the sarcoma was closely related to the beginning of the pregnancy, and that the almost terrific rapidity of development and recurrence after operation was commensurate with the progress of the pregnancy. From these and other personal observations, as well as from a digest of the literature, it was apparent that the weight of opinion substantiated the position that pregnancy exercised a stimulating, and hence a malign, influence upon coexistent cancer, not only of the organs most closely concerned in the pregnancy, namely, the uterus and breast, but of any part of the body. Therefore, in all such cases, especially in those similar to the second, there seemed little ground for delaying, or for failing to terminate the pregnancy as early as possible. It was interesting to note that relatively little attention seemed to have been devoted to the question of the influence of pregnancy on the development of cancer other than cancer of the uterus and breast, particularly the former.

Treatment of Appendicular Abscess.—Dr. W. A. B. Sellman, of Baltimore, stated that the important features in the treatment of appendicular abscess were: 1. Bring the sac up and wall it off so that the purulent fluid might not infect the surrounding tissues; secure drainage after being emptied at its most dependent portion; and prevent choking and obstruction of these drains. 2. Protect the healthy parts by using rubber tissue around drains and upon the skin around the abdominal wound. Change the fluff gauze whenever it had become saturated with the discharges. Do not withdraw drains until satisfied that they had accomplished all that could be secured by their use. 3. Stimulate granulation and destroy pyogenic tissues by irrigation. Keep the patient in the most favorable position to secure drainage. 4. If the appendix and intestines showed evidence of gangrene and the patient was threatened with shock, refrain from removing the appendix, as many of these cases recovered, whereas if the operation was prolonged they died. In the majority of cases no postoperative symptoms developed. The speaker had patients who had been operated upon five to eight years without the development of any indication for a secondary operation. Experienced surgeons asserted that ten per cent. required the secondary operation. His experience did not coincide with these statistics.

(To be concluded.)

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Book Reviews.

[*We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.*]

A Treatise on Regional Surgery. By Various Authors. Edited by John Fairbairn Binnie, A. M., C. M., F. A. C. S., Kansas City, Mo. Volume I. With three hundred and fifty-one illustrations. Philadelphia: P. Blakiston's Son & Co., 1917. Pp. xiii-652. (Price $7.)

This volume deals with traumata and diseases of the scalp, skull and contents; harelip and cleft palate; injuries and diseases of the face and jaws; trifacial neuralgia, the buccal cavity, tongue, salivary glands, pharynx, nose, ear, neck, larynx, trachea, bronchi, and esophagus; thyroid, parathyroid, and thymus glands; surgery of the heart, pericardium and diaphragm; and the female breast. It is conceivable that a treatise of this sort may have a certain field of usefulness—and of this sort the work under consideration is above the average. Precisely what purpose such agglomerations serve is rather difficult to understand, unless their *raison d'être* is their usefulness in preparation for examinations, or as mental "first aids" when one has not time to orient himself thoroughly in some emergency. Then why not call it a "compend" instead of a "treatise"? In this first volume the territory covered is enormous. With very few exceptions, the monographs bear the same relation to really informant writings as does the Automobile Blue Book to the more prolix Baedeker. The great fault, as usual, is the tendency to epitomize to an extreme degree. This is probably inevitable in this kind of publication. The contributors are authorities in their various fields, but the obvious demand for condensation and succinctness has very evidently restrained most of them from telling us, in detail, what we really want to know. Typographically and as to its illustrations this book is to be emphatically commended. For reference, it will be found most convenient and, in a way, valuable.

After Office Hours.

When the *Smart Set* violates its custom of never using serials, we may be sure that something unusual is responsible for it. And The Tentative Demise of My Friend Creighton, a three part serial, beginning in the November number, is indeed unique. A wealthy, handsome, and accomplished man is uncertain which one of five superlative women he wishes to marry, so pretends to die, in order that their behavior may furnish the criterion he needs.

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DIARY OF SAMUEL PEPYS, M. D.

November 8, 1917. News of a great victory won by our forces. God bless them! An I were a younger man, I would be off to France. November 11, 1917. The barber being done with me, I went to church and heard a very good sermon of Mr. Blanks. I did heartily agree with his remarks anent pride and haughty spirit. Then home in great haste for I did fear me that the dissolute cousin of my wife would speak to us for he was at the church and methought was trying to make his way to us after the services. My wife says it does a doctor no good to be seen familiar with persons who dress as badly as he and I agree with her. Visited in my Sunday office hour by Doctor Smith who makes a subscription book for the Red Cross. I gave fifty dollars, as by the blessing of God, I have done very well since so many of my brother practitioners went away to the war. He did promise me that my name would appear in the newspaper at least three times, which will be a great help as they do not let us men of physick advertise any other way.

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Births, Marriages, and Deaths.

Married.

Boyd-Shea.—In Springfield, Mass., on Thursday, November 22nd, Dr. Francis P. Boyd, of Springfield, Mass., and Miss Margaret Shea.

Jelliffe-Dobson.—In Roslyn, Long Island, on Sunday, December 2d, Dr. Smith Ely Jelliffe, of New York, and Miss Bee Dobson.

Died.

Copp.—In Jackson, Miss., on Friday, November 16th, Dr. Isabelle R. Copp, aged seventy-three years.

Curran.—In Yonkers, N. Y., on Wednesday, November 21st, Dr. Sylvanus C. Curran, aged seventy-one years.

Ermentrout.—In Eldridge, Cal., on Wednesday, November 14th, Dr. Sallie J. Ermentrout.

Fetherolf.—In Allentown, Pa., on Monday, November 19th, Dr. Abraham P. Fetherolf, aged seventy-three years.

Griffis.—In Fountain City, Ind., on Tuesday, November 20th, Dr. William T. Griffis, aged seventy years.

Jones.—In Grass Valley, Cal., on Monday, November 19th, Dr. John T. Jones, aged sixty-two years.

Koontz.—In Charleston, W. Va., on Tuesday, November 20th, Dr. James W. Koontz, of Louisville, Ky., aged forty-six years.

Lowery.—In Homer, Ill., on Saturday, November 17th, Dr. Joseph E. Lowery, aged fifty-seven years.

Malatesta.—In Philadelphia, Pa., on Friday, November 23d, Dr. Joseph M. Malatesta, aged fifty-two years.

Melde.—In Chicago, Ill., on Friday, November 16th, Dr. Olaf T. Melde, of Spokane, Wash., aged forty-eight years.

Mills.—In Janesville, Wis., on Sunday, November 18th, Dr. James Mills, aged sixty-five years.

Norris.—In Philadelphia, Pa., on Saturday, November 24th, Dr. Albert A. Norris, aged sixty-four years.

Porter.—In St. Louis, Mo., on Friday, November 16th, Dr. Henry L. Porter, of Seneca, Mo., aged seventy years.

Rowley.—In Culmerville, Pa., on Tuesday, November 20th, Dr. Daniel G. Rowley, aged fifty-nine years.

Smith.—In Los Angeles, Cal., on Saturday, November 17th, Dr. Everett R. Smith, aged seventy-one years.

Underwood.—In York Springs, Pa., on Saturday, November 17th, Dr. Howard A. Underwood, aged seventy-four years.

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Original Communications

FOOD CONSERVATION.*

By Anthony Bassler, M. D.,

New York.

In 1870, France was in favor of war with Germany, believing herself to be in a state of military preparation. The first serious conflict took place on August 4th at Weissenberg. A series of battles occurred and the Battle of the Sedan, which practically marked the end of the war, took place on September 20th. While there was more or less fighting after this, the war was over as far as the Germans were concerned. The French were defeated, and the reduction of the French military forces, from the beginning to the Battle of the Sedan, took Germany only twenty-nine days. Although this was half a century ago, the world has still not learned the lesson of German military preparedness, and today we still have the strikingly sad examples of inefficiency on the Allied side. Probably the most prepared country on the Allied side at the opening of hostilities was France. France had had compulsory military training and had been in a fearful state of mind ever since the Franco-German War. It was not long after the Germans had invaded Belgium that it was again apparent to France that her military efficiency was at a distinctly lower level than that of Germany. As far as England and America were concerned, they surely were in no state of preparedness, not even so much so as the French.

Beginning with the Franco-German War and through all this half century the world has been cognizant of the constant strengthening of the military power of Germany. Yet the democratic forms of government have accomplished practically nothing toward the inauguration of a policy which would be of value in the present emergency. As a part of military preparation of the Teutonic country, food was an important factor, and Germany, recognizing the importance of food, as well as a general policy of conservation of raw materials and all material which would influence the prosecution of war, carried out a careful policy of noting and indexing. There was in Berlin a knowledge of practically every stick, stone, and bit of living material within the boundary of the German Empire. This information was constantly at hand, and plans pertaining to the utilization and conservation of it had all been worked out years before in the event of hostilities. There was not a house, a tree, a shrub, an animal, or anything in the German Empire which was not known in the Berlin military offices, so that promptly when war broke out all the various activities which pertained to the conservation of resources were immediately put in motion, with the result that today we see this marvelous military nation actually conducting a war against the entire world, maintaining her position, and often doing almost superhuman military feats. Let us not forget that in times of war the business of war becomes the whole business of a nation. Leaving out of consideration the other countries, it is true that America had sufficient time to consider preparations for war. After the sinking of the *Lusitania* and the establishment of strained relations, surely sufficient time elapsed to prepare to a certain extent in the necessary direction. Yet nothing was done until war was declared. Today we have the spectacle of a country of the fullest freedom with a central government undertaking to control matters pertaining to war. An important factor in this is food. We have not only to feed our own civic population and our own army, but the army of the allied countries are heavily dependent upon us for sustenance. The inauguration of this control immediately brings home to each individual of America a matter which heretofore has been absolutely neglected. Before discussing this I shall direct attention to several factors pertaining to the country in general.

It has been stated that this war is a contest between autocracy and democracy. America for many years has been the land of plenty, and there have been no efforts toward conservation in any direction. It has been customary in the West to cultivate large wheat fields for one or two years, and usually the third year the land was so poor that the farmers moved off on to new land which was fertile, leaving the barren soil behind. There was a constant use of new lands and the fruits of Nature without any effort to conserve resources which Nature bestowed. Now suddenly all this is changed and much is expected of America which America has had no experience in accomplishing. What might be termed the economic education of the people of America is still at a low level.

Great industries have been established and efficiency in their operation is a well known and manifest factor. In a general way, however, America has been more accustomed to accumulate and spend

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wealth as quickly as possible. Economy practised by the people has been practised for the most part by those coming from Germanic countries. The average American and the average foreigner of a low grade, as a rule, are not economical or saving. It is well known that the poor of America have no knowledge of conservation and economy. In New York, as well as elsewhere, it is apparent even to a casual observer that more money is spent for food than is justified by nutritional requirements and that the average housewife in the poor family has no essential knowledge of cooking or economy as far as the table is concerned. The rich indulge in luxuries and expensive social activities, but considering incomes and the amounts of food required, the poor spend relatively more for food than any other class of people. This is due to ignorance of economy and conservation and to a certain extent to the laxity of standards. There are avenues for the propagation of knowledge on these subjects, such as through pamphlets and lectures; but a large class of the population will make no effort for knowledge, and many feel their personal liberties are being interfered with when it is only intended to benefit them.

The United States Government has inaugurated a Food Administration under Mr. Hoover. His task under these conditions is by no means a simple one. The preparations for its activities and part of the propaganda are now known to all, and the time has arrived when America must voluntarily conserve food or submit to government action. On November 1st, the licensing of business concerns was instituted for the purpose of controlling excess profiting in foods. Foods must be sold under supervision, and foods which are to be sold this way represent practically all of the important foods of mankind. Prices have been fixed by the Government, and the producer as well as the middleman will be held down to a reasonable profit for his wares, however much he may have in stock and regardless of how great the demand may be. This meets one of the important points in connection with the subject since the price of food is important in connection with conservation of it. The previous acts of the Food Administration have in the main directly benefited the people of the allied countries and indirectly those of the United States. President Wilson and Mr. Hoover, representing the efforts of the United States, have been generous to millions of people whose needs were greater and more pressing than our own. Based on the past rate of food utilization in America, France and England would go to pieces because of lack of food, and the United States then would have to go on fighting alone. This is becoming better and better understood by a constantly increasing body of Americans who may be described as having international minds. For the conduct of the war our normal export of wheat of 77,000,000,000 bushels must be increased to more than 200,000,000,000 to keep our allies from starving. To do this America must eat corn bread and breads made of mixed flours. This interference, apparently, with the life and liberty of the average American citizen has caused considerable resentment and bitter questioning from various groups in all parts of the country. To them statistics are meaningless figures, and there are many others, not so selfish, who resent the ceaseless reiteration of the dictum to save and to eat less, because they always have saved of necessity. The Administration sympathizes with these people deeply and it intends to help them by the license system now undertaken. The main effort of the campaign, however, is to educate those whose habit has been to waste, and there are many of them. The line between the producer and the consumer, which has been a very crooked one, is to be straightened, and the many wasteful, supercost methods of distribution are to be got rid of. This direct fixing of food prices, unlike the fuel law, was not intended to control absolutely, for neither the President nor the food administrator wanted that power. Fixing of food prices had failed even in Germany and wherever else it had been attempted. As far as the price of wheat is concerned, the Government merely said that it considered $2.27 a fair price, and the millers cooperating with the Government have agreed to pay that price. The growers may sell at that or not, as they see fit. They can sell for less if they want to; for more if they can get it. The only absolute price fixing, and it has been done by the action of Congress, is in declaring that next year wheat shall be two dollars a bushel.

The licensing to buy does not provide the fixing and selling price of any given article of merchandise. It, however, does provide that no person in the food business shall charge more for any article than will give him a reasonable percentage of profit over what he actually paid for it. Another provision is against the resale of contracts for the delivery of goods a long time in the future. This is one of the chief causes of the unnecessary increase in the price of food to the consumer, regardless of the original cost of production, and does away with hoarding. There are sixty-four articles of food within the scope of this licensing law. Each applicant for a license must state specifically which of them he deals in and in what one or more capacities he does business, as wholesaler, retailer, supplier of hotels, and so on. Because of its control of the wholesaler or jobber the Government knows just what each establishment pays for articles sold, and if necessary it will let it be known in every village or town just what the grocer or butcher is paying for his goods. At the present time this is important in connection with sugar. We are now suffering a shortage of sugar, due to large exportation, last year's crop having run out, and it being too soon for the new crop to come in. Fabulous sums are asked for sugar which are far beyond its value, and in various parts of the country sugar has been hoarded and has been sold at an exorbitant profit, the merchants thereby taking a gross advantage of the war conditions of the world. Our country, however, is blessed with an abundance of foodstuffs, and if our people will economize in their use of them, confining themselves to quantities required for the maintenance of health, if they will eliminate waste, and if they will make use of those commodities of which we have a surplus, leaving for export a larger proportion of those required by the world now dependent upon us, we shall not only be able to accomplish our obligation to our allies, but we shall obtain and establish reasonable prices at home.

The solution of our food problem, therefore, is dependent upon the actual individual service of every man, woman, and child in the United States. It is an opportunity for everybody to do his or her bit in connection with the war. We cannot accomplish our object in this great war without sacrifice and devotion. In no direction can that sacrifice and devotion be shown more than by each housewife and proprietor of a public eating place in the country pledging his and her support to the Food Administration and complying with its requests. Naturally, the great centre, New York, is looked upon as a fertile field for food conservation. New York's daily food bill is $2,760,000. There is a daily consumption of foods as follows: Beef, 880,000 pounds; calves, 168,000 pounds; sheep, 140,000 pounds; lamb, 68,000 pounds; pigs, 120,000 pounds; ham and bacon, 200,000 pounds; butter, 393,000 pounds; cheese, 152,000 pounds; eggs, 496,000 dozen; milk, 2,500,000 quarts; ice cream, 241,000 quarts; potatoes, 190,000 pounds; fish, 450,000 pounds, and so on. The hotels are expected to help materially in the conservation of food. They may set a splendid example to thousands of persons from out of town who have occasion to visit the city. The Waldorf, for instance, and similar hotels in one week saved 4,000 pounds of beef by the institution of a meatless day. They are now about to inaugurate wheatless days in addition.

It is not difficult to demonstrate our obligation and the necessity of great effort on our part. In normal pre-war times England, Ireland, Italy, France, and Belgium were to a large degree dependent upon imports for their foods. They yearly imported over 750,000,000 bushels of wheat, together with vast quantities of animal and fat products. Belligerent lines have cut off their supplies from Russia, Bulgaria, and Rumania and the demands of Germany on surrounding neutrals have reduced the supply from these quarters. Of much importance is the danger of submarine destruction of shipping, cutting off wholly or partially foreign markets. The great markets of Australia and the Indies are now only partially accessible, and gradually the more remote markets will be more and more restricted until a year from now when our own new ships will be in numbers to help. The last harvest in Argentina was a failure, and until the next harvest even that contribution to their supplies was cut off. Beyond this again much food is lost at sea; perhaps ten per cent. of the actual shipments are sunk en route. Of no less concern to the dislocation of markets and the losses at sea is the decrease in production among the Allies. If 40,000,000 men are taken out of productive labor and put into war and war works, there can be only one result, and that is diminution in the production of food. Further contributing factors are the lessening in the amount of fertilizer which is available. Through shortage of shipping and losses at sea, and the consequent reduction in the productivity of the soil itself, the allied powers are in danger of starvation. A stock taking by the various food administrators and departments of agriculture in Europe shows that the production of cereals this year has diminished to about 525,000,000 bushels of grain below normal. This shortage in production added to normal imports gives 1,250,000,000 bushels of grain that must be imported by the Allies during the next twelve months if consumption is kept normal. Their cattle, sheep, and hogs are diminished by over 30,000,000 animals and these reductions are bound to go on with increasing velocity because short supplies have necessitated eating into the herd. Now the burden upon the United States is clear. During the three year pre-war period we averaged an annual export of 120,000,000 bushels of grain and 500,000,000 pounds of animal products and fats. During the last fiscal year we exported over 400,000,000 bushels of grain and 1,500,000,000 pounds of animal products and fats. We are really overexporting, because we are selling our animals faster than we grow them, and our stock of foodstuffs just prior to harvest was relatively the lowest in our history. Hence the necessity for food conservation, and this necessity will grow greater as the war goes on. Our allies are making every possible effort to reduce consumption and eliminate waste; the principal staples are dealt out to the public under some restriction. Fines up to $500 are levied on persons who throw away stale bread. Europe has seen that while all these restrictions on foods generally show appreciable results, the saving is not as much as one would expect. One third of the population in Europe consists of nonworking individuals, old men, women, and children, for the most part. They are the class upon which the restrictions fall heavily, because men actually engaged in the fighting for national defense have the first call on all supplies, and they, too, are engaged in so much more physical labor than in peace times, that they require more food than usual. An item of importance in this connection is that all of the foodstuffs sent abroad shall be of the most concentrated sort; therefore the commodities which we have to send most advantageously are limited to wheat, corn, beef, pork products, dairy products, and sugar. We are the large corn growing nation, and we are not averse to eating corn, even in place of wheat, as is the case with the Frenchman, or even the Englishman. We have here a surplus of potatoes, vegetables, fish, and poultry, and these commodities do not lend themselves to shipment, either from bulk or for other reasons. We cannot increase, or even maintain our present exports of wheat, beef, pork, dairy products, and sugar without reducing our consumption, and there again is a reason for food conservation.

The logical and sensible first step in adapting our supplies to Allied needs is to substitute on our own table corn, potatoes, vegetables, fish, and poultry for those staples which we wish to export and which I mentioned above. An interesting point in this connection is that we as a nation are not vegetable eaters; by encouraging the eating of vegetables we would really contribute to the public health. We normally raise for export about 80,000,000 bushels of wheat; Canada produces something like 100,000,000 bushels of wheat for export. Europe must import this year 525,000,000 bushels of wheat if they are to maintain their normal bread supply. With our normal export of 80,000,000 bushels we can go but a short distance toward accomplishing that end. If, however, by conservation we increase our export to 200,000,000 bushels, and Canada increases hers to 125,000,000, we shall then come within 200,000,000 bushels of the solution of the problem. By conservation and by substituting twenty to twenty-five per cent. of other cereals in our bread, and by some imports from far distant markets, the problem may be solved, but the margin is so narrow that any failure on our part to provide an extra 120,000,000 bushels of wheat risks disaster to the whole cause in which we are engaged. For us to increase the exports of wheat from 80,000,000 bushels to 200,000,000 bushels means that we must make a saving of about twenty per cent. in our wheat consumption. That is not a great burden for our people to bear. Europeans have not learned to eat corn. Since we are a corn eating nation, twenty per cent. of all the flour we use could take the form of corn. For a hundred years the wheat loaf has been the basis of life in Europe, with the exception of Italy. The art of household baking has long been lost. Most of the bread is baked by bakers. For this reason alone it is almost impossible for our allies to substitute corn bread which cannot be distributed by bakers. Furthermore, the actual household machinery for baking, ovens, etc., have long since been out of existence in most European homes. Again, if we are to ship corn, we must ship it in the form of the grain itself, for cornmeal does not keep well, and European countries have few facilities for milling corn. They are now mixing cornmeal in the wheat flour but there is a limit beyond which cereals cannot be mixed in the wheat loaf and have the bread rise, and that limit is about at twenty-five or thirty per cent.

Another important subject is sugar. We import between one half and two thirds of our sugar from the West Indies. The Allies formerly drew sugar from Russia, Germany, Austria, and Java. They are now compelled to bring their demands to our market, therefore we must reduce our consumption if we are to leave enough for them. The individual consumption of sugar is from eighty-five to ninety pounds per annum. The Allies have placed their population on an individual sugar ration of from twenty-one to twenty-five pounds. Even this relatively small amount cannot be supplied without reducing on our part, and France has asked us to send them 100,000 tons of our supply at once; otherwise they must stop the ration altogether.

Leaving the strictly war side for the moment, I will briefly outline the chemistry of food and the matter of nutrition. The activities on which life depends involve a continuous expenditure of energy and a constant breaking down of body constituents. The energy expended leaves the body chiefly as heat. The material expenditures of the body are shown in the various end products, eliminated through the skin, lungs, kidneys, and intestines. We may consider all these substances, which supply the body either with matter needed for its substance or with energy for its activities, as collectively constituting its food, and any individual compound which thus nourishes the body may be considered a nutrient or a foodstuff. The energy expended by the body is derived from the burning of organic material, chiefly carbohydrates, fats, and proteins. The material expended also includes combinations of various gases and salts. These expenditures are unavoidable, they may be reduced but can never be stopped, neither by resting the body as completely as possible nor by stopping the intake of food. The nutrition of the body includes all the processes which have to do with the upbuilding and repairing the tissues and supplying them with fuel for their work. Most of the nutrient material in food requires more or less change to bring it into the exact form useful in nutrition. These changes, as a rule, take place in the digestive tract, and constitute the process of digestion. The changes which take place in the foodstuffs after they have been absorbed from the digestive tract are included under the general term "metabolism." The metabolism of matter and the metabolism of energy are supported by the food, but if no food is taken they continue at the expense of the body substance. The expenditure of energy can never cease in the living body because it includes the work involved in carrying on the internal processes essential to life itself, and the expenditure of matter cannot cease because the energy for this necessary work is obtained by the breaking down of the organic compounds of food or of the body substance to simpler compounds, many of which are of no further use to the body and must be eliminated. When the food supplies sufficient energy, the body substance is protected; when the food is insufficient, the body substance is burned as fuel and the waste of the materials which make up the body tissue is increased. In order then to consider intelligently the nutritive requirements of the body as regards the substances of which it is composed, it is necessary to know whether the fuel requirements have been fully met. The carbohydrates include the simple sugars and all those more complex substances which are dissolved into simple sugars. On an ordinary mixed diet the carbohydrates are usually the most abundant and most economical.

The next important article of food is the fats. These in the human economy have essentially the same effect as the carbohydrates, namely, the sugar and the starches. They probably, however, are more important factors than the sugars and starches in connection with heat energy. Fat is found in all of the animal foods, also in the vegetable kingdom and in the various dairy products.

The last important items of food are what are known as proteins. These are essentially what I call the three F's, flesh, fowl, and fish. Proteins are found more or less in the vegetable substances, but their value is not as great as that of the so called native proteins, namely, those of the three F's. The proteins possess the faculty of making good the wear and tear on the important tissue elements of the body, the actual cell structures of the body and organs. The body is said to be in nutritive balance when the intake of food is sufficient to meet the expenditures of the tissues and the activity of the individual. In the young during the period of growth a larger intake is necessary for the construction of tissues; one of the saddest phases of war is the limitation of the food of children; their nutrition is usually the first to suffer. God has constituted man to subsist on foods wherever he finds them and in whatever part of the world and under whatever conditions he finds himself to be. After all that has been said pro and con on the question of a vegetarian or any other type of diet, the fact remains that man, by the character of his teeth and structure and functions of his digestive canal, is neither exclusively herbivorous nor carnivorous, but omnivorous; to maintain a normal balance, his diet should consist of foods from both the animal and vegetable kingdoms. It is true that man can exist on either type of diet alone, but there are immutable standards of anatomy and physiology against which no propagandist or faddist can prove to the contrary. That man can subsist on the most diverse selection of food is proved by the diet of those in the Arctic zone as compared with those in the tropical. The Eskimo is essentially carnivorous, while those who live in the tropics are essentially herbivorous. There are certain parts of the world, as India and Japan, where the people live on only two or three articles of food. When, however, enough carbohydrates, fats, and proteins are ingested, life is compatible and the balance of health can be maintained. It makes little difference from what sources the carbohydrates, fats, and proteins are derived; the main point is that they are chemical substances which possess the faculty of maintaining life in man whose alimentary canal can digest them. They are then called foods.

On Texan ranches not very long ago where there were thousands of cattle, there was very little fresh meat and never any milk. Fresh meat was considered too expensive; the coyotes destroyed the chickens, so no eggs were available. The staple foods were boiled beans, bacon, called sow belly, soda biscuits, molasses, canned tomatoes, black coffee, and large dishes of very greasy flour gravy. In this instance the proteins were derived mostly from the beans and the wheat. There are many peculiar ideas regarding articles of diet. In Germany, for instance, light colored meat, such as chicken and veal, is considered digestible and good food for the sick; red meat, like beef, is deemed indigestible. Here in America, on the other hand, red meat is considered digestible and veal very indigestible. There is reason, perhaps, for this, in the fact that in Germany veal is very well cooked, whereas in this country it is not, and on the other hand, in Germany the cooking of beef is one of their unsolved problems. Just before the outbreak of the war, according to the prices of food at that time, I figured that a man at normal work could live on fifty cents a day and purchase his meals in a restaurant, this giving him an ample supply of foods, as well as a considerable selection according to his palate. I suppose that today according to the present prices this would be at least doubled and possibly tripled. Those were days when eggs were twenty-four cents a dozen; now it is hard to get a fresh egg even though you pay sixty cents a dozen for them.

It might be worth while in connection with food conservation to consider a few scientific and practical facts regarding the relative value of different foods, since many of these are not known. There is more actual nutritive value, weight for weight, in barley and beans of various kinds than there is in beef. There is not as much nutritive value in sirloin or tenderloin steak as is found in ribs, shanks, briskets, or even the heart of the beef. Fish possesses quite as high a protein content as meat and is very much less expensive. All the flours have about the same nutritive value, so why not use buckwheat flour, corn flour, or barley flour, and why must it always be wheat? There is so little difference between the various kinds of cheeses that one gets quite as much for his money whether he buys the American or the expensive Roquefort or Swiss cheese. In fact, the American red cheese has the largest nutritive value for the expenditure, and it is the least expensive of all. Chicken has a sufficient nutritive value for animal food, and chocolate, which is very little used as food in this country, is one of the most valuable articles of food that we have. The same may be said of cocoa. All of the fowls and even rabbit has a nutritive value quite equivalent to beef and lamb, and are much more digestible. Oatmeal, which is now quite neglected in this country, has a much higher nutritive value than any cut of mutton; the same may be said of macaroni. Pie has a high nutritive value and when shortened with chicken fat, which makes a better crust than any other kind of fat anyway, it answers the purpose of conservation admirably and gives sufficient nutrition in addition. Rice is a most nutritive substance; the same may be said of shad roe and turkey, as well as nuts.

In eating, however, we are essentially creatures of habit. Several years ago the Childs Restaurant Company undertook a scientific investigation of the nutritive value of the various foods which were sold for five or ten cents and more, figuring out the nutritive value of a dish sold at the same price as compared to another, and the reason why certain foods which had relatively low nutritive value were so much more used by the public than others. I will not go into all the details connected with the study or the deductions found, except to mention one, and this is typical of many that were observed. It was found that foods which contained tomatoes, such as tomato sandwiches, or a slice of tomato on anything were always most popular with the diners. A tomato has a very low nutritive value and for a long time it was a great question in the minds of scientific men as to why the public should be so keen about foods containing tomatoes; why they were willing to pay more for a dish which contained a slice of tomato than would be necessary to buy five or six tomatoes to make up the difference. It was not until somebody delved back into the food history of the human race that the solution was hit upon. It was that the tomato was red and it was learned that many centuries ago it was the custom of the ancients to color foods red so as to make them attractive, and in that way much larger amounts of foods of certain kinds could be sold. Now this is merely an example of many things which we have been living under in these so called modern times, and which have a distinct bearing on the subject of food conservation and the prices paid for food.

The solution of food conservation is to eat more of some foods and less of others and to waste nothing. Corn, graham, and rye bread are delicious; corn in various forms contains nutritious and heating properties superior to wheat and is a most desirable human food. As I stated before, it is difficult to ship cornmeal and its preparation in Europe is not understood. Wheat, on the other hand, is not difficult to ship and its preparation is understood over there. That is why we should save wheat and use the other cereals here as much as we possibly can. Corn, graham, and rye bread answer as good substitutes, and can be made up without the use of butter or eggs. A new cornmeal flour is now on the market and it is most practical and beneficial. Likewise we must save as much beef, mutton, and pork as we can, therefore we should use fish as a substitute as often as possible, perhaps two or three times a week. Chicken and other poultry cannot be shipped, and our New York markets are carrying rabbits which are a nutritive form of local food. There are many recipes for delicious made over dishes, using meat and fish scraps which might otherwise be thrown away. Beans, as I mentioned before, are very nutritious, having the same food value as meat. Do not use butter for cooking; use olive and linseed oil, or perhaps oleomargarine. These give as satisfactory results as butter, and once in a while use jam on the bread as a substitute for butter. As little sugar as possible should be stirred into tea and coffee. Eat all the vegetables and fruit you can. Vegetables and fruits in America are abundant, and the first have not been eaten as plentifully as they should and as plentifully as would be beneficial. Don't waste food in any form, for beside substitution there is great need to save the waste. Encourage serving smaller portions, the clean plate, the use of food wisely; all are in order. There are a hundred avenues of saving, for if we inspect the old garbage can we can see the wastefulness of this country. Remember that we consume nearly double the amount of fats that we need; we waste a fabulous quantity. Save as much as you can on lard, bacon, butter, lard substitutes, and soaps.

There are other features of food conservation of national importance; one of them lies in the whole problem of national saving. Wars are paid for out of the savings of a people; whether we meet that expenditure now or after the war, we shall have to pay it some day from our savings. The savings of a people lie in the conservation of commodities and the saving of productive labor. If we can reduce the consumption of the necessary commodities in this country to a point where our labor can turn to the production of war material; if we can secure that and get to the point where we can free our men for the army, we shall have solved one of the most important economic problems of war. If we are to carry on this war and carry it on without economic danger to the country, we must carry out a major portion of it during the war by the saving which we make at the present time. If we reduce the waste and the unnecessary consumption of food by a matter of only six cents a day, we shall have saved $2,000,000,000 in a year. Remember that the war is nowhere near over; no one can foretell the finish.

Conservation in addition teaches the great moral lessons of temperance, selfdenial, and selfsacrifice. We have been a most extravagant and wasteful people, and it is as truly intemperate to waste foods as it is to take unnecessary drinks. Next year will be a harder one for us in the matter of food than the present, and it will grow harder each year, because we shall have to make an effort to increase the exports over last year and this year; it is obvious that we not only cannot do so without conservation, but that unless we do have conservation, we must expect higher prices. It is often said that high prices are themselves a conservation measure, but I agree with Mr. Hoover that they are a conservation measure of the nature of famine. It is conservation in favor of the rich against the poor. The rich will have all the food and variety they need, but the poor must under this form of conservation shorten their food allowance and lower their standard of living. The only real conservation is one by which the whole population, rich and poor alike, take their part in the provision of these necessary supplies. This can only come about either by forced measures by the Government, such as you see in Germany today by which all are placed on rations and available foodstuffs equally divided, or by a great voluntary effort of selfdenial by which an added supply can be obtained without the vicious action of conservation through price, and this is what America is undertaking to do. May the Lord give us strength to carry it out.

Another phase on the problem consists of a class of people which has been increasing in this country given over to more or less idleness and a great deal of extravagance. Out of this state of affairs there grows a certain amount of class feeling in a country where there should be no class distinctions. There is now an opportunity for that leisure class, by a reduction in its scale of living, to demonstrate its fidelity to the national cause and its willingness to take its full share of the national burden. In so doing that section of our people will have demonstrated something more than mere saving; it will have demonstrated the willingness to serve in our national necessity, even to the extent of personal sacrifice. We are now at the period of the whole question of national service. Here is an opportunity for every man, woman, and child in this country to contribute immediately and directly to the winning of the war. It should be possible to show to the entire population that there is at least one point in which all may serve in this struggle. The women of America have been wonderful in their sacrifices of labor for those at the front. The knitting and Red Cross movements have been a godsend. Here they have an opportunity for another, a sense of service, a sense of contribution to the war itself, and a proof of loyalty and support in each and every individual. America does not want to compel its people by iron clad law or by forcing legal limitations on every individual in the country to accomplish this object. This is not only unfeasible from the governmental point of view, but it is against the instincts of our people. Washington hopes that we are a nation of volunteers, and hopes that we will volunteer here as we have done in other things in the past. It hopes that the same results can be accomplished by stimulating the people with the knowledge that every individual has here a definite service to perform.

We cannot consider this problem from the standpoint of force, but only from the standpoint of voluntary effort. America calls upon all to join as voluntary workers in the hope that we can show in a democratic country a movement the result of which is equivalent in efficiency to autocracy which establishes and maintains efficiency by law and organization. Whether democracy can organize itself without the necessity of autocratic direction and control remains to be seen. If these are necessary, perhaps they will be inaugurated as they are in Germany today. One thing is true, the war must be won or fought out to an apparent finish. If we can secure alliance in this national service in our 20,000,000 kitchens and our 20,000,000 breakfast, lunch, and dinner tables; if we can multiply an ounce of sugar, fats or what not per diem by 100,000,000, we have saved 180,000,000 pounds in a month. If we save a pound of flour a week, we save 125,000,000 bushels of wheat per annum, and this multiplication of minute quantities, teaspoonfuls, etc., by 100,000,000 and 365 days, will save the world, and for such a cause as we are now engaged in it seems to me that there should be nobody who cannot prevent some waste, or who cannot deny himself or herself something, to a service which means the right of life and freedom

21 WEST SEVENTY-FOURTH STREET.

TONSILLOSCOPY AND CURETTAGE OF THE TONSILS IN ADULTS.*

A Test of Focal Infection and a Means of Removing Pathogenic Detritus.

BY THOMAS R. FRENCH, M. D.,
New York.

(*Concluded from page 1065.*)

In individuals with excessively intolerant fauces, curettage of the tonsils may be absolutely out of the question. We have met with defeat for that reason in only a few cases although we must confess to having been perilously near it in many others. Our plan in tonsil curetting is to anesthetize one tonsil and devote our attention entirely to that in a séance. With a skilled assistant to draw the anterior pillar forward it is a very easy matter to approach a tonsil at almost a right angle to its free face. This is accomplished by turning the patient's head well to one side and by employing a tongue depressor in such a way that it will force backwards the opposite angle of the mouth. Collections of pathological material lying deep in surface pockets or folds, and which cannot be seen by looking at the tonsil from the median line, will often be disclosed in this way. This might be called the direct method of approaching the tonsil with the curette, the indirect method being the approach from the medium line, which for effective work requires the use of angular curettes. In the direct method only straight curettes are used and much more skillful work can be done with straight instruments. Without skilled assistance the operator may draw the pillar forward with the left hand if the patient is able, as he often is, to assist by keeping the tongue out of the way with the tongue depressor. Of course, it is easy enough to cull out surface collections and those retained in large pockets, and the removal of such material often proves to be highly beneficial. The chief difficulty, however, lies in the removal of collections which are partly or completely locked in. By placing a sharp ring curette over the mouth of a closed crypt or pocket and then making firm pressure, or by making firm pressure in various localities inside of a fold or fissure, the ring may be made to break through into a crypt or pocket, conveying in the act a sensation to the hand of having broken through thin silk. When this sensation occurs one may be quite certain that a sweep and a twirl of the instrument will result in securing much or all of the pathological contents of that particular cavity. In addition, it may be said that the sealed mouths of the crypts or sacs in hard and smooth tonsils which have been the seats of long standing disease, will often resist direct pressure alone but will usually yield to a few rapid turns of the curette. The twirling or spinning of a straight curette in a crypt, pocket, or sac is the most effectual means of engaging their pathological contents. Since the aid which is given by the rotary motion was revealed, the time needed to clear the tonsils of all the pathological material which can be reached with a curette has been materially reduced. We regard it as wise to limit each treatment to a dozen or so successful applications of the curette, as too prolonged a séance is apt to result in a local inflammatory reaction which will give rise to a sore throat of several days' duration.

Unless a culture is to be made of the material removed the surface of the tonsil is bathed with a fifty per cent. solution of alcohol just before curettage is begun and in all cases after the use of the curette a minim or two of the same solution is injected into every pocket and cryptic opening from which the necrotic material was released. It may be of interest to note that the ease of reaching and removing collections of detritus increases, at least for a time, as the séances of treatment advance. Presumably, the injections of alcohol into the crypts and pockets causes a contraction of the necrotic material within them and that perhaps will explain the greater ease in securing it.

For tonsils which contain cheesy or waxy material, we regard the applications of alcohol immediately after curettage and also by the patient at home as only second in importance to the removal of the necrotic material itself. Therefore, during the period of treatment by curettage and in some cases for months afterwards patients are instructed to make daily applications of solutions of alcohol directly to their tonsils. As they find the ordinary tonsil syringe somewhat awkward for self use, they may be instructed in the employment of a long medicine dropper, which can be manipulated with one hand without displacing the nozzle from the openings in the tonsil, and from which a very small quantity of fluid can be accurately expressed. If, however, a patient is not an adept in selftreatment, a certain amount of assistance in destroying bacteria within the crypts and particularly within pockets with large openings is rendered by spraying a thirty-three per cent. alcohol solution directly upon the faces of the tonsils, or even by using a twenty-five per cent. solution as a mouth wash. The value of the use of alcohol for the destruction of bacteria in necrotic tissue in the tonsils has been strikingly shown in patients with myositis who were under orders to continue the application of solutions of alcohol after the séances of curettage had been discontinued. They remained free from pain until the applications were omitted, when the symptoms returned, to disappear again as soon as the applications were resumed. As a result of the conservative surgical treatment just described tonsils decrease in size in proportion to the amount of necrotic material removed and, therefore, probably to the number of bacteria destroyed.

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*Read before the Philadelphia Laryngological Society, October 3, 1916.

If, after the removal of a considerable quantity of detritus it is made apparent that the source of any existing symptoms is in the tonsil, then, of course, enucleation must be regarded as the ideal procedure. If, however, a radical operation is not sanctioned by the patient or for any reason is regarded as hazardous by the physician or surgeon, we have at hand a method which in the majority of cases gives excellent results and which we have used in a large number of patients who, having refused or been denied enucleation, might otherwise have been consigned to endless suffering. The method consists in the removal of the plica triangularis followed by the removal of segments of the tonsil piece by piece at different times, and that again followed by curettage and alcohol injections. This method not only removes portions of the tonsil containing foci but also opens the way to a sweeping curettage of the stroma of the gland in every direction until in the course of time every portion of the tonsil has been explored and surgically exploited down to the capsule. In this way if too much haste is not made, a tonsil can be freed of its foreign contents without, or with but little, inflammatory reaction. The removal of segments with a small and very sharp punch reduces the discomfort of the patient and also reduces the amount and strength of the local anesthetic needed. This is painless, or practically painless, minor surgery which with care in address and approach can easily be carried out in nearly every adult subject whose tonsils are a menace to future health or the cause of existing ill health.

Of course, the stroma of the tonsil cannot be entirely removed by this method and, therefore, the objection may be urged that even if practically all the foreign material originally contained in the tonsil has been eliminated, cheesy masses might again form in pockets in the remaining bases with a fair prospect of giving rise in the future to another train of symptoms. The validity of such an objection must naturally be granted but it is clear enough that the patient would be just so much better off because of the greatly reduced amount of tonsillar tissue which could contain foreign material. If then afterward in any case it was deemed desirable and expedient to enucleate the hollowed out bases, they could be as readily removed as if no glandular substance had been taken away. It is simply a question of whether we should offer the patient a compromise between enucleation and no assistance at all, and judging by the improvement in, or complete relief of, symptoms following this method of conservative surgery at our hands, we cannot understand how one can fairly withold in proper cases an offer of the compromise measures. The light application of the curette through the openings presenting in the tonsil, without removal of tonsillar tissue has so often been followed by highly beneficial results that the removal of the substance of the tonsil piecemeal has not always been regarded as necessary. Indeed, many of the happiest outcomes of conservative treatment for the relief of focal infections, in some cases only temporary and in others apparently lasting, have been obtained by light and infrequent curettage through the openings presenting in the tonsils without removal of the stroma. If as complete a destruction of the tonsils as is possible by piecemeal removal is for any reason not permissible, we should at least make the effort to convert every surface fissure and pocket capable of retaining foreign material into shallow basins which will effectually prevent such retentions. This is not elaborate minor surgical work and is often very effective.

Our study of the clinical pathology of, and the effects produced by, the foreign material in diseased tonsils has thus far led to the following impressions: that the collections found in the crypts and pockets with more or less wide open mouths, thus exposed to the air, are of the cheesy variety which after removal look like small balls of wet cotton; that the foreign material found in partly or nearly closed cavities is apt to appear like yellow or white wax and that the material found in closed cavities is puslike in character, the color of which varies from that of bouillon to that of rich cream; that the disorders to which cheesy material may give rise are mainly of the muscular system but it may also be the cause of pain in and about joints which, however, are not themselves apparently involved in disease; that the most striking results in partial or complete relief of affections other than those associated with muscle groups, as for instance neuralgia and other nervous disorders, have been obtained from the removal of necrotic material having the appearance of pus and that the cheesy masses in cavities lying close to the surface and to a certain extent the waxlike masses are very apt to recur. Judging from the lasting relief of symptoms following the removal of puslike material, it is probable that, except as the result of acute inflammatory processes, there is no likelihood of its recurrence. In a case of severe and long standing myositis and endocarditis caused by cheesy collections between folds and in pockets and enlarged crypts, the use of cutting instruments, even in the slightest degree was at first made impossible because of excessive bleeding. As the relief of pain obtained from the use of the curette and alcohol injections was practically complete, that form of treatment alone has until recently been frequently applied during the past three years with the result that now the cheesy material has almost ceased to reform, the size of the tonsils has decreased a half, the myositic pain is negligible, and the patient's health is far better than it had been since the beginning of her illness twenty or more years ago. In addition, the hyperemia and blood clotting time have been sufficiently reduced to make it possible to remove the tonsils piecemeal, which is being done.

While we are as yet unable to determine at once whether pathological collections revealed by the tonsilloscope are giving rise by infection to a particular disorder and while a test by the removal of the collections may prove that there is no relationship, we do not recall an instance in which the curetting out of a considerable number of such collections was not followed by improvement in the general health. Indeed, as the result of a fairly large experience, we now feel able to state with confidence that with adults in whom the tonsils are found diseased but are apparently causing no systemic disturbance, a free curettage followed by alcohol injections with or without piecemeal removal of the stroma will almost invariably result in an improvement in health, the improvement for the most part manifesting itself in a greater power of endurance and higher spirits. At the request of patients who had no especial goal in mind for the relief of existing symptoms but who wished to make a venture for an improvement in general health, we have, in order to determine as far as possible the potency of the contents of pathological tonsils, quite frequently undertaken such treatment and in no case have we been disappointed in the results. This test, which has been somewhat intensively practised during the past two or three years has left no doubt that necrotic material retained or locked up in the tonsils is always in some form and to some degree detrimental to health; and to a far greater extent than we had ever before suspected, such locked in necrotic material is present in the tonsils of man.

The logical deduction to be made from this statement is that an advance in the standard of health of the race would be attained if all diseased tonsils were removed. In the course of time through public enlightenment, together with the simplification and more skilful use of methods of relief, the universal custom of ablating all definitely diseased tonsils may be achieved, but for the present such a hope must be relegated to the realm of utopian dreams. As has already been said, except for the best of reasons clearly demonstrated, the present generation of adults will refuse radical measures but will generally welcome the employment of the minor operative procedures here advocated. It is on that account that we have devoted our attention to their further development.

By conservative surgical treatment and by the enucleation of the tonsils we shall soon arrive at a still better understanding of what systemic disorders are produced by infection from them, and doubtless many surprises are awaiting us. Our own experience with curettage has proved that necrotic tissue in the tonsils was the active and apparently the sole cause of various existing disorders. Some of the disorders were, of course, among those now generally attributed to infection, while others, so far as we know, have not yet been suspected of having such an origin. The conditions and diseases which we have thus far demonstrated without doubt to be caused by foci in the tonsils and which were either partly or completely relieved by curettage are persistently high blood pressure; labyrinthine deafness; neuralgia; neuritis; flat foot; myositis; arthritis; restricted movements of joints without evidence of local disease; bacteriemia; acne; furunculosis; thyroid and various other glandular enlargements—a very marked improvement in one case of beginning exophthalmic goitre; various nasal vasomotor disturbances; June cold; a sessile growth of inflammatory tissue upon a vocal band; gastric and intestinal indigestion; and chronic cough without assignable cause. The explanation of the phenomenon of cough caused by diseased tonsils would seem to lie in the fact that in some cases there are definite reflex areas in the tonsil which when pressed upon with a probe or curette will instantly give rise to an expiratory explosion. Relationships between many other diseases of the body and diseased tonsils are being investigated but more time and the study of a larger number of cases will be needed before definite statements can be made regarding them.

As by the employment of the tonsilloscope and the test by curettage we can determine quite accurately when permanent relief of the systemic disorders due to infection from the tonsils only can be obtained by tonsil enucleation, the question of the propriety of performing the radical operation upon adults under local or general anesthesia is brought still more prominently forward. It is not our purpose to invite discussion upon that question in connection with this paper, but rather to offer the suggestion that now that it seems likely that enucleation in adults will for demonstrable reasons more often be deemed necessary, the further study and development of methods of local anesthesia for tonsillectomy be given the most thoughtful consideration.

This quite naturally leads to the final thought to be expressed in this communication, namely, that if it shall be proved that the tonsilloscope is to increase the amount of intelligent operating upon the tonsils, what shall we do to try to insure better surgical work in the future by which those glands will be enucleated with the smallest chance of subsequent faucial deformity? This question embodies in it a very serious problem for us, as teachers, to attempt to solve.

However lightly the value of the quality and character of the human voice may be discussed by the unthinking and indifferent it, nevertheless, has a very important bearing upon the makeup of a pleasing personality. Our patients have the right to demand of us the best assistance in this matter and so save for them as large a measure of attractiveness as lies within our power. One of America's most popular actors said to the writer not long since: "If in your special field you have the power to conserve the agreeable elements in the quality of the human voice, in singing or in speaking, it is your highest duty to exercise it, for surely the characteristics of the average voice heard in this land are none too satisfying now." We, ourselves, cannot view with complacency the probable flattening and unpleasing quality of the voice in the future of the race as the result of injury to the faucial structures from inexpertly performed tonsillectomies. To us it would seem that the need of better teaching and more practice to effect a higher degree of skill in operating was never so imperative. It is, perhaps, much too easy to get the tonsils altogether out of their beds but the vast array of faucial deformities which stand today as witnesses of defective technics—and no one has brought us to as full a realization of what is happening now in that particular as Doctor Makuen—makes the need of getting them out, not alone for the effects of tomorrow, but of a year hence, the crying need of the hour.

As it has now been clearly proved that the tonsil is so much more frequently the seat of disease, giving rise to infections, than we had supposed, it would appear that the need of the time is that we should all go to school to learn how to enucleate it with the highest possible degree of skill. The test of an operator's skill should in this particular be the result of his work at the end of a year rather than what seems to be done in the operation itself. If the results at the end of a year are satisfactory they and they alone can proclaim the skill with which the operation must have been performed. Our need today is not better methods of operating so much as the better use of the methods which we have.

150 JORALEMON STREET, BROOKLYN.

PATHOLOGY, DIAGNOSIS, AND TREATMENT OF INTERNAL HEMORRHOIDS.*

By HERMAN A. BRAV, M. D.,
Philadelphia,
Rectal Surgeon, American Stomach Hospital and Lebanon Hospital.

Internal hemorrhoids may be defined as varicosities of the middle and superior hemorrhoidal veins, sometimes associated with eversion of the rectal mucous membrane. There is always more or less pain and tenderness, with discomfort in sitting. Allingham describes three varieties of internal hemorrhoids: capillary, arterial, and venous. The capillary hemorrhoid is small and is composed of the terminal branches of the arteries and veins and of the capillaries which join them. The capillary hemorrhoid never protrudes through the anus. It is covered by a delicate thin membrane and this accounts for the free bleeding which follows the slightest injury of its surface by the passage of hardened feces during defecation. To this form of hemorrhoid the name bleeding piles may properly be applied. Some authors refer to this form of piles as the first stage of hemorrhoidal development. An arterial hemorrhoid is of considerable size and consists of a tumor of freely anastomosing arteries which are tortuous and dilated and bound together by connective tissue. Such a tumor is firm to the touch and is liable to inflammation, erosion, hemorrhage, and protrusion through the anal orifice during defecation, returning spontaneously into the bowel after the act has been completed. This form of hemorrhoid is the result of repeated attacks of inflammation of the capillary form of hemorrhoid which causes an increase in the submucous tissue. I shall refer to this form as the second stage of hemorrhoidal development. The venous hemorrhoid consists of a mass of large dilated veins beneath the mucous membrane of the rectum. Repeated irritation leads to hypertrophy and induration of the mucous membrane and submucous connective tissue, and a large bluish tumor is formed, which protrudes during defecation, or the protrusion may be continuous if the patient is not in the recumbent position. This stage is spoken of as the third stage of hemorrhoidal development.

The diagnosis of this most common and distressing malady is not difficult, although errors in diagnosis are of more frequent occurrence than is generally supposed by physicians who do little rectal work. Internal hemorrhoids are likely to be confounded with cancer of the rectum, polypus, and prolapse of the rectum, because these conditions are likewise accompanied by hemorrhage, pain, protrusion at the anus, and a discharge of mucus. Errors are particularly liable to occur in diagnosing the disease as met with in children because prolapse and polypus of the rectum are not uncommon affections in children and present some resemblance to internal hemorrhoids. It is true that internal hemorrhoids is a very rare affection in childhood, but cases have been reported by Allingham, Ball, and others. My own experience has been limited to several cases occurring in children whose ages ranged from five to ten years. The symptoms of a prolapsed and a congested polypus are very similar to those of internal piles, consisting of a protrusion at the anus and occasional bleeding at defecation, but a careful digital examination will disclose the presence of the pedicle to which the growth is attached.

Prolapsus of the rectum is easily distinguished from piles by the characteristic appearance of a reddish purple mass with its depressed central orifice and the annular fold of tissue around the whole anus. The differential diagnosis between malignant growth and hemorrhoidal tumors is an easy matter, as the hard nodules on the side of the rectal wall with its comparatively firm structure and surrounding induration can readily be detected on a digital exploration. The following cases, selected from a number which I saw confused with internal piles, will demonstrate the fact that a wrong diagnosis is often made:

CASE I.—In March, 1903, a woman, aged seventy years, consulted me for what she thought to be bleeding piles. Her history was as follows: In April, 1902, she had an attack of diarrhea associated with rectal hemorrhages during defecation. She consulted her physician who diagnosed her case as internal piles and prescribed ointments to be used locally, and internally some medicine to check peristalsis. She did not improve under this treatment but grew worse every day. When I saw her she complained of a constant desire to evacuate her bowels, but when at stool she passed nothing except blood and mucus. She said she felt as if her bowels were never unloaded, and the excessive straining caused a sharp pain in the rectum. I placed the patient in the right lateral and semiprone position and introduced my index finger into the rectum in search of the cause of her ailment. Sweeping the finger around the walls of the first three inches of the rectum I found nothing to account for her symptoms. Introducing a speculum in order to see whether there were an erosions or ulcerated areas, which may give rise to bleeding, I found the lower portion of the rectum very much congested but no lesions were visible. Not being satisfied with the result of my examination, I requested the patient to stand up and I examined her in the erect position. While the patient was straining as much as possible, I again introduced my finger to its full length when the tip of my finger came in contact with a malignant stricture about four inches above the anus.

CASE II.—A boy, eleven years old, was referred to me by his physician for a rectal examination. The history obtained from the mother was as follows: For over two years the boy suffered with tenesmus and diarrhea, and at times passed blood and mucus from the rectum. Occasionally a bright red mass would protrude from the anus and cause pain. He was treated by a number of physicians for internal hemorrhoids, but failed to get relief. A digital exploration of the rectum revealed the presence of a polypus.

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*Read before the Gastroenterological Society of the American Stomach Hospital, February 15, 1917.

From what has been said it is obvious that the importance of a correct diagnosis of internal hemorrhoids cannot be overestimated. In the second and third stage of hemorrhoidal disease, when the piles protrude through the anal orifice and when they either return spontaneously into the bowel after defecation or protrude constantly, a careful examination will readily disclose the nature of the trouble. The pile tumors can then not only be seen as a dark blue mass, but they can also be felt between the fingers as a circumscribed and distinct tumor, being partly hard and partly soft, with a strict contiguity between the piles and bowel. The difficulty in diagnosis arises in the early stage of hemorrhoidal development when there is no external evidence of internal piles and bleeding is the only symptom present. Also when hemorrhoids are complicated with a fissure or an ulcer of the rectum the spasmodic contraction of the sphincters is so great that the piles are not prolapsed, though they may bleed freely with each action of the bowels. In such cases an examination should be made immediately after the rectum has been emptied by an enema, when the bearing down efforts and water cause the hemorrhoids to protrude, enabling us thereby to determine the number and size of the tumors we have to deal with. In women piles may be brought plainly into view by everting the anus with two fingers introduced into the vagina and pressing upon its posterior wall. An examination in a case of internal hemorrhoids should never be terminated at the evidence of hemorrhoidal tumors, for it often happens that higher up a stricture exists which manifests no other signs of its presence except the hemorrhoids.

In outlining a rational method of treatment for internal hemorrhoids it is necessary to bear in mind the etiological factors and pathology underlying this condition. We must remember the effects of the various causes of piles, whether the result of pressure as in constipation, foreign bodies in the rectum, retroversion of uterus, pregnancy, or whether it is caused by reason of straining during micturition, as in enlarged prostate and stricture of the urethra. All these conditions lead first to a varicose condition of the veins and impediment of the return flow of venous blood, and later on to an increase in the bloodvessels and proliferation of connective tissue. The treatment of internal hemorrhoids is generally considered under two heads, palliative measures and radical cure by operation. A large majority of sufferers from internal hemorrhoids will not submit to a radical cure in spite of the advantages and the safety and facility with which it may be accomplished. In my experience, comprising both private and hospital practice, three out of five object to the use of the knife and general anesthetic. It is, therefore, of paramount importance to know what can be done for such patients without surgical interference. The belief that permanent cures cannot be effected with palliative measures or local treatment is surely true in the third stage of hemorrhoidal development when we have to deal with a firm, hard, fibrous tumor. This, however, is not true in the first and second stage of hemorrhoidal formation. Here palliative measures should always be tried, and when skilfully and scientifically executed we will not only relieve or soothe the symptoms of the disease without curing it, but by the alleviation of the existing cause and the employment of palliative measures we render an operation quite unnecessary.

The dictum calling for the removal of the cause before prescribing treatment is applicable to this affection. Internal hemorrhoids secondary to stricture of the urethra, enlarged prostate, vesical calculus, pregnancy, or neoplasm will completely disappear when these affections are cured. Knowing that constipation is the most common cause of internal hemorrhoids, we should first direct our attention to this condition and attempt to secure at least one daily evacuation of the bowels. This can often be accomplished without medicine by a change from a sedentary habit to active outdoor life and the avoidance of everything which tends to produce constipation. The diet should be regulated by eliminating from it all substances which tend to constipate the patient's bowels. Highly seasoned meats, rice, cheese, potatoes, alcoholic drinks, and the excessive use of tobacco should be strictly prohibited. If the prophylactic and dietetic measures are not sufficient to obtain a daily evacuation of the bowels, we have to resort to medicinal or local treatment. Mild aperients in the form of a mineral water in the morning, or a dose of cascara at night, in addition to gentle massage of the sphincters with the finger, will be found very effective. The injection of two ounces of olive oil at bedtime and its retention overnight is extremely beneficial, not alone because it softens the feces and facilitates its expulsion, but because it also prevents hemorrhage. The softening of the feces prevents the cohesion of scybala which invariably causes engorgement of the hemorrhoidal veins and the surface of the pile is not abraded by the passage of a hard fecal mass during defecation. In cases of obstinate constipation, saline cathartics are indicated; drastics, however, should not be used.

Hemorrhage is most efficiently relieved by the use of astringents and cold. The best astringent in these cases is cold water. After each passage, the bowel should be injected with cold water. A suppository of ten grains of tannic acid is also very efficient. When the hemorrhage is profuse every mechanical means should be exhausted in determining the exact location of the bleeding point. With our modern method of distending and illuminating the rectum, the bleeding point should be located before any effort at packing the rectum or hemostatics are employed for checking the hemorrhage. When the hemorrhage is the result of a general oozing from the surface of the piles, a single application of nitric acid or carbolic acid will often stop it forever; cauterization may also be made with the Paquelin cautery point, which is still more reliable. The application of these chemical caustics is not painful and the beneficial results obtained are so satisfactory that a trial of this procedure in controlling hemorrhage from capillary oozing is, I believe, by all means worthy of consideration. Hemorrhage from a spurting vessel on the surface of one pile can readily be stopped by the application of a silk ligature to the bleeding point. This can be done without an anesthetic. Following the application of the ligature, the bowels should be confined for three days, after which time a cathartic is given to secure a daily natural evacuation afterward. The injection of a moderately strong solution of carbolic acid into the centre of the pile results in a hardening and diminution in the size of the hemorrhoid. This atrophy of the tumor is produced by the inflammatory induration following the injection and by the subsequent cutting off of the circulation to the tumor. The solution I employ is one part of pure carbolic acid to two parts of glycerin and two parts of water. The amount I inject into the hemorrhoid ranges between five and ten drops, depending upon the size of the tumor. I inject two and sometimes three tumors at a time, but I think the novice does better by injecting only one at a sitting. The injection may be repeated after one week. When the injection is properly and skilfully performed, there is very little pain following it and the results are very gratifying. There is a gradual decrease in the size of the tumor, and in a few weeks the prolapse disappears and with it the bleeding, pain, and discomfort. While this method is only considered palliative treatment, I am satisfied that I obtained complete cures in a large number of cases. I do not advocate this method in preference to the radical cure by operation, but I often resort to it when patients refuse the surgical operation.

The practical advantages of this plan of treatment may be summed up as follows: The patient is not frightened by the use of a knife, it is painless when properly performed, and it does not detain the patient from business. I believe that with the proper antiseptic precautions there is no danger of sepsis, abscess formation, or sloughing. Regarding the permanency of the cure, it may be said that after the exciting cause is removed and the prophylactic measures are successfully carried out, there may be no recurrence of the trouble. I have seen cases of recurrence following the clamp and cautery and the ligature operation if the preventive measures have not been adhered to. Piles should not be injected when highly inflamed, external, strangulated, or ulcerated. We may at any time be called upon to treat a case of strangulated piles and the condition is an extremely painful one. We usually find a mass of piles, swollen, congested, and edematous, which are tightly constricted by the external sphincter. The pain is so severe that a large majority of patients will readily submit to an operation which should be performed at once.

If an operation is refused, lead water and laudanum lotion applied ice cold affords great relief and so reduces the edematous swelling that the piles may be replaced. Their reduction by taxis requires much care and judgment. After anointing the mass with vaselin one finger is gently introduced into the anus and the other fingers press the tumors one by one within the bowel. This, if possible, should be done under an anesthetic, for the maneuver is a very painful one and the reduction is sometimes impossible without an anesthetic. With cold and sedative applications and rest the condition will subside in forty-eight hours, when the patient is able to effect a reduction himself. Terrell reports good results from the injection of quinine and urea hydrochloride. He uses a solution of from five to ten per cent. in sterile water. The operative treatment is the safest as it does not require much time to bring about a radical cure. I shall refer only briefly to some of the numerous methods of operation for internal hemorrhoids. Of all the various operative procedures I prefer the ligature or Salmon's operation. This operation can be performed in a short time and is accompanied by very little bleeding. There is no risk of hemorrhage if the ligature has been tied tightly, the loss of healthy mucous membrane can more easily be prevented by including only the pile in the ligature, and the period of convalescence is short, as a rule from two to three weeks. If the operation has been properly performed there will be no recurrence of the piles. This operation can be performed with fewer assistants than any other operation adopted for the operative cure of hemorrhoids. I will not give a detailed description of the various steps followed in applying the ligature as the procedure is generally known. I only wish to state that I do not cut off a pile after the ligature is tied unless the pile is very large. After the piles are tied, I replace them within the bowel. I finally insert into the rectum a firm piece of rubber tubing three and one half inches long and an inch in diameter around which sterile absorbent cotton is wrapped. This is secured by placing a safety pin through the outer end and into a T bandage. The tube serves three purposes: 1, it allows the escape of flatus, which is the chief cause of the discomfort after the operation; 2, through this tube possible bleeding can be detected; 3, if after the third day a cathartic is administered and no action of the bowels is obtained, an enema can be given through the same tube. Immediately after recovery from the effects of the anesthetic a powder composed of 0.25 grain of morphine and ten grains of bismuth should be administered every four hours for two days in succession. This is necessary to keep the bowels confined for about four days, at the end of which period they should be relieved by the administration of a laxative and, if necessary, an enema. The external dressing should be removed twenty-four hours after the operation and a fresh dressing should be put on every night and morning until the wounds are healed. The ligatures will ordinarily slough off in from eight to ten days. When this operation is properly performed there will be no suffering following it, surely no more than after the clamp and cautery operation.

There is one other operation, the operation by clamp and cautery or Henry Smith's procedure, which has won for itself an enviable reputation; I believe this is the best after the ligature operation. Some surgeons hold that this operation is not followed by pain if care has been taken to avoid cauterizing the skin. I cannot agree with them, for I have seen marked pain after it. The edema of the mucocutaneous tissues following this operation is very great. Some time ago, while demonstrating such a case to a number of physicians, I was asked why I did not remove all the piles, as they thought the edematous mass around the anus was piles. Such a condition is the cause of considerable suffering, and while this is not present in every case it occurs frequently enough to warrant the statement that this operation is just as often followed by pain as the ligature operation. It is furthermore stated by the advocates of the cautery operation that the patients can be about in a few days and that they are not detained from business more than a week. I do not find this a safe procedure, because the wounds are not entirely healed by that time and the irritation produced by walking or straining while at work will lead to increased granulation and subsequently to the formation of a stricture. I have seen a number of such cases in patients who were permitted to attend to business one week after the operation, returning about four or five weeks later with marked stenosis. It is advisable to keep the patient under observation for three weeks, during which time he should not be permitted to exert himself in the least. The patient may be up and about in the room after a week or ten days, but should be in the recumbent position the greater part of the day. I have already indicated my preference for the ligature operation and only wish to add that this treatment requires skilful supervision in order to be successful, but when successfully carried out it has yielded, in my experience, more satisfactory results than any other operation. My experience in the treatment of internal hemorrhoids leads me to arrive at the following conclusions:

1. In the treatment it is important, in the first place, to determine whether the disease is primary or secondary to some affection of the pelvic organs.
2. In the first stage of hemorrhoidal disease no operative treatment is indicated.
3. The true value of the nonoperative treatment is frequently underestimated in the second stage of hemorrhoidal disease.
4. None but operative treatment should be resorted to in the third stage of hemorrhoidal disease.

1933 North Broad Street.

Cholecystectomy.—Miles F. Porter (*Annals of Surgery*, September, 1917) thinks that with the present state of knowledge the last word on the subject of the surgery of the gallbladder and gall ducts may not be said. However, at the present time, the conclusion seems warranted that it is neither necessary nor advisable to remove the gallbladder except when it is diseased or injured beyond the probability or possibility of restitution, and that this power of restitution may be presumed to be lost when one of the following conditions obtain: 1, hydrops with obliteration of the cystic duct; 2, calcareous degeneration or fibrous degeneration with contraction; 3, chronic empyema; 4, the cholesterin on strawberry gallbladder; 5, carcinoma; 6, extensive laceration or perforation; 7, gangrene other than localized gangrene such as is sometimes caused by pressure of a stone.

THE CURE AT VICHY IN THE SEVENTEENTH CENTURY.

By Guy Hinsdale, M. D.,
Hot Springs, Virginia,
Secretary of the American Climatological and Clinical Association; Associate Professor of Climatology in the University of Pennsylvania; Fellow of the Royal Society of Medicine, etc.

France is sending her wounded as far as Biarritz and Nice and the neighboring Riviera and we hear that Vichy and Aix-les-Bains are full of soldiers "taking the cure" until able to join the ranks again. One of the great sources of reputation of Aix was the remarkably good results achieved in affections of the joints and in supplementing the work of the military surgeon. The soldiers of Napoleon went there and recovered and fought again in later campaigns. At Bath, in England, one can see the old Roman pool very much as the Romans left it. The same columns are there looking down on the pool as they did nearly twenty centuries ago. Aix-les-Bains and Vichy are just as ancient, but suffered more from the inroads of the Huns who destroyed nearly every vestige of the Roman baths.

Only recently archeologists have brought to light evidence of a high state of Roman civilization at Néris near Vichy. A buried city has been discovered rivalling Pompeii in historical interest. We are told that marble villas, gracious fountains, ranks of stately porticoes, Parian marble baths, bronzes, coins, jewels of rare beauty, mosaic flooring and walls exquisite with carvings in ivory, gold, silver and alabaster are coming to light. Before 300 A. D. Néris was a luxurious resort, chosen by the Romans because of its wonderful springs, but destined to destruction by the hordes from the north that under Attila even reached the Eternal City itself. But the wreck of Néris was strangely enough completed by the waters that were once its peculiar charm. All through the dark ages the hot springs flowed and helped to bury the débris of the forum and the palace left by the Huns as they swept on. But Vichy after about a thousand years of oblivion was revived. The Bourbon kings discovered something miraculous about the waters and in the time of Le Grand Monarque Vichy became a fashionable resort. Mme. de Noailles and Mme. de Sévigné and cardinals and princes gave social distinction to the place and two hundred years later Napoleon III was a devoted visitor.

It is, however, due to the letters of Mme. de Sévigné that we have had preserved to us a minute description of the methods employed at the spa. This most famous of modern letter writers was a sufferer from rheumatism or gout and planned a trip to Vichy in 1676. She writes from Paris to M. de Corbinelli, on April 17th: "I have wonderful fortitude and I anticipate revelling in heat and in Vichy. Since I know that they take the douche there, that they bathe there, and that the waters are as good as at Bourbon, the beauty of the country and the purity of the air have decided me and I shall set out as soon as I can." She says she is very much troubled with her hands and she plans to go to Vichy although some of her old friends want her to wait until the end of May. She says: "The fear of having even once in my life an attack of rheumatism would make me take a longer trip than from here to Vichy. . . . I could stand ten hours of great heat rather than half an hour of cold."

From Vichy she writes to her daughter, Mme. de Grinan: "If the physicians, whom I scorn, should forbid me to write to you, I would forbid them to eat and drink to see how they would like that régime." The following day, May 20th, she says: "I have taken the waters this morning and how bad they are! We go to the spring at six o'clock. Every one is there. We drink and we present a sorry appearance." Of the springs she says: "You can imagine them boiling with a disagreeable taste of saltpetre. We come and go and walk about. We attend mass. We get rid of the waters and speak confidentially of the manner of it and that is all we talk about until noon. Then we dine and each one goes to someone's house. Today it was to my house." Then she complains that she has to take her soup with her left hand. "I have pain in my hands, my knees, and shoulders. They tell me the douche will cure me. I look well and eat and sleep well. I fancy I shall take the waters only fifteen days for fear of heating or exciting myself too much. I shall begin the douche tomorrow."

On the 24th Mme. de Sévigné seems a little blue for she writes: "It is a fact that if I should be taken ill here, which I do not fear at all, I beg of you to come quickly to me; but I feel very well. I drink the waters every morning. I ask, 'Give me my drink of water.' The quantity, the quality, everything goes right. They tell me they are wonderful and I believe it and even feel it for in my hands and knees, which are not well because I have not yet taken the bath or the douche, I am quite as well as I have ever been."

Wednesday, May 26, 1676: "Today I began the douche operation, and it is not a bad foretaste of purgatory. The patient is quite naked in a little underground room where there is a tube of hot water which a woman directs wherever you wish. This state where one does not have even a fig leaf for a garment is very humiliating. Behind the curtain is a person who sustains your courage for half an hour. A physician of Gannet fell to my lot; a very worthy man whom Mme. de Noailles brought to all the springs that she is fond of, who is neither a quack nor a bigot; I shall keep him though it cost me my cap, for the others here are unbearable and this man amuses me; he has wit and courtesy, and knows the world. He talked to me the whole time I was under torture. Just think of a spout of water pouring over one or other of your poor limbs! It is first applied to every part of the body to rouse the spirits and then directed to the affected joints; but when it strikes the nape of the neck the heat produces such a surprise that it is impossible to describe it. That is the affair in a nutshell. However, it is necessary to suffer and we do suffer, but we are not quite scalded to death; and we are then put into a warm bed where we perspire profusely and that is how we are cured. It is like taking a new lease of life and health."

Two days later there is an improvement for she writes to her daughter: "You can believe that I can write without effort and that my hands are better. They do not swell any more and the palms of the hands are a little swollen and the fingers also." The letter of June 1st shows that the cure was a pretty strenuous one. But after all it is much the same as at the Virginia Hot Springs today. Any one who has taken the cure at that resort will recognize the time honored spout bath and hot blanket pack of the Virginia spa as the principal features of the treatment used at Vichy two centuries and a half ago.

"But let us speak of the charming douche. I will give you a description of it. I am at my fourth and I shall go as far as eight. My sweats are so extreme that they go through the mattress. I think that it is all the water I have drunk since I was born. It is a fact that we are all exhausted. I lie an hour without opening my mouth, during which the sweat commences and continues for two hours and for fear of losing patience I make my physician read to me which pleases me. He would please you. I started him with the philosophy of your dear Descartes. I collect the sentiments which I have heard you repeat. He is a gentleman as well as a physician and he amuses me. I go about alone and I am very comfortable. Since they have not deprived me of the charming country, the river Allier, a thousand little groves, books, fields, sheep, goats and the peasants,—the country alone would heal one. The sweats which would weaken any one give me strength and convince me that my weakness comes from the superfluous matter I have in my body."

In modern parlance we would say she was getting rid of toxic matter and that her disability was due to a toxic arthritis. She has hope when she declares that her knees are much better. "They are not well but will be in time." A day or two later: "I must tell you that you were wrong in having a bad idea of these waters. They are not bad but they are hot. When you place a plant or a flower in this water it comes up fresh as when gathered and in place of irritating or roughening the skin this water makes it soft and smooth."

June 4, 1676: "Today I finished my douche and sweats and I believe that in eight days there have gone out of my poor body more than twenty pints of water. I believe that nothing could have acted better and I believe I have escaped rheumatism for the rest of my life. The douche and the sweating process are certainly painful but in about half an hour you find yourself dry and fresh. I am going to take a little medicine tomorrow and then drink the waters for eight days and then it is all done. My knees are about healed. My hands do not close yet but after the soaking which they will get they will be all right. . . . . . This horrid rheumatism; it makes me almost weep. I am the wonder of Vichy for having endured the douche courageously. My legs are healed. If I could close my hands there would be nothing left. As for the waters it is my sixteenth day. They purge me and make me much better. . . . . . I am going to take my waters and reduce them one half. It is Tuesday and ten o'clock in the morning. As I know well, to please you, I must stop writing and I finish by embracing you with all the tenderness I have."

PHYSICAL TRAINING AND HYGIENE FOR BUSY PEOPLE.

By Leonhard Felix Fuld, LL. M., Ph. D.,
New York,
Assistant Chief Examiner, Municipal Civil Service Commission, New York; Member, American Academy Physical Education; Chairman, Committee on Education, Borough of Manhattan, New York.

Part II.

HEADACHE.

Headache is preeminently a disease of civilization. Savages seldom suffer from headaches because they take sufficient physical exercise to avoid them. Headaches are the penalty which men and women are required to pay for violating persistently some law of health. It is important that every one be able to recognize the most common types of headaches.

Eyestrain.—A dull pain in the forehead is one of the most common forms. This is generally the result of eye strain. The remedy is simple. An oculist should be consulted and proper glasses obtained to correct the defect of vision. Incidentally careful attention should be paid to the details of personal hygiene. A simple diet of coarse food, plenty of fresh air and exercise, and the sparing of the eyes as much as possible from the strain of unnecessary reading will aid the oculist very much in banishing this type of headache.

Indigestion.—A feeling of dull weight in the head, accompanied by a coated tongue, cold fingers, and aching eyes, constitutes a second common type of headache. This form is experienced frequently by men upon their return to duty after a few days of absence following pay day and by women who eat little for breakfast and believe that they can obtain their nourishment from candy, pastry, and meat. To cure headaches of this kind the person suffering from them must realize that gross intemperance in the matter of candy and pastry is likely to result in digestive derangement of almost as serious a character as excessive indulgence in alcoholic liquor. In each case the serious disturbance of the digestive functions is accompanied by the attendant headache of indigestion. Fresh air, physical exercise, and a rational diet are the weapons with which this form of headache may be conquered.

Sick headache.—A heavy pain in the temples accompanied by an offensive breath, cold moist hands and feet, and a sense of fullness are the symptoms of the sick headache which so frequently impels business women to absent themselves from their work. A gentle emetic will give relief and abstaining from food for a short time will make the cure permanent. If a woman is interested in learning the cause of her sick headache let her ask herself whether she has violated the laws of health by worrying, by too much reading, by irregular eating, by an improper or insufficient clothing of the feet, or by becoming overheated and then hurrying into the cold air of the street. By committing one or more of these offences against good health any woman can readily acquire a sick headache and by carefully avoiding these indiscretions, particularly at times when she does not feel perfectly well, she can protect herself from these headaches.

Exercises.—Brain workers frequently suffer from headaches which are due to an insufficient blood supply in the brain. In most cases an increase in the efficiency of the blood supply of the brain will aid in overcoming the distressing symptoms. Those suffering frequently from headaches will derive benefit from performing this exercise in bed before arising in the morning. Lying on your back in bed, raise your head until you can see your toes. Confine the movement to the muscles at the front of the neck; there should be no movement of the back. Next, turn over and support the weight of your body on your toes and on your hands. Raise the head and lower it until the muscles at the back of the head are fatigued. Confine the movement to the muscles of the neck. This exercise increases the blood supply of the brain, makes the neck full and round and will tend to reduce a double chin. If you should become dizzy while performing it, discontinue the exercise and resume it on the following morning.

CONSTIPATION.

Causes.—Constipation is a condition which though trifling in itself may lead to serious consequences. When the bodily wastes are retained in the human body they cause physical discomfort by reason of their presence and they also tend to render the blood impure by the reabsorption of effete matter and by preventing the elimination of other impurities from the blood. It is believed that many derangements of the digestive system and even such serious ailments as appendicitis are often caused directly or indirectly by constipation. Quite apart from these serious consequences, however, constipation is a condition to be avoided by all because it makes an individual suffering from it sour tempered and in this way decreases his efficiency. Furthermore, it shows a personal carelessness which is indicative either of ignorance or of gross negligence. Constipation is generally caused either by lack of exercise, improper food, or improper personal habits. This condition, which is almost unknown among savages, who lead an active outdoor life, is frequently found among civilized people, who lead a more sedentary life, eat more indigestible food, and in the high tension of business and social life pay less attention to their personal habits. The fact that each of these faults of civilization seems to be more exaggerated in the case of women than in the case of men is probably a partial explanation of the greater frequency with which women suffer from this ailment.

Peristalsis.—The contents of the bowels are normally forced through the intestines in the same manner as material may be forced through a tube by means of a ring passed along the tube. This process is called by physicians, peristalsis. There is really no ring passed along the intestines, but the contraction of the intestinal walls has the same effect as a ring. Peristalsis is increased by pressure on the walls of the intestines and also by the addition of large quantities of broken down bodily tissues into the bowels. Both of these conditions may be secured by proper physical exercise.

Water.—Most cases of constipation may be overcome by proper diet and by proper habits. If you are constipated on arising in the morning one or more glasses of water before breakfast will frequently overcome this condition. Similarly, if constipation is of frequent occurrence the amount of fresh fruit, vegetables, and cereals eaten by you should be increased and the amount of meat and pastry should be diminished. Careful attention should also be paid to the regularity of personal habits.

Indigestion.—If the constipation is chronic or long continued and does not yield to these dietary measures, recourse should not be had to patent medicines which are advertised as laxatives or cathartics. Such medicines usually accomplish the desired result in a distinctly harmful manner. Instead of stimulating the walls of the intestines to perform their normal function of forcing the bodily wastes out of the system, patent medicines either cause a large amount of water to flow into the intestines to wash them out or they stimulate the intestines in such a manner that in the future they will act only when stimulated by a dose of the medicine. Constipation can be properly cured only by getting the intestines into a regular healthy habit and patent medicines get them into the habit of requiring a stimulant before they will act. If dietary measures fail to correct a condition of constipation, you should carefully examine your digestion, especially if you feel distress after eating, belch gas from the stomach, having a burning sensation in the throat, have a feeling of nausea after eating or a dull frontal headache, or a pain at the pit of the stomach or at the left of the chest, or a palpitation of the heart, or any other symptom of digestive disturbance. If you have any of these symptoms independent of your constipation—that is, if you have them whether you are constipated or not—you should consult a physician. If on the other hand these symptoms are not present at all or are present only when you are constipated you may be able easily to overcome your constipation by systematic physical exercise.

Exercises.—First try personal massage. Compress and stimulate the intestinal walls by rubbing the abdomen vigorously with the hands and fists, beginning on the right side well below the ribs, then across the abdomen and finally on the left side. Next bend the body at the hips, first to the right side and then to the left side. Hold the hips hips firm with the hands, and neither turn the head nor bend the knees while performing the exercise. Take a stride position with the legs well apart. Bend the body only a little at first and then gradually increase the amount of the bending. Next, while lying flat on the back lift first one knee and then the other as high as you can, pressing the knee against the abdomen. Vary this exercise by lifting the leg with the knee unbent until the leg stands straight in the air. These exercises should be performed rapidly. Take a stride position with the legs well apart and the knees unbent. Bend the body slowly forward at the waist to secure the pressure on the abdomen which will be found beneficial in overcoming this condition. In addition to these exercises any exercise which involves hard vigorous muscular work will be found of value in overcoming constipation, because such exercises have the effect of breaking down a large amount of body tissue and sending it as a stimulant into the intestines. Fast walking is an ideal exercise for this purpose and if it is inconvenient or impracticable to leave the house a stationary run may be indulged in. This is performed by running without moving forward.

PAIN.

The personal and business efficiency of many women is interfered with by the fact that they are suffering pain. They do not know the cause of this pain, and, as it generally leaves them after a day or two as mysteriously as it came, they are resigned to it and suffer it as an inevitable discomfort, without uttering a sound of complaint. However much such heroism may be admired by us, the business woman should remember that her employer pays a salary for the efficient performance of duty, and no woman can render efficient service when she is in pain. For the sake of her position, as well as for her own sake, every business woman should seek at all times to be free from pain. To prevent the onset of this pain try to build up your general health. See to it that you get sufficient sleep and rest and do not overwork. See also that you digest your food properly and that you are not constipated. Make certain, too, that you do not chill your body by sitting all day in shoes or skirts which have been wet by storm or by wearing insufficient clothing at the neck or at the feet. You need not decrease or vary the amount of your physical activities to reduce or prevent the occurrence of this pain. Whatever you are accustomed to do you may continue to do, but any increase in your physical activities may be injurious. As dancing is, in the case of most of us, a rare indulgence, it is considered injurious in this connection.

When you suffer pain you may obtain relief in one of three ways. A hot bath or any hot drink may give relief by drawing the blood to the surface of the body. Half a teaspoonful of essence or syrup of ginger in a cup of hot water will also often be found beneficial. The best method of overcoming this pain is, however, by pelvic exercises, which strengthen the diaphragm and other abdominal muscles and improve the general circulation.

Pelvis exercise.—Empty the bladder and loosen all tight clothing. Lie on your back on a couch or on a rug on the floor. Draw up your legs by bending your knees and sliding the soles of your feet along the floor. Rest your arms at your sides and relax completely. Rest the tip of your forefinger lightly on your abdomen just below the umbilicus without exerting the slightest pressure. See how far you can lift your hand in this position by lifting your abdomen, and then see how far you can lower your hand by contracting your abdomen. The lowering of the hand should be more deliberately and more thoroughly done than the raising of the hand because it is more beneficial in overcoming pain. This exercise generally lessens the pain, and in very many cases the pain may be cured permanently by performing this exercise every morning for five minutes for a year. If a woman is unable to cure herself of pain by means of this exercise, by careful attention to the bowels, by the practice of deep breathing, and by attention to protection against chills caused by an improper or insufficient clothing of the feet or the throat she should consult a competent physician. However well you may believe yourself able to stand pain to which you are accustomed, do not practise such heroism. It will decrease your working effieiency, rob you of your chances for advancement, and possibly deprive you of your means of earning a livelihood, as well as of your health and happiness.

(*To be continued.*)

LARYNGEAL STENOSIS AS A COMPLICATION OF MEASLES.

By M. Ford Morris, Jr., M. D.,
New York.

Some of the most widely read medical textbook writers fail to emphasize the occurrence of laryngeal stenosis as a complication of measles. Though laryngeal stenosis is not regarded by some as important, it seems to occur often enough to make the onset of a croupy cough the signal for grave concern and vigorous treatment. In the measles wards of the Willard Parker Hospital several such cases have occurred lately, most of which were very severe from the onset and progressed to a fatal termination. The symptoms are those of laryngeal diphtheria, namely, croupy cough, increasing dyspnea and pallor, and retraction of the epigastrium and lower intercostal spaces. A membrane may or may not be visible. It is interesting to note that some of these patients enter the hospital with nose and throat cultures negative for Bacillus diphtheriæ, while others have positive cultures; some react to the Schick intradermic test, while others do not. Three recent cases may emphasize the seriousness of this condition.

Case I.—M. F., age one year, entered the hospital March 16th, with a fading measles rash. Intubation, in the home, by the ambulance surgeon, had been necessary, a two year rubber tube being used. On admission, 20,000 units of diphtheria antitoxin were given. In less than twenty-four hours she was extubated and intubated no less than seven times, without improvement. A small piece of dirty gray membrane was removed during one extubation. Patient died thirty hours after admission.

Case II.—F. K., age fourteen months, entered hospital February 14th, with maculopapular rash, Koplik's spots, bronchitis, and discharging eyes and nose. Nose and throat cultures were negative. As a result of a positive Schick, 2,000 units of diphtheria antitoxin were given. February 20th, the patient became very croupy, and received 20,000 units of antitoxin. The cough increased in severity and dyspnea and retraction became marked, but several hours later these symptoms subsided somewhat. Later, patient began regurgitating food (postdiphtheritic paralysis?). The number of respirations were from 60 to 70; the heart rate from 150 to 170, and the temperature was from 102° to 105° F. No physical signs of pneumonia were found. Death resulted.

Case III.—T. S., age eighteen months, entered the hospital February 26th with Koplik's spots, bronchitis, and temperature of 100.8° F. Two days later, there was a general maculopapular rash present. On admission, cultures from the nose and throat were negative, but were positive five days later. The Schick test was negative. One week after admission, a very croupy cough developed, with considerable dyspnea and retraction; 20,000 units of antitoxin were given; signs of consolidation in upper left lobe posteriorly were found; intubation done early in the evening, with some improvement. Next morning, the dyspnea, retraction, and pallor became much worse. Extubation, followed by immediate reintubation, was done with little improvement. Death resulted seventeen hours later.

What is the cause of this terrible condition? Some of these patients have positive cultures of the Bacillus diphtheriæ prior to the onset of croup. Then, too, cultures taken from the sides of the rubber tube immediately after extubation have yielded growths of this same organism. Also small pieces of membrane have been dislodged during extubation, even in a case with a negative Schick. All of which facts make one very suspicious of the Klebs-Loeffler bacillus as the cause. Against such a chain of evidence are the fact that diphtheria antitoxin did not seem to have much effect, although the mortality of undoubted cases of laryngeal dipththeria is exceedingly high—and the opinion of such men as Parke, of the Department of Health Research Laboratory, who in a recent address before the house staff of this hospital, said that "positive cultures of a diphtheroid organism and a diphtheritic looking membrane do not necessarily mean that the case is diphtheria," and also that he "does not believe that diphtheria ever occurs in a person who has a negative Schick." If the diphtheria bacillus does not cause this laryngeal condition, either the streptococcus or staphylococcus is the "root of the evil."

SUMMARY.

1. Laryngeal stenosis is a too frequent and a very serious complication of measles.

2. The onset of a croupy cough should be the signal for vigorous treatment.

3. Intubation should be tried, even though it failed to relieve in the cases cited above.

4. Large doses of diphtheria antitoxin—15,000 to 30,000 units—should be given, in the writer's opinion, even in cases with a negative Schick, and in the latter cases, for the purpose of satisfaction of conscience, if nothing else. If a positive blood culture of the streptococcus or staphylococcus can be obtained, vaccine therapy, preferably autogenous, will be logical.

Willard Parker Hospital.

CONDYLOMA ACUMINATUM IN THE ANAL REGION IN THE MALE.

By Charles E. Hyde, M. D.,
Bridgeport, Conn.

Dr. A. Ravogli, of Cincinnati, in a recent article (1) called attention to the rarity of the occurrence of condyloma acuminatum in the anal region of the male. In reporting this case I wish to call attention of the medical profession to the following: These vegetations were formerly considered as proof positive of syphilis and even of sodomy, and were treated as such. Molière relates how at the time of Dionysius there was a special hospital at Rome for the treatment of these growths, and Dionysius himself tells how the surgeons spared neither the iron nor the fire, and were not moved to pity by the cries of the patients inasmuch as this disease was the result of unnatural conduct. It is unfortunate that this belief still prevails.

They may occur from infancy to adult life, though they generally belong to the latter period. When they grow from one side of the intergluteal fold, and are large enough to press with moistened surface upon the corresponding point of the opposite side, a second patch may develop at the point of contact. Great pain on defecation may be produced by a small wart situated just at the edge of the anus and such a little tumor may give rise to all the characteristic symptoms of a painful fissure, including a slight serous discharge and blood. They may also spring entirely from the mucous membrane above the sphincter, though they are generally confined to the first inch of the canal. There they are generally smaller and harder than when on the cutaneous surface. When inside the canal the pedicle may become twisted and cause pain, especially on defecation. They may be so long as to protrude from the anus, interfering with sitting. It must be remembered that any irritating discharge, regardless of the source, may cause the growth. A cleanly person may be affected as well as an uncleanly. The pathology of these growths was very well discussed in Doctor Ravogli's article.

Case.—A professional man, thirty-two years of age, during six months previous to onset of anal trouble had many attacks of duodenal ulcer, with frequent bowel movements of acid, burning character. When his attention was first attracted to his anus he felt one wart on the left side of the anus. This gradually grew larger and others developed, spreading around the entire outlet; they were both diffuse and confluent, and some were pedunculated. In four months he had a cauliflowerlike growth around the outlet with extension of the process inside the rectum. They were dry at first, but soon became moist and painful at times, especially on defecation. On examination of the rectal mucosa an inch and half linear fissure with indurated edges was discovered. The acid burning bowel movements during the ulcer attacks caused an erosion of rectal mucosa, which developed into a linear fissure. The irritation from the fissure with the involuntary discharges caused the warts to grow. The Wassermann test and dark field illumination were negative. Surgical intervention established a cure.

This case illustrates the necessity of thorough rectal examination and the rapidity of growth.

REFERENCE.

1. A. Ravogli: *Journal A. M. A.*, July 8, 1916.

320 West Avenue.

Technic of Laparotomy in Penetrating Wounds of the Abdomen.—Lombard (*Presse médicale*, August 9, 1917), in autopsies on unoperated cases of penetrating abdominal wounds by war missiles, noticed that the visceral injuries were always situated directly along the path followed by the foreign body, in spite of the displacements of the wounded during transportation and their exertions in vomiting. The experience of surgeons at operations confirms this observation. Lombard therefore recommends that, instead of employing fixed lines of incision in all cases, one should adapt the incision to the course followed by the projectile, this course being shown by the orifices of entrance and exit in through and through injuries and by the orifice of entrance and the position of the missile, revealed by the x rays, in other cases. The visceral injuries are thus rendered plainly visible from the start. Two cases are reported in which this mode of procedure seemed advantageous.

Abstracts and Reviews.

THE ORIGIN AND NATURE OF LIFE.*

By Henry Fairfield Osborn, LL. D.,
New York,
President of the National History Museum.

Arguing that previous theories failed to explain the unquestionable facts of evolution, the lecturer outlined a new conception of evolution. Previously there had been three ideas of the origin of life—creation, vitalism, and materialism. The traditional opinion was that something new entered this planet with the appearance of life. This view was also involved in all the hypotheses which gathered around the idea of vitalism, or the existence of specific, distinctive, and adaptive energies in living matter and which did not occur in lifeless matter. The more modern scientific opinion was that life arose from a recombination of preexisting forces, that the explanation of life should be sought in the physical terms of motion and matter. While to matter and form was owed the revelation of the existence of the great law of evolution, the thought must be reversed in the search for causes and steps taken toward an energy conception of the origin of life and an energy conception of the nature of heredity. One was on sure ground here so far as the creative power of energy was concerned. In physics energy controlled matter and form; in physiology function controlled the organ; in animal mechanics motion controlled and in a sense created the form of muscles and bones. In every instance some kind of energy or work preceded some kind of form, rendering it probable that energy also preceded and controlled the evolution of life.

The central theory which was developed in this speculation on the origin of life was that every physiochemical action and reaction concerned in the transformation, conservation, and dissipation of energy, produced also, as a direct result or as a byproduct, a physiochemical agent of interaction which permeated and affected the organism as a whole or affected only some special part. Through such interaction the organism was made a unit and acted as one because the activities of all its parts were correlated. This idea might be expressed as follows: Action and reaction—functions of the capture, storage, and release of energy. Interaction—functions of the coordination, balance, cooperation, compensation, acceleration, and retardation of actions and reactions. Since it was known that many actions and reactions of the organism, such as those of general and localized growth, nutrition, and respiration, were coordinated with other actions and reactions through interactions, it was but a step to extend the principle and suppose that all actions and reactions were similarly coordinated, and that while there was an evolution of action and reaction there was also a corresponding evolution of interaction, for without this the organism would not evolve harmoniously. Evidence of such universality of the interaction principle had been accumulating rapidly of late, especially in experimental medicine and in experimental biology. Life was a cycle of the capture, transformation, storage, and release of energy all of which came ultimately from the sun, either from its heat or its light. The simplest organism of which one could conceive was such an energy seeker; when it grew to a certain size it split in two, forming another organism in life itself.

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*Summary of the Anniversary Address delivered before the New York Academy of Medicine, November 15, 1917.

The theoretic evolution of the four complexes of energy was somewhat as follows: 1. The inorganic environment came first in the order of time. Energy and matter were first seen in the sun, the earth, the air and the water, forming an entirely orderly system, held together by gravitation, moving under Newton's laws of motion, subject to the laws of thermodynamics. 2. What was called organism came next, a union of the internal and external adjustment of energy. In the course of the evolution of life every law and property in the physicochemical world was turned to advantage, every chemical element assembled in which inorganic properties might serve organic functions. There was an immediate or gradual separation of the organism into two complexes of energy: first, the energy complex of the organism, perishable with the life of the individual and, second, the germ or heredity substance which was perpetual. 3. The hereditary germ in some respects bore a likeness to latent or potential interacting energy, while in other respects it was entirely unique. The supposed germ energy was not only cumulative but was in a sense imperishable, selfperpetuating, and continuous during the whole period of the evolution of life upon the earth, a conception owed chiefly to the law of the continuity of the germ plasm formulated by Weismann. 4. The energy complex of the life environment was a new factor which entered with the multiplication and diversification of individual organisms. Thus were combined three, and possibly four, complexes of energy of which each had its own actions, reactions, and interactions. The evolution of life proceeded by sustaining these actions, reactions and interactions and constantly building up new ones; at the same time, the potentiality of reproducing these actions, reactions, and interactions in the course of the development of each new organism was gradually being accumulated and perpetuated in the germ. From the very beginning every individual organism had been competing with other organisms of its own kind and of other kinds, and the law of the survival of the fittest was operating between the forms and functions of organisms as a whole and between their separate actions, reactions, and interactions. This, while a selection of the individual organism itself, was actually a selection of the heredity germ complex, of its potentialities, powers, and predispositions. This selection was not a form of energy nor a part of the energy complex; it was an arbiter between different complexes and forms of energy; it antedated the origin of life just as adaptation or fitness antedated the origin of life. Thus one arrived at a conception of the relations of organisms to each other and to their environment as of an enormous and always increasing complexity, sustained through the interchange of energy.

The complex of four interrelated sets of physicochemical energies set forth as the most fundamental biological scheme or principle of development might be restated as follows: In each organism the phenomena of life represented the action, reaction, and interaction of four complexes of physicochemical energy, namely, those of, 1, the inorganic environment; 2, the developing organism—protoplasm and body chromatin; 3, the germ, or heredity chromatin; and 4, the life environment. Upon the resultant actions, reactions, and interactions of potential and kinetic energy in each organism, selection was constantly operating wherever there was competition with the corresponding actions, reactions, and interactions of other organisms. If a single name was demanded for this conception of evolution it might be termed the tetrakinetic theory in reference to the four sets of internal and external energies which played upon and within every individual and every race. In respect to form it was a tetraplastic theory in the sense that every living plant and animal form was plastically moulded by four sets of energies. In sketching the course of the origin and evolution of life, the difference between the nonliving and the living world seemed like a vast chasm when one contemplated a high organism like man, the result of perhaps a hundred million years of evolution. But the difference between primordial earth, water, and atmosphere and the lowest known organisms which secured their energy directly from simple chemical compounds was not so vast a chasm that one need despair of bridging it by solving at least one problem as to the actual nature of life; whether it was solely physicochemical in its energies, or whether it included a plus energy or element which might have distinguished life from the beginning. The energy conception of the origin and evolution of life on which were based fresh stimulus to experiment and renewed hope of solving the riddle of heredity was as yet in its infancy.

In considering the source of heat, light, and other forms of energy which conditioned the origin of life, the sun should first be considered. It was possible that in the earlier stages of the earth's history the sun's light and heat might have been different in amount from what they were at present; so far as could be judged from the available data, it seemed probable that they were greater then than now, but if that were so the atmosphere must have been more full of clouds and have reflected away into space much more than the forty-five per cent. of the incident radiation which it reflected at present. On the earth's surface beneath the cloud layer, the temperature need not have been much higher than the present mean temperature, but was doubtless much more equable, with more moisture, while the amount of sunlight reaching the earth's surface might have been less intense and continuous than at present. The lifeless surface of the primordial earth was covered not only with igneous rock but with piles of heat storing débris and there was on it a great regularity of the sun's heat supply with considerable moisture. It was also possible that through the agency of thermal springs and the heat of volcanic regions, primordial life forms might have derived their energy from the heat of the earth as well as from that of the sun. This was in general accord with the fact that the most primitive organisms surviving upon the earth today, the bacteria, depended on heat rather than light for their energy.

Thus far it had been observed that the primal earth, air, and water contained all the chemical elements and three of the most simple but important chemical compounds, namely, water, nitrates, and carbon dioxide which were known to be essential to the bacterial or prechlorophyllic, algal, and higher chlorophyllic stages of the life process. An initial step in the origin of life was the coordination or bringing together of these elements which, as far as was known, had never been chemically coordinated before and which were widely distributed in the solar spectrum. It was through these properties which in life subserved functions and adaptations that all forms of life from monad to man were linked with the universe. The earliest function of living matter appeared to have been to capture and transform the electric energy of the chemical elements designated as the life elements. This function appeared to have developed only in the presence of heat energy, derived either from the sun or from the earth or from both. This was the first example in the life process of the capture and utilization of energy wherever found. At a later stage of evolution, life captured the light energy of the sun. For example, some of the sunlight falling upon it was either reflected or shone through the leaf, giving it its green color; other red, blue, and violet light waves travelling with the velocity of 186,000 miles a second caused electrically charged atoms to fly off from the molecules of chlorophyl as negative ions; the molecules of carbon, of hydrogen, of oxygen were thus torn apart by the electric discharge of their atoms to recombine with other atoms such as sugar which contained twelve atoms of carbon, twenty-two atoms of hydrogen, and eleven atoms of oxygen. Finally the intellect of man captured and controlled physicochemical energy in many of its forms.

The power of relatively water free spores to resist heat and cold had suggested to several investigators that living germs might have pervaded space and have reached this planet either in company with meteorites or driven by the pressure of light, but the fact that so far as was known life on the earth had only originated during one period and not repeatedly, did not appear to favor this hypothesis. The adaptation of the chemicals to life processes was due to their incessant action and reaction, each element having its peculiar and distinctive forms of action and reaction, which in the organism were transmuted into functions. Such activity of the life elements was largely connected with forms of electric energy which the physicists called ionization, while the correlated or coordinated interaction of various groups of life elements was largely connected with processes which the chemists termed catalysis. Ions were atoms or groups of atoms carrying electric charges. Electrolytic molecules were constantly dissociating to form ions and the ions were as constantly recombining to form molecules. Since the salts of the various mineral elements were constantly being decomposed through electrolytic ionization, they played an important part in all the life phenomena; and since similar decomposition was induced by currents of electricity, indications were that all the development of living energy was in a sense electric. In general the electric action and reaction of the nonmetallic and metallic elements dissolved or suspended in water were now believed to be the chief phenomena of the internal functions of life, for these functions were developed always in the presence of oxygen and with the energy either of the heat of the earth or of the sun, or of both the heat and light of the sun.

The actions and reactions of the life elements, which were mainly contemporaneous, direct, and immediate, did not suffice to form an organism. As soon as the grouping of chemical elements reached the stage of an organism, interaction also became essential for the chemical activities of one region had to be harmonized with those of all other regions. The principle of interaction might apply at a distance and the results might not be contemporaneous. The mode of the origin of life was a matter of pure speculation, but from the knowledge of bacteria one could form reasonable hypotheses in regard to it considering the life process as probably a gradual one, marked by short leaps or accessions of energy, and not as a sudden one. The first hypothesis was that an early step in the organization of living matter was the assemblage one by one of several of the ten elements now essential to life, namely, hydrogen, oxygen, nitrogen, carbon, phosphorus, sulphur, potassium, calcium, magnesium, and iron which were present in all living organisms, excepting some primitive forms of bacteria which might lack magnesium and iron.

The second hypothesis was that these elements were gradually bound by a new form of mutual attraction whereby the actions and reactions of a group of life elements established a new form of unity, an organic entity, an individual or organism.

The third hypothesis was that this grouping occurred in the gelatinous state described as colloidal. The fourth hypothesis was that the evolution and specialization of various chemical messengers known as catalyzers, including enzymes, had proceeded step by step with the evolution of plants and animal functions. In the evolution from the single celled to the many celled forms of life and the multiplication of these cells into billions and trillions, biochemical coordination and correlation became increasingly essential. With this assemblage, mutual attraction, colloidal condition, and chemical coordination, a fifth hypothesis was that there arose the rudiments of competition and natural selection which tested all the actions, reactions, and interactions of two competing individuals. The central idea in these five hypotheses of successive physicochemical stages was that in the origin and early evolution of the life organism there was a gradual attraction and grouping of the ten chief life elements, followed by the nineteen or more chemical elements which were subsequently added. The creation of new chemical compounds might have been analogous to the successive addition of new characters and functions, such as were now observed through paleontology, resembling a series of inventions and discoveries by the organism.

Medicine and Surgery in the Army and Navy

CAMP HYGIENE AT THE FRONT.

First Communication.

By Charles Greene Cumston, M. D.,
Geneva, Switzerland,
Privat Docent, University of Geneva; Fellow of the Royal Society of Medicine of London; Honorary Member of the Surgical Society of Belgium; Member of the Surgical Society of Switzerland, etc.

Besides attending to the wounded and sick, regimental surgeons play an important part from the viewpoint of hygiene and its many applications. They should be regarded as technical advisors to the chiefs of an army corps or unit. With the prolongation of the war the importance of hygiene increases. The excellent sanitary condition of the French and English troops is a proof of the efficiency of the measures adopted for the past three years.

Trench warfare, which involves great numbers of men living in the same spot for a long time, has necessitated the employment of extremely strict precautions. During the periods of rest the hygiene of troops billeted in villages is generally defective. The want of sufficient space, the difficulties of supervision, the possibility of epidemic foci and frequently also the complete absence of any village or even hamlet in the region where units are to be encamped are the multiple reasons for creating bivouac camps. At the beginning of the war these camps were simple collections of huts of most rudimentary type, but at present real barracks are constructed according to more and more perfected plans, realizing very great progress from the viewpoint of hygiene and no longer meriting the name of bivouacs. It is incumbent upon the surgeon to apply and carry out the prescriptions of hygiene, and I propose to describe how this is carried out, taking as a type the measures carried out in a certain French army unit. In what is to follow I shall omit any reference to clothing, food, antityphoid and paratyphoid vaccination, etc., and shall confine my remarks to dwellings and their accessories, drinking water, bodily cleanliness and disinfection and sanitation of cantonments and trenches. All these questions are more or less new and are of considerable importance to those confrères about to go to the front.

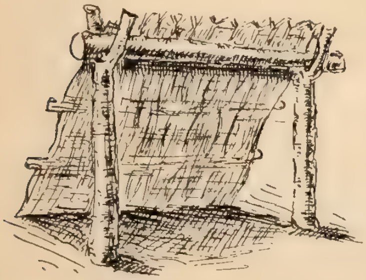

Fig. 1.—A simple shelter.

Dwelling conditions is a vast subject and I cannot pretend to treat it more than in outline. Therefore, I shall not consider the more perfected constructions which can be taken to pieces, such for example as Adrian's type of structure, which have been put up by engineers for certain sanitary formations or for camps relatively far in the rear. From the regimental viewpoint, two large classes of dwellings must be considered, namely, the cantonment barracks and shelters placed along the line. On both, the same hygiene measures must receive the same care from the viewpoint of cubic feet of air, measures against dampness and storms, aeration, selection of proper bedding material, etc. I shall refer later on to the details of construction for preserving the men against the asphyxiating gas clouds.

Discussing first cantonment barracks, let me consider the evolution of hut construction during the war. The French colonial troops at the beginning employed natural materials found on the spot, and, left to their own initiative, they constructed very rudimentary huts whose only use was to protect them against cold and to a certain extent against rain and snow. Branches of trees, logs, and clods of earth put together in various ways, represented the composition of these continually damp *cañas* while some bunches of straw placed on the ground served as beds. The earthen walls offered an excellent insulating material against change in temperature, while a rustic chimney constructed of moistened packed earth maintained a good heat with a wood fire. At present, however, thanks to the materials furnished by the engineering corps, the habitations have completely changed. Plans have been drawn up by the military authorities and all barracks of a cantonment are of the same type. Boards, tarred pasteboard, and corrugated iron sufficed for their construction. Hygiene demands that the earth should never be dug, but in practice, on account of the insufficiency of material, many of the barracks are partially buried. The temperature is more even, less cold in winter and cooler in summer. The earth forming the floor is advantageously covered with rustic wattles or, better still, a raised board floor. The barracks are constructed so as to avoid crowding and according to their size they should

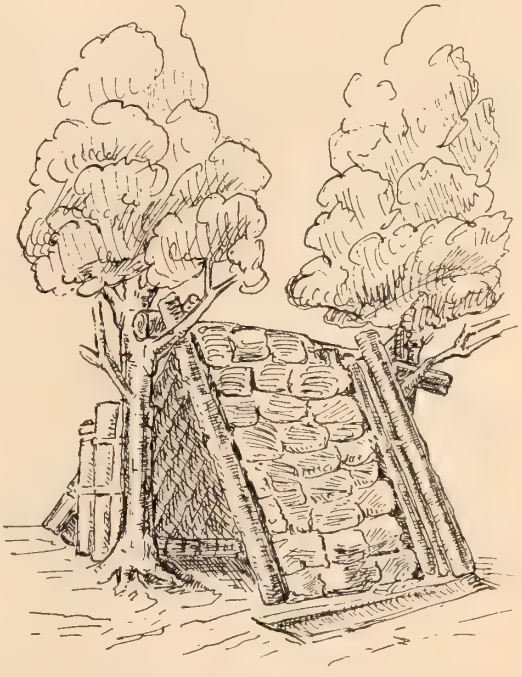

Fig. 2.—A rapidly constructed hut.

not contain more than from four to eight men each at the most. Numerous scattered shelters are preferable to large barracks. The ventilation of the barracks is very simply provided for by openings with blinds or roofs and open chimneys (see Figs. 3 and 4).

In the trenches or in the battery positions, structures above ground must of necessity be replaced by subterranean habitations. The shelters are of two kinds, either a sap or excavations in the earth covered by several layers of logs, each layer separated by a layer of earth. The experience during the second German offensive before Verdun having demonstrated the necessity of being protected by a thickness of earth of at least six metres, the shelters have since been made underground. For this reason it is absolutely essential to superintend the care, disinfection of bedding, as well as the ventilation of these caverns, without overlooking the extermination of rats, to which I shall refer later on. Blocking up the walls solidly is quite as essential from the viewpoint of hygiene as for the solidity of the construction. These bomb shelters are furnished with at least two egresses, so that a very free ventilation can be obtained and also offer certain security in case of caving in. When an emission of asphyxiating gas requires closing of all egresses ventilation can still be obtained by the use of a ventilator filled with loam which, from recent experiences, has shown itself to possess the property of retaining the gas. With this apparatus the men can remain without gas masks in the interior of the shelter. One can readily see the great advantage of such a shelter for use as a dressing station.

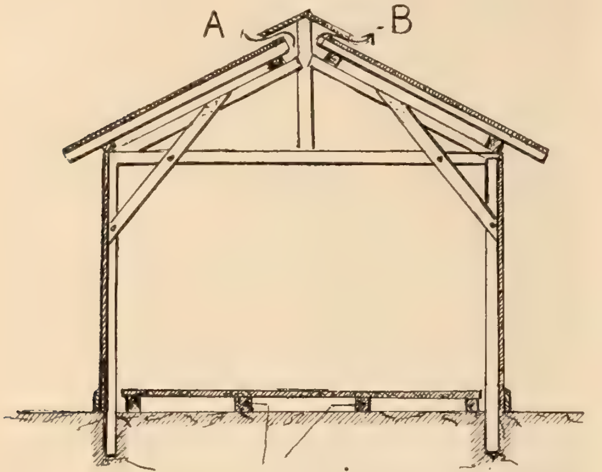

Fig. 3.—Cross section of wooden barracks, showing ventilating scheme, A. B.

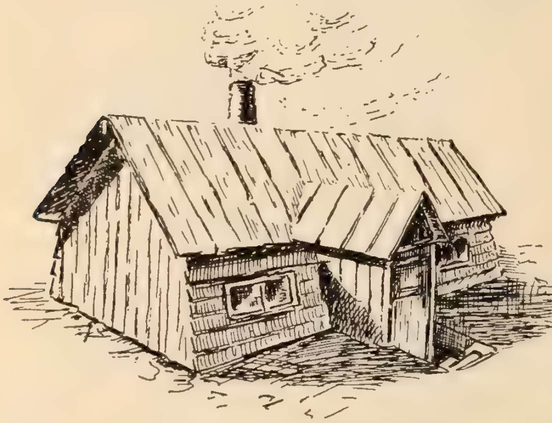

Fig. 4.—Half buried barracks, made of boards and tarred pasteboard.

I shall rapidly describe the construction of the ventilator in question (Fig. 5), which can be done by the men themselves. The ventilator is composed of six wood shingles, five millimetres thick, fifteen centimetres long, and ten in width, nailed on to the six faces of an hexagonal wooden axis. A pulley five centimetres in diameter moved by a crank is fixed on this axis. The ventilator turns in a drum fixed on the same construction as the flywheel and is composed of two wooden wings 105 millimetres apart and cut out following the tracings of a development of a circle with a radius of fifteen to twenty centimetres. The envelope is made of sheet tin. The wing opposite the beam has a hole ten centimetres in diameter through which aspiration takes place. A fuller understanding of the underground shelter may be obtained by studying the cut and caption, Fig. 5.

The question of bedding has been simplified by the manufacture of camp beds composed of a wooden frame two metres long by seventy centimetres wide, supported on four legs. Cleansing and disinfection are easy to obtain and this bed is at present the one most universally used in the French army (see Fig. 6). With the addition of a mattress and blanket, sufficient comfort for any man is realized. The beds are placed one metre apart wherever possible. If beds are lacking, straw bedding is separated from the ground by means of hurdles which can always be easily constructed. The straw should be changed as often as possible and during the day should be exposed to the air and sunshine. Although hammocks fulfil the requirements of hygiene, their use is not very extensive in the French army.

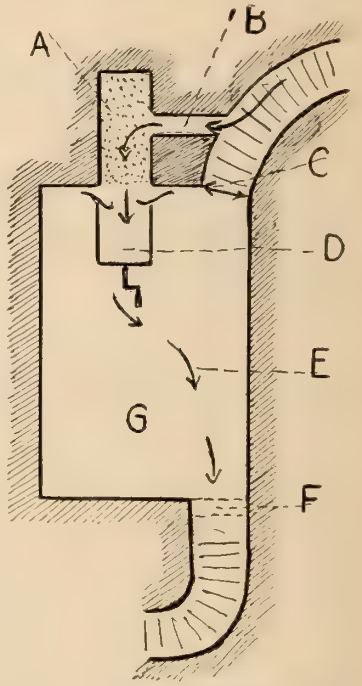

Fig. 5.—Horizontal diagram of ventilation scheme of an underground shelter. A, ventilator filled with loam for retaining gas; B, pipe carrying air to filter; C, second hermetically closed exit; D, drum of the ventilator proper; E, arrows indicating direction of the current; F, first exit closed by double curtain of hyposulphited canvas; G, interior of the shelter.

A few words now regarding the construction of kitchens and store rooms: The majority of units have individual wagon kitchens, the first essays with them having been made during the Russo-Japanese War. The advantage of these kitchens is that meals can be prepared during a halt and therefore are particularly useful during active operations. When they remain at a fixed post they render all the services for which they were originally intended. They have given complete satisfaction during the past three years. Since food cannot be cooked in proximity to the trenches, where all smoke is absolutely prohibited, the use of Norwegian kettles has become generalized for the transport of food to the first line. Hot food, particularly in winter, is obtained by all the men as each one possesses solidified alcohol heaters so that they can heat their mess bowls or make hot drinks on the spot. One of the latest improvements which has been made is the construction of storehouses near the kitchens in order to avoid all contamination by flies and to keep food cool and away from the rats and mice. The model which has given satisfaction is made by digging a ditch two metres square, and two metres deep covered by a slanting roof of corrugated tin. The interior of the store room is reached by steps. The entrance is closed as nearly hermetically as possible by a door (see Fig. 7). In this shelter the food chests are placed. These consist of wooden boxes covered on one or several of their sides with a special metal sheeting, or when this is lacking, by ordinary jute or canvas. The use of meat wagons, which are really rolling store rooms, has been extended and I would recall the interesting fact that during the summer of 1914, the Paris autoomnibuses rendered great service in the transportation of meat to the front.

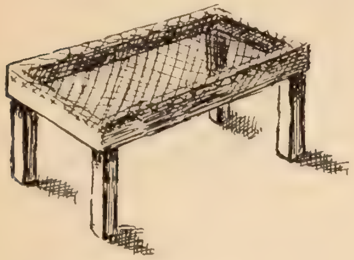
FIG. 6.—Individual bed for cantonments.

Coming now to the very important question of the sanitary disposal of human excrement, the outhouse has considerably developed in importance during the war and their hygienic and prophylactic qualities must attract serious study by every military surgeon. The ordinary ditches prescribed in the older books on military hygiene are entirely inadequate although they can still be employed by troops on the march at halting places. Outhouses at cantonments should be situated at an accessible spot, far removed from the kitchens, but relatively near the cantonment in order to obviate the laziness of men to evacuate intestinal contents. Signs should be posted indicating their location and at night by lantern. Generally speaking, these outhouses are composed of a ditch covered by a board frame. According to the type used, the ditch varies in dimensions as follows:

	Single outhouse	Outhouse with 3 stalls
Length...	1 metre,	2 metres, 10 centimetres
Width....	20 centimetres	50 centimetres
Depth	1 metre, 40 centimetres	1 metre, 40 centimetres

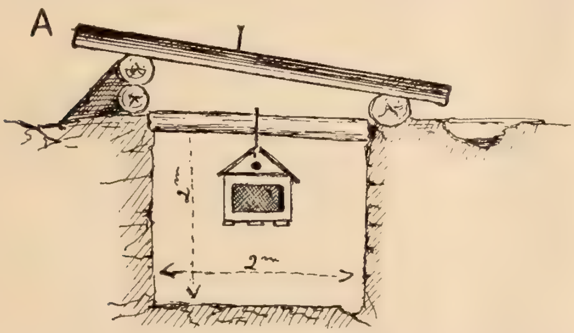

FIG. 7.—Food storage room. A, slanting roof of corrugated tin.

In large cantonments the three stall outhouse is absolutely necessary. The wooden frame represents the dimensions of the opening of the ditch (see Fig. 8). The frame is as nearly hermetically closed as possible by wooden covers. Its construction ends with a wood screen or canvas nailed to posts (see Fig. 9), while a roof in addition offers all necessary comfort.

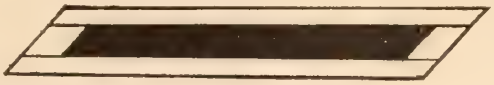
FIG. 8.—Single outhouse ditch, one metre long by twenty centimetres wide.

For the trenches the ditch and its framework are the same, but the construction and location of the outhouses should offer the maximum of safety for the men. They should be parallel to the principal trench and placed at the end of a bent trench (see Fig. 10), connecting it with the main trench. The parallel portion of the bent trench should be made sufficiently long in order that several successive outhouses can be added along it as requirements demand. Safety is increased by covering the outhouse by a roof of logs, earth, and, if possible, sheet iron. Such a roof has also the advantage of keeping the place dry; otherwise rain water accumulates in them. For the same purpose the trench leading to the outhouse should be slightly inclined downwards from the outhouse to the trench, the central gutter of which should be covered by hatches in order to protect it from the constant trampling of the feet, which would otherwise quickly demolish it.

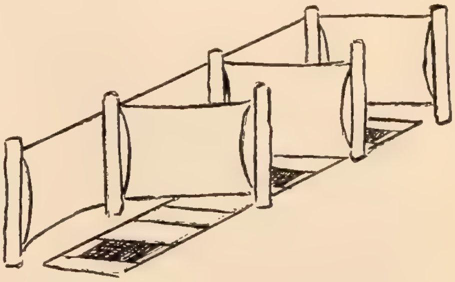
FIG. 9.—Screened outhouse ditches.

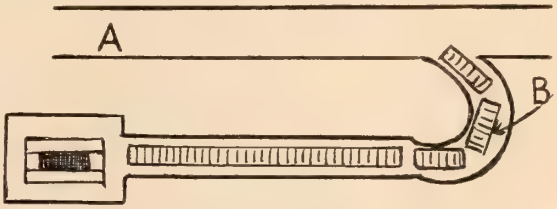

FIG. 10.—Diagram of a trench outhouse. A, trench; B, passage to outhouse, floor covered with boards.

To the above measures for the disposal of human feces the daily care and maintenance of the trench must be strictly looked after. The immediate surroundings should be treated with disinfectants by the stretcher bearers. I shall refer in another communication to the disinfectants to be employed. When an outhouse ditch is half filled it should be disinfected thoroughly and then filled in with earth, which will be sufficient under the circumstances. When the cantonment is abandoned the spots where the outhouse ditches were should be marked so that other units shall not dig theirs at the same spots. Regardless of every effort at disinfection, the frequency of bad odor and the presence of numerous flies reveal the imperfection of these haphazard, but necessary constructions, whose chief inconvenience is the communication of the ditch with the exterior. Progress has been realized by Surgeon Major Bué with his system of immersion in an antiseptic fluid and a layer of this fluid completely and hermetically separating the ditch from the exterior. Unfortunately, the construction takes some time and requires certain special materials which cannot always be obtained in a regimental cantonment.

MEDICAL NEWS FROM WASHINGTON.

Propaganda for Civil Cooperation in Maintaining Health of the Service.—New Regulations on Promotion of Junior Officers Being Drawn Up.—Graduate Nurses Needed in the Army.—Reservists Being Appointed in Medical Department of the Navy.

WASHINGTON, *December 6, 1917.*

The surgeon general of the navy continues to conduct his educational campaign in various parts of the country with a view to stimulating interest in preserving the health of the civil communities and in obtaining the cooperation of the local health authorities. To that end, Rear Admiral Albert Ross, U. S. Navy, retired, and Surgeon J. R. Phelps, of the navy, attached to the Bureau of Medicine and Surgery, recently visited districts in New England and New York for the purpose of explaining the opportunity of the physicians in various places to contribute to the health of the naval and military personnel by the enforcement of regulations in regard to hygiene and sanitation among civilians residing in the neighborhoods of naval stations and army cantonments. Unless this is done, it will be exceedingly difficult to prevent the introduction of communicable diseases at the places where so many of the enlisted force are necessarily gathered, perhaps for a protracted stay. It is one of the inevitable results of a war of this kind that barracks are unduly crowded. This is particularly so at the City Park barracks in Brooklyn, where 6,000 men are sheltered under conditions that, without exercising the greatest care, it would be easy for an epidemic to prevail to an extent that would give the naval authorities considerable trouble. Of course, the same is true at the cantonments, and the medical authorities of the army, navy, and Public Health Service are continually fighting for greater air space and such conditions of sanitation as will reduce the possibility of preventable diseases.

The naval medical officers are much gratified with the admirable showing that is made by the health reports of vessels in home and foreign waters and of the training stations. The sick rate is about that prevailing in normal times. Of course, there is anticipation that, with the advent of cold weather, there will be an increase of sickness, but the Bureau of Navigation is cooperating with the Bureau of Medicine and Surgery in efforts to prevent any material change. Overcrowding of the personnel is being avoided wherever possible, for it is realized that it is from too great a concentration of newly enlisted men in barracks that produces epidemics. The welfare work of civilian bodies in the communities near the stations is of material assistance to the naval authorities in the control of local conditions so far as they have an influence upon the health of the service personnel, and much more can be accomplished in this direction in this country. Abroad there may be difficulties on account of the territorial jurisdiction, and it may not be possible to enforce the sanitary regulations to the extent permissible at home.

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The Surgeon General's Office of the War Department has completed the first draft of new regulations pertaining to the promotion of junior officers, in accordance with the provisions of the act of October 6, 1917, to the effect that "during the existing emergency, first lieutenants in the medical corps of the regular army and of the national guard shall be eligible to promotion as captain upon such examination as may be prescribed by the Secretary of War." It probably will be a week or more before these regulations are promulgated and before it is decided in what way the promotions may be effected.

* * * * *

Five hundred graduate nurses are needed immediately for work with the army Nurse Corps. The work is particularly difficult and exacting, and the opportunity for patriotic service is correspondingly great. A 1,000 bed base hospital has been established with each national army and national guard cantonment. Each will require at least sixty-five graduate nurses in its personnel. The pay is fifty dollars a month and maintenance.

* * * * *

There continues to be great need of additional officers in the Medical Department of the navy, and this is being met, as far as practicable, by appointment of reservists. The provisions of the selective draft act have made it possible for medical and dental students to be exempt from active service for the purpose of continuing their studies, if they enlist in the enlisted reserve corps of the Medical Department of the army. Those students of medical and dental colleges that desire to enter the navy may be enrolled in the naval reserve force and allowed to remain at their studies in a manner similar to that offered them by the army. Medical and dental students who may be interested in joining the naval reserve force should apply to the commandants of naval districts for information on the subject.

The Surgeon General's Office

Expansion Caused by War—Organization of Work by Divisions—Leaders from Civil Life Enlisted—Organizing the Specialists of the Country

(Continued from page 1090.)

ADVISORY BOARD IN ORTHOPEDICS.

To insure a more active cooperation between the orthopedic surgeons who have entered active service as members of the reserve corps and those who have not entered the service, the Surgeon General has organized an advisory board in orthopedics, which includes the following members: Major E. G. Brackett, M. R. C., professor of orthopedic surgery, Harvard University; Dr. John L. Porter, professor of orthopedic surgery, University of Illinois; Major J. E. Goldthwaite, M. R. C., professor of orthopedic surgery, Tufts Medical College; Major David Silver, M. R. C., professor of orthopedic surgery, University of Pittsburgh; Dr. Robert W. Lovett, professor of orthopedic surgery, Harvard University; Dr. Albert H. Freiberg, professor of orthopedic surgery, University of Cincinnati; Dr. Gwilym G. Davis, professor of orthopedic surgery, University of Pennsylvania; Dr. F. H. Albee, consulting orthopedic surgeon, New York Post-Graduate Medical School and Hospital, who is also a member of the advisory surgical staff and represents that body on the orthopedic board as an ex-officio member.

STATE, WAR, AND NAVY DEPARTMENT BUILDING, WASHINGTON. *Photo Harris & Ewing*

Before the war the Surgeon General's Office occupied four rooms in this building. Now it occupies over 300 rooms, five entire buildings, and parts of two others, beside the Army Medical School and the Army Medical Museum and Library.

Division of Special Hospitals and Physical Reconstruction

The standard unit for the giving of what is commonly known as physical remedies, which is to be placed at the hospitals which handle the sick and wounded, as at present planned, will be housed in a building having a floor space equivalent to twenty-four by 400 feet or 9,600 square feet. This building will have equipment to give treatment with dry heat and all forms of hydrotherapy which have been found to be useful in the treatment of sick and wounded, including general and local baths for joints —known as the whirlpool type—which have been reported as being exceedingly useful by certain French and English surgeons. A new development in the plan of the Surgeon General's office is to attempt to apply this same principle of treatment to the shoulder joint and hip joint, which bids fair to be successful. An interesting feature of each of these units is the pool bath, the temperature of the water being automatically regulated to the required degree, with provision for gentle movement of the water. It is expected that these pool baths will prove of great benefit in certain types of cases. At certain of the larger hospitals swimming pools will be available. These have been found useful for certain purposes. There will be provision, of course, for massage to the extent necessary, both in connection with hydrotherapy and alone.

This unit will include provisions for giving remedial exercises, both active and passive, both manual and by means of machines. It is intended that each machine will have a measuring device by means of which the progress from treatment to treatment will be known both to the patient and to the surgeon. This will greatly encourage the wounded man, as he will see his progress from day to day for himself. Electrotherapy is provided, a set of equipment being included which is calculated to give those forms of treatment which have been shown to be of benefit, with provision for extension as new methods are developed. This special unit will have gymnasium facilities and space for indoor drills when the weather is unfavorable. The building will be so constructed as to afford, when desired, a space large enough for entertainments or indoor games in the winter time, and all of these contribute to the recovery of the individual.

Photo Harris & Ewing

LIEUTENANT COLONEL WILLIAM H. MONCRIEF, M. C., Chief of the Division of Surgery.

The work of this division will include physical reconstruction, functional reconstruction, and vocational readaptation. This readaptation and training of the wounded for new or special callings has been a very important feature of the work in France and Great Britain, and surprising results have been obtained. In some cases, as a result of the technical training involved in the reeducation, a wounded man has been able to earn more after the war than he did before. At the head of this division is Major Edgar King, M. C., and he is assisted by Major Thomas D. Woodson, M. C.; Major James Bordley, M. R. C., director of the South Baltimore Eye and Ear Hospital; Major W. H. Henderson, S. C., professor of industrial education at the University of Wisconsin; and Captain H. Brooks Price, S. C., New York, an architect.

ACTIVE VOCATIONAL BOARD

In the same way that the Surgeon General has availed himself of the services of eminent surgeons on the advisory surgical board, he has organized an active vocational board which includes Dr. Royal Meeker, labor, commissioner of labor statistics, Washington, D. C.; Dr. David Edsall, medicovocation; Jackson, professor of clinical medicine, Harvard Medical School; Dr. Dean Lewis, general surgeon, professor of surgery in Rush Medical College, Chicago; and John E. Wilder, industrial and employment, president of the Wilder Leather Company, and Chairman Board of Trustees of Hanaman Hospital, Chicago, Illinois; Charles A. Stone, industrial and employment, president of the American International Corporation, New York, and of the firm of Stone and Webster, Boston, Mass.

Division of General Surgery

The Division of General Surgery develops all plans and provides for the execution of all details of the surgical care of men wounded in action. Within the scope of the activities of this division, there come all the problems incident to the surgical care of all the major and minor injuries during transport to and after arrival at the regimental aid and dressing stations, field, evacuation, and base hospitals. The development of all necessary plans has been based on three fundamental propositions: 1, the established principles laid down in the Army Regulations; 2, the past experience of the medical corps of the army in military surgery; 3, the experiences of our allies during the present conflict in all matters dealing with the problem of surgical care of the wounded.

The organization of general surgery with its allied specialties is aiming first to secure a personnel well qualified to care for the wounded; and in the second place, to plan and arrange conditions—the so called externals—so that this personnel can work at its maximum efficiency. In order to do this such broad though intricate problems as hospital construction and mobilization, transport of the wounded, and surgical reconstruction and rehabilition have to be mastered in detail. Innumerable minor, though possibly no less important or pressing, matters have to be and are being disposed of in definite concrete fashion: e. g., the standardization of the treatment of fractures, with the fewest possible number of standard splints, adequate provision for crisis expansion of the field hospitals by the use of mobile operating units, the standardization of surgical equipment and supplies, fostering the spirit of research so as to render it most useful in meeting

MAJOR CHARLES H. MAYO, M. R. C., Member Advisory Surgical Staff, Surgeon General's Office; President, American Medical Association.

practical immediate needs, providing adequate instruction in the special branches of so called war surgery, both in general surgery and in surgery of the various specialties. These educational activities have taken on three forms: 1, the establishment in various large clinical centres—New York, Philadelphia, Chicago, St. Louis, New Orleans, Pittsburgh, Cleveland, Boston—of special schools of instruction under the direction of competent specialists; 2, the publication of special manuals based largely on the surgical experiences of our French and English colleagues, but incorporating also the fundamentals of general surgery and the surgical specialties; 3, the establishment of schools of instruction in all of the fifty base hospitals now organized in the various cantonments, the instruction being planned for the benefit of the medical personnel of each division. The Division of General Surgery is in charge of Lieutenant Colonel William H. Moncrief, M. C., who is assisted by Major Raymond P. Sullivan, M. R. C., surgeon to the Holy Family and Greenpoint hospitals of Brooklyn; Captain John B. Walker, M. R. C., professor of clinical surgery at the New York Eye and Ear Infirmary; Captain Percy R. Turnure, M. R. C., F. A. C. S., New York; and Captain Floyd E. Keene, M. R. C., Philadelphia.

Photo Harris & Ewing

LIEUTENANT COLONEL T. C. LYSTER, M. C.,
Chief of the Section of Surgery of the Head, Division of General Surgery.

In order to provide for the very essential element of coordination, in the maturing of all plans and provisions, the Division of General Surgery has coordinated with the departments of Surgery of the Nervous System, Surgery of the Ear, Nose and Throat, Surgery of the Eye, Oral and Plastic Surgery, Genitourinary Surgery, and Orthopedic Surgery. A note on the work being done in orthopedic surgery appeared in the NEW YORK MEDICAL JOURNAL for December 8th, and one on the work in surgery of the head is given below.

THE ADVISORY SURGICAL BOARD.

Several distinguished surgeons from civil life who have joined the Medical Reserve Corps are attached to the Surgeon General's Office, serving in the capacity of advisors, and aiding in coordinating the work of general surgery and the surgical specialties. Among the members of the Advisory Surgical Board are: Major William J. Mayo, M. R. C., and Major Charles J. Mayo, M. R. C., of Rochester, Minn.; Major W. D. Haggard, M. R. C., professor of surgery at Vanderbilt University; Major Stuart McGuire, M. R. C., professor of surgery at the Medical College of Virginia; Major A. J. Ochsner, M. R. C., professor of clinical surgery in the Medical Department of the State University of Illinois; Major J. F. Binnie, M. R. C., surgeon to the Christian, the Missouri General, and the German hospitals in Kansas City, Mo.; and Major Samuel J. Mixter, M. R. C., consulting surgeon to the Massachusetts General Hospital of Boston; Major Arthur Dean Bevan, M. R. C., professor of surgery, Rush Medical College, Chicago; Major K. A. MacKenzie, M. R. C., professor of operative and clinical surgery, University of Oregon.

SECTION OF SURGERY OF THE HEAD.

One of the many effects which trench warfare has had on the character of casualties has been a remarkable increase in the proportion of wounds of the head. So important has this particular phase of surgery been in the present war that the Surgeon General has organized a separate section on surgery of the head with subsections on ophthalmology, otolaryngology, plastic and oral, and brain surgery. The activities of the subsections of ophthalmology and otolaryngology can be considered together, as the methods of procedure were the same in each instance. The first activity engaged in by these

MAJOR STUART McGUIRE, M. R. C.,
Member Advisory Surgical Staff, Surgeon General's Office; professor of surgery, Medical College of Virginia.

sections was the listing of all the known specialists throughout the United States and preparing an indexed catalog. In determining the availability of applicants for service, assistance has been rendered by an advisory committee, which consists of well known specialists in different parts of the country, to whom letters were sent requesting specific information. Through this means many of the most eminent members of the profession have joined the Medical Reserve Corps and have been assigned to positions in the various cantonments. Under them will be placed men of less experience for training who later will be assigned for service in base hospitals abroad. Other activities include the standardization of instruments, the revising of the visual and hearing requirements for entrance into the army, the assembling of tests for malingerers, and the perfecting of an ear protector. Plans for a special operating pavilion were designed for use in the cantonments, and a special hospital for use abroad has been planned and the equipment selected.

The main work of the subsections of plastic and oral and brain surgery has been securing a personnel of about 450 surgeons. In addition to the small number of qualified men there have been listed those general surgeons who have expressed a desire to undertake the problems of these special branches. For the purpose of further fitting the general surgeons schools have been established in Philadelphia, St. Louis, Chicago, and New York. The course of instruction includes anatomy, physiology, symptomatology, operative exercises upon the cadaver and animals, clinical demonstrations, and didactic lectures. The neurosurgical course extends over a period of ten weeks and the plastic and oral four weeks. In addition to the special surgical training, each officer is being given military training in a medical officers' training camp, or as a member of staffs of cantonment base hospitals. When in active service overseas there will be assigned one plastic and oral, one brain, and one dental oral surgeon to each 500 bed base hospital. To the small evacuation hospital staff will be assigned one surgeon to care for brain and oral and plastic surgery, and one dental oral surgeon. A supply table of instruments and equipment necessary for brain and plastic and oral surgery has been formulated.

In collaboration with the Dental Corps a systematic survey is being made of the mouths of all enlisted personnel of the National Guard and National Army. Focal infections are being eliminated when found. For the purpose of investigating problems of neurosurgery a laboratory was established September 1st at the Johns Hopkins Medical School; the members of this laboratory staff are now engaged in studying methods of combating infections of the brain, cord, and covering.

In preparing the courses of instruction and in selecting the personnel to receive this instruction the Surgeon General has had the assistance of Lieutenant Colonel T. C. Lyster, M. C.; Major M. N. Black, M. R. C., Milwaukee; Major H. P. Mosher, M.R.C., associate professor of laryngology, Harvard University; Major W. R. Parker, M.R.C., professor of ophthalmology, University of Michigan; Major Allen Greenwood, M. R. C., assistant professor of ophthalmology, Tufts Medical School, and lecturer in ophthalmology, Harvard Post Graduate Medical School; Major V. P. Blair, M. R. C., associate in surgery, Washington University Medical School, and professor of oral surgery, Washington University Dental School; Captain Charles Bagley, Jr., M. R. C., Baltimore; Captain R. H. Ivey, M. R. C., associate surgeon Columbia Hospital, Milwaukee; and Captain H. H. Kerr, M. R. C., clinical professor of surgery, George Washington University. Lieutenant Colonel Lyster and Major Mosher are on temporary duty abroad, and Major Walter R. Parker is on duty in temporary charge of the Head Section; and Major Charles W. Richardson is in temporary charge of the Subsection of Otolaryngology.

Division of Infectious Diseases and Laboratories.

The rapid development of the laboratory sciences as aids to medicine is recognized in the organization of a laboratory section of the department of infectious diseases. This laboratory section is charged with the provision of laboratory equipment for bacteriological laboratories suitable for examinations of carriers of meningitis, typhoid, paratyphoid, and diphtheria. This section also is charged with the supervision of water supplies, the supervision of methods of purification, of plans for examination not only as to bacteria, but also as to mineral or other poisons which might be introduced by enemies, the examinations of pneumococci with a view to identifying the particular strain present in specific cases for the information of the therapeutist in charge of the case. The division will also be charged with the organization of these laboratories and with provision for the proper personnel, and instruction of that personnel. A series of courses of instruction in laboratory methods, for instance, are being given by Major Simon Flexner and his staff at the Rockefeller Institute, and instruction will also be provided by other specialists. Under this division there will be five large departmental laboratories and a large number, forty or more, division laboratories and camp laboratories. The equipment for a field bacteriological laboratory is not very elaborate or bulky and such field laboratories with adequate personnel will be provided for service in the advance lines of the troops. Associated with Colonel F. F. Russell, M. C., in this section of the division are Major Hans Zinsser, M. R. C., New York, professor of bacteriology, Columbia University, and Captain George Draper, M. R. C., New York, associate professor of medicine, Columbia University.

SECTION OF VENEREAL DISEASE OF THE DIVISION OF INFECTIOUS DISEASES.

The work of the Section of Venereal Diseases is concerned with two major lines of effort to reduce the noneffective rate from these diseases, namely, measures of prevention and treatment. The preventive measures are grouped under social, educational, and prophylactic. The treatment measures deal with acute cases and necessary follow up treatment. The prevention of these diseases is sought through cooperation with all the forces which may be directed toward the protection of the soldier from alcohol and prostitution as the major factors favoring exposure. A special commission of the War Department has been created by the Secretary of War to organize and develop these influences. The Section of Venereal Diseases is charged with the administrative details of cooperation with this Commission, and to this end assigns a number of its Sanitary Corps lieutenants to extracantonment duty. Since recreation, entertainment, and religious and educational interests operate largely to reduce sex temptations, the Commission utilizes the resources of many welfare agencies such as the Y. M. C. A., Y. W. C. A., Playground and Recreation Association, Knights of Columbus, and organizations dealing more directly with the combating of venereal diseases such as the American Social Hygiene Association. The Section is also charged with the promotion of education as an important factor in combating these diseases. Official pamphlets, talks by the commanding officers, and compulsory attendance at lectures by selected lecturers are among the agencies utilized. In this phase of the work, it has the cooperation of the Commission on Training Camp Activities, through a department of social hygiene instruction.

Photo Harris & Ewing
COLONEL F. F. RUSSELL, M. C.,
Chief of the Division of Infectious Diseases and Laboratories.

Measures for the prevention of development of infection after exposure constitute a part of the program. Early treatment stations are maintained for this purpose at each regimental infirmary and in extracantonment cities where necessary. Every effort is made through these facilities and through disciplinary measures, including court martial and loss of pay, to limit the number of cases which arise from failure of the combined efforts to prevent exposure to infection. When all of the above efforts have failed and cases of syphilis or gonococcus infections are discovered or suspected, they are referred in the first instance from the regimental infirmaries to special medical officers who have at their command laboratory and hospital facilities. As soon as possible, cases are returned to the regimental surgeons for follow up treatment. The dermatologists and genitourinary surgeons who comprise this corps of special officers are also required to carry out demonstration courses for the regimental surgeons thus insuring continuity of effective treatment for each patient, even after his return to active duty.

The activities of the section are closely correlated with the activities of the Sanitary Division of the Surgeon General's Office, and the other divisions indirectly concerned. To render the work of the section most effective as a whole, an advisory committee of five members has been created. Each of these members serves one month in rotation in the Surgeon General's Office, and at other times is occupied with field inspection trips. The Section of Venereal Diseases, through its joint activities with the United States Public Health Service, the American Red Cross, and the Council of National Defense, as well as with the Commission on Training Camp Activities of the War Department, illustrates the elasticity of the organization which the Surgeon General of the Army has preserved in building up the enormously enlarged office which has become necessary to conduct the affairs of the Medical Department of the Army.

The personnel of the section comprises: Major William F. Snow, M. R. C., in charge; Major Edward L. Keyes, Jr., detailed to foreign duty; Captains McCampbell and Thomson, and a corps of lieutenants and sergeants, among whom are Lieutenant Paul Popenoe, S. C., editor of the *Journal of Heredity,* and Lieutenant Sidney F. Morgan, special field agent of the American Red Cross, attached to national headquarters. The personnel of the Advisory Committee comprises: Dr. William Allen Pusey, emeritus professor of dermatology at

Photo Harris & Ewing
MAJOR WILLIAM F. SNOW, M. R. C.,
Chief of the Division of Venereal Diseases.

the University of Illinois; Dr. Francis R. Hagner, professor of genitourinary surgery and venereal diseases at George Washington University Medical School; Dr. S. Pollitzer, consulting dermatologist to the German Hospital, New York; Dr. Grover W. Wende, of Buffalo, professor of dermatology and syphilis of both the medical and dental departments of the University of Buffalo, and in charge of the Section on the Treatment of Genitourinary Diseases, and Dr. Henry H. Morton, of Brooklyn.

The Medical Officers' Training Camps

On April 6th war was declared. Three days later complete plans were laid upon the Surgeon General's desk for the organization of four medical officers' training camps. In the rush for erection of new Plattsburgs for the training of line officers these plans were thrust aside and it was not until June 1st that medical officers' training camps were opened at Fort Benjamin Harrison, Fort Riley, and Fort Oglethorpe. The fourth camp plan, which was to have been located at Leon Springs, Texas, was never organized, but a camp was orgainzed at Des Moines, Iowa, for the special benefit of the negro medical officers in the service. The course of training laid out covered three months, and provided instruction for 1,500 students in each of the three camps first organized and 200 at the Des Moines camp. The character of the training given has been described at some length in an article on life in a medical officers' training camp, which appeared in the Journal for November 3rd. At the close of the second three months of instruction the camp at Fort Benjamin Harrison was closed, but a third series of students is now undergoing instruction at Fort Oglethorpe and Fort Riley.

The training of the medical officer was divided into three main divisions, the first being the school of the sanitary soldier. The student officers were put through exactly the same training which the enlisted men of the Medical Department are put through, for one of the important duties of the medical officer is the training of the enlisted personnel, and the best way for the officer to learn this is to go through it himself. He was then called upon to study sanitation in the field. Next followed instruction in "paper work," which would enable him to handle correctly the numerous and important official documents which must pass through his hands as commander of a medical detachment. Finally he was given a comparatively brief course of instruction in special features of professional work which differ from the work of the surgeon in civil life. This instruction was intentionally so graded that even if the student was ordered away from the camp before the completion of the course, he would have learned some of the basic duties of the military surgeon. These surgeons are intended for use on the firing line and the psychology of the packmule is more important there than the finer technic of brain surgery. A number of the younger surgeons in the National Guard were ordered to the medical officers' training camp and also a large number of enlisted men of the medical department. While the majority of the students were quartered in barracks, the National Guard members and the enlisted personnel were under canvas and the instruction of the enlisted personnel took the form of organization into ambulance companies, field hospitals, and regimental military detachments. The work of this division has been under the supervision of Colonel E. L. Munson, M. C., secretary of the Association of Military Surgeons and editor of *The Military Surgeon*.

Division of Neurology and Psychiatry

The Division of Neurology and Psychiatry was created for the purpose of coordinating all matters pertaining to nervous and mental disease which concern the Medical Department of the army and the division's first duty was furthering commissions in the Medical Officers' Reserve Corps of qualified specialists in nervous and mental disease and having them assigned to appropriate duties. There are now nearly 250 of such medical officers on duty in this country and Europe. First came the examination of troops for the purpose of preventing the army from being hampered by officers or soldiers affected with nervous and mental disease or by those whose nervous makeup was of a character to indicate that they could not withstand the shocks and strain of warfare. More than 2,000 persons, physically fit, have been found unfit for military service by reason of these causes.

In all the cantonments, special neuropsychiatric pavilions have been built which serve as special wards for cases of nervous and mental disease. Base hospitals and other organizations have been supplied with neurologists from this division. Courses of special instruction have been given some of these specialists officers at the Psychopathic Hospital, Boston, Mass.; Neurological Institute, New York; Manhattan State Hospital, New York; Phipps Clinic, Baltimore; St. Elizabeth's Hospital, Washington, D. C.; Philadelphia General Hospital, Philadelphia; and the State Psychopathic Hospital, Ann Arbor. Through the courtesy of the British War Office, a group of officers have been stationed in the English shell shock hospitals to study the war neuroses, which have created such a grave medical problem to the English army. From now on the Division of Neurology and Psychiatry will devote much of its attention to supplying special officers, nurses, and enlisted men to the neurological hospitals to be established in France. At the head of this division are Major Pearce Bailey, M. R. C., consulting neurologist to St. Luke's and other hospitals in New York, Captain Sanger Brown, II, assistant physician at Bloomingdale, White Plains, N. Y.; Lieutenant H. M. Pollock, of Boston, and Lieutenant Roy Haber.

SECTION OF PSYCHOLOGY.

The Section of Psychology of the Office of the Surgeon General of the Army was created in August, 1917, to provide for the proper handling of psychological problems which confront the Medical Department. The first task of this new unit within the Medical Department was the recommendation of methods for the detection and measurement of mental defectives. There were available certain methods which had been especially prepared for military use by the Committee of the National Research Council. These were accepted on the basis of thorough trial in regular army reorganization camps. In addition to revealing mental defectiveness these new methods of psychological examining, as applied to enlisted men and officers, supply an intelligence rating which is of obvious importance in connection with assignment to duty. At present the enlisted men and in certain instances the officers, also, in four National Army cantonments are being given psychological examinations. The procedure is simple and the work progresses very rapidly. A company of approximately 150 men can be examined by a single examiner in about one hour. Special provision is made for the examination of men who cannot read and write English fairly well.

Photo Harris & Ewing
MAJOR R. M. YERKES, S. C., N. A.,
Chief of the Section of Psychology of the Division of Neurology and Psychiatry.

The special feature of the new methods is the provision for examining large groups. It is possible for a staff of ten psychologists, assisted in the scoring and recording of records by enlisted men, to examine upward of 2,000 soldiers in a day. In one army camp practically all of the officers and almost all of the enlisted men have already been examined. From one to two per cent. of the enlisted men are for various reasons referred to the psychiatric board for special study. Both the medical staff and the staff of the commanding general of the division in this camp are making abundant use of records of psychological examination for purposes of organization since they believe that the efficiency of the division may be greatly increased by the proper utilization of reliable information concerning a man's general intelligence and special abilities.

The staff of the Section of Psychology, Office of the Surgeon General, includes: Major Robert M. Yerkes, Sanitary Corps, National Army, professor of psychology and director of the psychological laboratory, University of Minnesota; Captain Charles Scott Berry, Sanitary Corps, National Army, associate professor of educational psychology, University of Michigan; Lieutenant Arthur S. Otis, Sanitary Corps, National Army, psychological statistician; Dr. Truman L. Kelley, advisory member of staff, assistant professor of education, Teachers College, Columbia University; Dr. Lewis M. Terman, advisory member of staff, professor of educational psychology, Stanford University.

The following appointees are serving as chief psychological examiners in the National Army cantonments: Lieutenant Clarence S. Yoakum, Base Hospital, Camp Lee, Virginia, associate professor of psychology, University of Texas; Lieutenant Marion R. Trabue, Base Hospital, Camp Zachary Taylor, Kentucky, assistant professor of education, Teachers College, Columbia University; Lieutenant Joseph W. Hayes, Base Hospital, Camp Dix, New Jersey, assistant professor of psychology, University of Chicago; Lieutenant William S. Foster, Base Hospital, Camp Devens, Massachusetts, instructor in educational psychology, Cornell University. Each cantonment psychological staff consists of four officers of the Sanitary Corps and six civil appointees, all of whom are competent experts in psychological examining.

Division of Food and Nutrition.

The health of an army is intimately related to the quality of food supplied, its protection against spoilage and deterioration, and its preparation for mess. Not only the health but the morale of the troops as well depends in large measure upon these factors. The problem of feeding the army has a physiological aspect involving the amount of food and the relative proportion of fats, carbohydrates, and proteins in the diet, and a sanitary aspect relating to the quality of the food and its preparation for the mess. In view of the nature of this problem and its great importance, the Surgeon General has

Photo Harris & Ewing
MAJOR JOHN R. MURLIN, S. C., N. A.,
Chief of the Division of Food and Nutrition.

organized a special division of the Medical Department to deal with it. The Food Division of the Surgeon General's Office has engaged the services of trained physiologists, nutrition experts, medical men experienced in public health work, and food chemists to study conditions and report their findings. The men assigned to the Food Division have been commissioned in the Sanitary Corps and the Medical Reserve Corps, and the problem of feeding the troops will be studied by them under actual field conditions in camps both in the United States and abroad in order to safeguard the nutritional interests of the army.

The purpose of the Food Division is to secure information for the Surgeon General in regard to the nutrition of the troops in the field, with the following points in mind: 1. It is desired to obtain data from which a nutritional history of the war may be written. This will be of use not only in connection with the military organization, but after the war as well, as a contribution to the knowledge of nutrition. 2. The information secured by the Food Division will be of such a nature that it may be used as a basis for recommendations as to what foods are most desirable, the best methods of cooking and serving food in camp, and the proper balancing of the menus. 3. The division is keeping detailed records of the activities of the men during the period of observation, and by cooperating with the United States Weather Bureau, will secure data on the climatic conditions under which the troops are working in camp. Since these two factors are closely related to the food requirements, it is important for purposes of correlation to have information concerning them.

In their final form, the reports of this division to the Surgeon General will give the cost and amount of fat, carbohydrate, and protein consumed by a man in a day, the climatic conditions under which the consumption took place, and the activities of the troops during the period of observation. In addition, the reports will contain notes on any factors affecting the palatability of the food as served at mess, such as methods of preparation, cooking, and serving, and quality of the food. Another purpose of the Food Division will be to make recommendations as to how waste may be prevented in camps. This aspect of the problem of feeding the army is closely related to the work previously outlined. The serving of a properly balanced ration containing just the quantity of food necessary to maintain the men under the conditions of their training will result in food economy and it is the purpose of the division to suggest also ways in which losses incident to preparation of food for cooking and losses of edible materials from the mess may both be kept as low as possible. The prevention of waste in the camps obviously assumes great importance in view of the worldwide shortage of food at this time, since the army, even at its present strength consumes a very considerable proportion of the total amount of food used in the United States.

A system is now in operation for obtaining the information above outlined by means of nutritional surveys of the various camps made at intervals by parties of officers and enlisted men of the division. These survey parties first inspect the subsistence stores from the point of their nutritive value. From an inspection of the entire camp a number of individual company messes are then selected for detailed study, care being taken to select those in which the conditions are typical of army life considering the period of training attained. The determination of the amount of food consumed involves in the first place the keeping of an accurate account of the food used in the mess during the period of observation, and in the second place a determination of the amount of edible material lost in the garbage. This latter quantity is determined by weighing the garbage and taking a sample which is subsequently analyzed. The net consumption is then determined by subtracting the quantity of food material discarded in the garbage from the total amount of food which came into the mess. In addition, the purchases of the troops at camp exchanges are recorded and an estimate is made of the amount of food bought outside of camp. Observation on waste, quality of food, and mess conditions are also taken. This information is worked up immediately upon completion of the survey of a camp and sent to Washington.

The Food Division will thus be able to state the net consumption of food by the troops under actual field conditions. This information has never been available before, and will constitute an important addition to the knowledge of nutrition. The division will also be able to furnish data bearing on the problem of feeding troops and to make recommendations as to how this problem can best be dealt with. Experts in various fields of research connected with food and nutrition are available in case special studies are necessary. It is believed that the information secured by the division will be of great value in reducing the feeding of the army to an exact scientific basis.

Following is the personnel of the Food Division: Major John R. Murlin, S. C., commanding the division, Cornell University Medical School, New York; Captain Caspar W. Miller, M. R. C., in charge of office force, University of Pennsylvania Medical School; Captain Frank C. Gephart, S. C., N. A., supervising surveys, Russell Sage Institute of Pathology; Captain Walter H. Eddy, S. C., N. A., in charge of Party No. II, Department of Biology, High School of Commerce, New York; Captain Arthur W. Dox, S. C., N. A., in charge of Party No. III, Iowa State Experiment Station; Lieutenant A. W. S. Thomas, in charge of Party No. I, Columbia University; Lieutenant F. B. Kingsbury, in charge of Party No. IV, University of Minnesota Medical School; Lieutenant F. M. Hildebrandt, in charge of statistics; Lieutenants V. K. Le Mer, N. R. Blatherwick, Edward Plaut, W. R. Line, A. D. Shohl, D. L. Weatherhead, B. H. Harrison, W. A. Turner, F. A. Cajori, R. B. Hill, C. C. Mason, M. G. Mastin, on survey parties; Dr. F. H. Flanders, Dr. J. P. Street, and Dr. A. S. Hogan have been commissioned but have not yet reported for duty. The Bureau of Chemistry, the Quartermasters' Department, the Public Health Service, and the Weather Bureau are cooperating with the Food Division and the following men are acting in an advisory capacity: Dr. A. E. Taylor, Dr. Graham Lusk, Dr. F. G. Benedict, Dr. C. L. Alsberg, Dr. E. V. McCollum, Dr. L. B. Mendel.

(*To be continued.*)

Editorial Notes and Comments

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EDITORS
CHARLES E. DE M. SAJOUS, M.D., LL.D., Sc.D.,
Philadelphia,
SMITH ELY JELLIFFE, A.M., M.D., Ph.D.,
New York.

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SHACKLING SCIENCE.

The sciences are not sectional. They are not bound by geographical or political lines. Even lingual limitations are abrogated to a large extent, for the scientist is generally at least bilingual. This is particularly true in medicine and it is most important that no artificial limitations be imposed on the spread of information regarding the medical sciences which would tend to make the development of medicine sectional in character. For this reason every physician should use his influence with the members of Congress and of the Senate of the United States to bring about a repeal of the law which imposes a zone system of postage on periodical publications. This system would make subscription a heavier burden to the doctor in the Philippine Islands than to the New Yorker, though he needs the NEW YORK MEDICAL JOURNAL even more because he is cut off from contact with the leaders in medicine at local meetings. The greatness of the United States lies in the fact that across its three thousand miles from sea to sea and up and down its two thousand miles from Canada to the Gulf there is a homogeneous people, speaking one language, having the same ideals and uniform manners and customs. At this particular juncture when our national existence is dependent upon unity of thought and purpose, it is worse than folly for the Government to make any change in the regulations affecting these periodicals which would tend to limit the sphere of their influence or foster a strictly sectional press. This would be the effect of the zone system of postage which forms a part of the war revenue bill, and physicians as patriots and men of science, may well exert their influence to bring about a repeal of this objectionable feature.

SING SING PRISON, THE OLD AND THE NEW.

In spite of the present outbreak of destructiveness modern revolutions proceed by slow and sure growth. There was a day when a Parisian mob attacked and razed to the ground an old fortress prison which had been the scene of much ignorant and barbarous miscarriage of justice, neglect, and abuse allowed in its name. Less grossly barbarous perhaps but no less irrationally ineffective, ignorance and injustice have characterized the prisons of more recent periods and of this newer and freer country. The beginning of the demolition of the old Sing Sing Prison, which took place on November 7, 1917, marks an era in the liberation of the ideals of justice and in a truer conception of actual freedom in the mind of the public at large. It is a milestone upon the road of progressive evolution, which is really evolution into a new consciousness of duty toward even those guilty of antisocial behavior. For two reasons, perhaps, the event is not exactly comparable to the razing of the Bastille. In the first place the event is the result of a slow process of change in the ideal of the people, a gradual apprehension by them of a better conception and plan of practical dealing with the problem of crime. On the other hand, humanity may also be better aware of itself since the end of the eighteenth century. It has been coming to realize that society is a unit, that to a certain extent and in a profound sense the guilt of one is shared in the common human weakness of all. This causes not a violent overthrow of such punitive measures as exist, in the flush of passion and power aroused to sympathy. It recognizes rather that both social misdemeanor and prison conditions as well are the responsibility of this common humanity in society. Society itself because of this, is not alone roused to the removal of conditions of brutality, intolerance, and calloused ignorance, which have made Sing Sing Prison a disgrace, but that particularly in a republican government, this is a disgrace shared by all the people. Humanity slowly awakening demands therefore a new structure which will stand for something better, something constructive in the problem of crime, in its relation both to the criminal and the society of which he is a part.

Before the old pile of tombstones began to crumble, the work of reconstruction had been undertaken under the direction of a group of men thoroughly imbued with a new ideal to see in the work with prisoners a profession for humanity rather than a selfcentered job. They had broken ground for an institution which is to serve as a classification centre for the prison system of the entire State and as a source of light and inspiration for new efforts in human salvage. This event is of no more interest in any circle than in that of the medical profession. Not only is it largely the outcome of medical, particularly psychiatrical, interest and effort. The whole movement forward, which has culminated in this occasion, is in very large part due to the impetus and enlightenment which medical investigation and medical reform gave to the care and treatment of the inmates of institutions both for criminal and insane. The occasion is therefore a cause for gratification and encouragement to those who in this profession desire a truly constructive program toward society and toward the individual's health in relation to it. In a very direct, practical way also, and one which widens out toward the future, the new provisions for care and actual treatment of prisoners will concern matters of health. Conditions which have prevailed in this and other prisons have had but little consideration for actual determination of existing diseased conditions, for ordinary measures of isolation and treatment. Under the new state of affairs this is a part of the intelligent plan of activity. Still more in the field of mental disabilities is there promise of reform and effectual working. Approach from the medical side means a far better understanding of crime and of the determinants toward it, as well as the only effectual handling of it in the matter of cure, readjustment of the prisoner's social attitude, and ultimately prophylaxis. Through this society's conception of prisons, crime, the criminal, and the service of the prison toward him and toward the whole problem, will become more thoroughly clarified and given a more effective course of definite action.

TREATMENT OF SHELL SHOCK.

One of the most important of things we can learn from our British and French allies to expect when our troops see active service is a large number of cases of shell shock. Wounds are familiar to all of us and especially to the military surgeon, and they do not differ greatly in a large sense, but shell shock produces cases presenting highly individual problems. In the British Army shell shock was the second most common reason for discharge, comprising one seventh of all cases and, leaving out wounds, one third of the remainder. From the kind of men we are sending to France we must expect an even greater incidence. We shall not have to struggle with problems of identification, etiology, and so on, as our allies did, for it is well understood now that shell shock is a war neurosis, caused by the tremendous emotional strain of the hitherto unprecedented conditions of warfare. Not stopping here to review the struggles which the British surgeons had at first in trying to understand these cases let us see what we know about the treatment, for these cases will soon be upon us, if indeed they are not already.

It has been found that the general military hospital is not the place for them, nor is the insane asylum. The British have constructed special shell shock hospitals. Here their treatment varies according to the ideas held by the man in charge, with reeducation, rest, hypnotism, isolation, etc. It has been definitely established that too much coddling is bad. Patients who received plenty of attention, massaging, dietetic luxuries, motor rides, and so on, showed practically no recoveries. These men rapidly become timid and selfpitying, showed no improvement, and in short, moved steadily on toward the goal of discharge and pension. On the other hand success has attended efforts at treatment just back of the firing line, in the casualty clearing station within sight and sound of battle and not out of the danger zone. One English surgeon, using such methods, has been able to return sixty-five per cent. of his cases to the firing line and only one per cent. of these relapse. On the other hand patients treated far away from the trenches almost invariably relapse at once when sent back to the front.

The differential diagnosis between neuroses, malingerers, and cases of organic nervous disease is often difficult. It must be remembered that the malingerer fears examination and is full of subterfuges designed to delay it; he is ready to hustle on his clothes after a short examination. The hysteric welcomes examination and likes to have a visiting specialist see him. The malingerer confines himself to a certain set of symptoms, which he has learned, for fear of making a mistake, while the hysteric may develop new ones, especially if they are suggested to him. Between organic disease and hysteria the distinction is more difficult. Both may be present. Then, too, a patient who is cured of organic disease may have fallen in love with hospital life and continue to simulate symptoms. The hysteric will face the firing squad, maintaining his symptoms to the end, while the malingerer quits under this test.

The prognosis is best for paralyses, next best for speech disturbances, and most unfavorable for tremors and disturbances of gait. When a mute patient begins to whisper it is a bad sign, showing an inferior makeup. A whisperer is not much inconvenienced for the affairs of daily life, but would not of course be called recovered and returned to the firing line. The rapidity of recovery is sometimes remarkable. Thus in one shell shock hospital there is a "shrine" of crutches which have been deposited by recovered patients, the rule being that crutches can be deposited there only when discarded within a week of arrival. This shrine is now about eight feet high and correspondingly wide.

The treatment of shell shock, is, first of all, preventive. Timid men, or those who have failed notably in life, should not be taken into the army. Cases should be treated as near the front as possible. Exercise has been found valuable, especially with the adjunct of music. But most important of all, the individual's attitude toward the war and himself must be rationalized. It has been observed that stretcher bearers are practically immune to shell shock, probably because their work fosters in them an altruistic attitude which is a potent protection. Develop then in the patient an altruistic attitude. A favorite and effective way of doing this is by saying something like this: "You are patriotic and ready to serve your country in any way. If your country had one enemy who threatened her life and you were appointed executioner of that enemy, you would not hesitate or refuse, would you? Well, your country has several million enemies and there consequently must be several million executioners, of whom you are one. Do not hesitate to do your duty." Besides these general rules of treatment, each case presents its own problems and must be treated individually. Suggestion, hypnotism, rationalization, psychanalysis, and other therapeutic weapons must be used as indicated.

TREATMENT OF HYPERTROPHY OF THE THYMUS GLAND.

The treatment of hypertrophy of the thymus will be indicated by a more or less certain diagnosis or from serious symptoms observed without a previous clinical study. In the latter case intubation or tracheotomy will be done on account of the urgent indications. Intubation with a long tube has given some results, although this question is still doubtful, but what is certain is the absolute uselessness of intubation in thymic asphyxia. *A priori,* the same might be said of tracheotomy since the obstacle is situated too low for the cannula to reach beyond the limits of the obstruction unless a special instrument is used. However, certain peculiar conditions that have been observed in this operation in cases of hypertrophied thymus, may explain the possible and partial usefulness of this interference. Severe venous hemorrhage has occasionally occurred and this, combined with the incision of the structures over the suprasternal region may produce a depletion of the gland which would result in a decrease in size and consistency, so that the existing compression is removed.

The only rational treatment is surgical interference. Three distinct surgical methods have been essayed, viz.: exothymopexy, resection of the sternal manubrium, and thymectomy. Exothymopexy may suffice to bring about a complete and permanent cure, but when the hypertrophy is considerable this operation can only be resorted to as complementary to extirpation. The glandular stump and the débris of the capsule have been sutured to the upper border of the sternum and aponeuroses of the neck by some surgeons. It has been declared that simple thymopexy is to be unrestrictedly rejected. In point of fact it would seem that it might be more difficult to fix an enlarged thymus to the incision than to excise it. It is more difficult to pass the sutures of fixation than to apply a simple ligature on a pedicle which is always thin in these cases. Furthermore, when a complementary thymopexy is done, the débris of the gland which has not been removed is united to the posterior aspect of the manubrium at a point at which their presence is more than likely to compress the trachea. Resection of the sternal manubrium has never been employed by itself and has always been a step in partial resection of the gland or in thymopexy. This resection is a useless and insufficient procedure, prolonging and aggravating the operation needlessly without offering any advantages, so that it should be abandoned.

Thymectomy is unquestionably the treatment of choice and the technic by intracapsular enucleation is also unquestionable. Any attempt to remove the gland with its capsule results in severe loss of blood and exposes the patient to injuries of the pleura, pericardium, and large vessels. As to the utility of total or partial excision, opinions differ, but in going over the records of reported cases it seems evident that partial subcapsulary thymectomy offers the best chance of success with comparatively little risk. The ultimate results have been excellent and an immediate and lasting improvement has been noted. In considering the mode of action of surgical treatment, it must be remembered that in partial thymectomy when only a very small fragment of the gland has been removed, this has been quite enough to cause the symptoms to subside. It is probable also that the improvement resulting from removal of only a portion of the gland is not due entirely to this fact and that the free dissection of the superficial aponeuroses, which results in disgorgement of the thymus, must be likewise taken into account. Radiotherapy may be practised to cause an acceleration of the thymic involution, but sufficient experience has not as yet been acquired to enable one to speak positively as to its utility.

TREATMENT OF GENERALIZED ERYTHRODERMIC ECZEMA.

Generalized erythrodermic eczema is not essentially different from the generalized exfoliating variety. The entire cutaneous surface is involved and the whole organism shows evidence of distress. The emunctory functions in particular are disturbed and whether or not they create or are the effect of visceral lesions, one should endeavor to lighten the work of the liver, kidneys, and skin. A fundamental indication is to do away with the systemic intoxication which invariably is present. A milk diet is essential, especially during the acute phase of the process, and represents the true etiological treatment. As the lesion must be looked upon as a vast cutaneous wound, it is rational to protect it against microbic infection, but asepsis is far better than antisepsis which irritates.

Among the symptoms to be treated asthenia holds an important place and although a milk diet might appear to be insufficient, in practice this supposition does not hold. Subcutaneous injections of fifty cubic centimetres of the waters of Bourboule have been tried. This water, which contains 0.0282 arsenate of sodium a litre, is considered a modifier of the nutrition and cutaneous system. It acts by increasing oxidation and by its elimination through the skin. In acute attacks of the cutaneous process it is contraindicated. Bourboule also contains two grams, 838 milligrams of sodium chloride a litre; hence, should the patient present an hypochloruria and retention of the chlorides the water may be contraindicated. Pruritus is an important symptom and calcium chloride, as recommended by Wright, has been given with success, four grams daily for five consecutive days at intervals of ten days.

It is said that several medicaments may exist in a single medicinal substance and the combined hemostatic and antipruriginous properties of several drugs are to be compared. Should there be an indication for improving the tonicity of the vasomotor nerves gelatin, either from its acidity or from its calcium chloride content, is employed with good results both in hemorrhage and pruritus. Gelatin or starch baths have an unquestionable sedative and emollient effect on the vast and irritated nervous surface, while high tension and high frequency currents produce vasomotor phenomena and anesthesia. The tepid shower bath also gives satisfactory results. The exhibition of ovarian extract, in order to bring on menstruation, has up to date not given any precise evidence of its action in this cutaneous pathological process. Uremic symptoms, if present, should be carefully treated, the chief end in view being to eliminate the factors of intoxication.

Obituary

OSCAR M. LEISER, M. D.,

New York.

The death of Dr. Oscar M. Leiser, assistant director in the Bureau of Public Health Education of the Department of Health of this city, is recorded with deep sorrow. A man of great personal charm, an able and devoted physician, a capable health official, and an uncompromising foe of charlatanry and fraud, Doctor Leiser through his persuasive eloquence on the lecture platform, contributed much to the health education of the people. Those who were associated with him mourn deeply the loss of a faithful and loyal friend. Doctor Leiser died suddenly while chatting with some friends in the Lambs' Club. So far as his associates were aware he had been in perfect health. He had, moreover, passed a physical examination within the past few months at the time he was commissioned a captain in the Medical Officers' Reserve Corps.

Graduated from the College of Physicians and Surgeons in 1896, and subsequently house surgeon at the French Hospital, Doctor Leiser entered the Department of Health in 1898 and served in various professional capacities. For the past four years, he had led in the Department of Health's propaganda against quacks and patent medicines, frequently taking an active part in the criminal prosecution initiated by the Department. He had the satisfaction of knowing that in not a single case in which he thus testified as a medical expert was the decision against the Department of Health. Doctor Leiser was forty-four years old and unmarried and had within the past two years suffered the loss of both parents and an uncle. After a funeral service at the Temple Emanu-El the body was taken to the family plot in Rochester, N. Y., for interment.

News Items.

Ten Thousand Men Wanted for Army Medical Department.—The Surgeon General's Office states that at least 10,000 men, between the ages of eighteen and forty years, are urgently needed for the Medical Department of the United States Army. Candidates should apply to any recruiting officer of the Regular Army or to the medical officer of any military post or cantonment. Enlistments are for the period of the emergency, unless sooner discharged.

Ohio Valley Medical Association.—Dr. J. Rawson Pennington, of Chicago, was elected president of this association at the nineteenth annual meeting, held in Evansville, Ind., November 6th and 7th, succeeding Dr. William Shimer, of Indianapolis. Other officers were elected as follows: Dr. W. F. Boggers, of Louisville, Ky., first vice-president; Dr. M. D. Heidingsfeld, of Cincinnati, second vice-president; Dr. Virgil Moon, of Indianapolis, third vice-president; Dr. Benjamin L. F. Floyd, of Evansville, reelected secretary and treasurer.

Syphilis Clinic Established at a New Jersey State Hospital.—In compliance with a resolution recently adopted by the Morris County Medical Society that, "if possible, at least three hospitals in the county establish a clinic for the treatment of syphilis or specific blood disorders," the Board of Managers of the New Jersey State Hospital at Morris Plains at its recent annual meeting authorized the establishment of such a clinic at this hospital. Through the liberality of high grade drug concerns, the necessary drugs are to be provided without expense to the hospital or State. Prior to this there has been no way by which those unable to pay could receive such necessary treatment; an innovation of a public, charitable character.

National Association for the Study and Prevention of Tuberculosis.—The next meeting of this society will be held in Boston, June 6, 7, and 8, 1918, under the presidency of Dr. Charles L. Minor, of Asheville, N. C. Other officers of the society are: Dr. David R. Lymna, of Wallingford, Conn., first vice-president; Frederick L. Hoffman, Ph. D., of Newark, N. J., second vice-president; Dr. Henry Barton Jacobs, of Baltimore, secretary; Dr. Charles J. Hatfield, of New York, executive secretary; Dr. Walter R. Steiner, of Hartford, Conn., chairman of the clinical section; Dr. James Minnick, of Chicago, chairman of the sociological section; Dr. George Thomas Palmer, of Springfield, Ill., chairman of the advisory council.

Rockefeller Foundation Votes Large Sum for War Relief Work.—In announcing its general financial budget for 1918 the report of the trustees of the Rockefeller Foundation shows that possibly more than $10,000,000 will be spent in public welfare work, half of which will be used for war relief. It was added, however, that while a sum of $5,050,000 positively will be used in war work, if necessary the foundation can draw on an available fund of $5,000,000 more.

The budget states that $1,076,000 will be used to fight hookworm, malaria, yellow fever, and other scourges. Appropriations for the Tuberculosis Commission in France reach $424,000. For land, building, and equipment for schools at Pekin and Shanghai $918,000 will be given. A sum of $627,657 has been put aside for the operation of medical schools and grants to other societies and hospitals in China, while instruction and research in American medicine and public health and work in mental hygiene in this country will absorb $3,000,000.

Meetings of Medical Societies to Be Held in New York During the Coming Week.—Monday, December 17th, New York Academy of Medicine (Section in Ophthalmology), Medical Association of the Greater City of New York, Psychiatric Society of Ward's Island; Tuesday, December 18th, New York Academy of Medicine (Section in Medicine), Tri-Professional Medical Society of New York, Medical Society of the County of Kings (annual), Federation of Medical Economic League of New York; Wednesday, December 19th, New York Academy of Medicine (Section in Genitourinary Diseases), Alumni Association of City Hospital, Medicolegal Society, New York (annual), Northwestern Medical and Surgical Society of New York (annual), Bronx County Medical Society; Thursday, December 20th, New York Academy of Medicine (stated meeting), German Medical Society of Brooklyn, New York, Celtic Medical Society; Friday, December 21st, New York Academy of Medicine (Section in Orthopedic Surgery), Clinical Society of the New York Post-Graduate Medical School and Hospital (annual), New York Microscopical Society; Saturday, December 22d, New York Medical and Surgical Society, West End Medical Society (annual).

Personal.—Dr. Eugene H. Porter, formerly State Commissioner of Health of New York, has been appointed State Commissioner of the Division of Foods and Markets, to succeed John J. Dillon.

Major Joseph Sailer, professor of medicine at the University of Pennsylvania, has been appointed permanent chief of the medical staff at the base hospital at Camp Wheeler, succeeding Major Richard Weil, who died there recently.

Children's Hospital Opened in France.—Announcement is made that the American Red Cross has opened a children's dispensary in a garage which is called the American Children's Hospital. The hospital was opened ten days earlier with seventy beds and is already overcrowded with diphtheria, measles, scarlet fever, and whooping cough cases. The American doctors twice daily examine an average of 250 children arriving from behind the German lines and send contagious cases to the American Hospital. Every contagious case thus stopped may mean an epidemic prevented somewhere in France. An American dentist has opened a dental dispensary in the old kitchen with a dental chair improvised from a wine barrel.

Model of Portable Hospital Ward on View.—The model of the portable and convertible Liberty Field Hospital Ward, designed for the American Museum of Natural History by Mr. H. F. Beers, superintendent of construction of that institution, under the direction of Dr. Henry Fairfield Osborn, president of its board of trustees, has been placed on public view on the first floor of the museum. This hospital ward, which is constructed in five foot units, represents the latest hygienic and scientific principles of hospital construction, and can be quickly erected or removed from place to place as necessity demands. Sliding panels separate the building into wards, kitchens, and nurses' apartments. The building material is cedar. An interesting phase of the construction of this model is the ability to convert it into a dwelling for the refugees in France and Belgium after the war. Because of its unique features, as well as of its constructive ingenuity, the model is attracting much attention in hospital and building circles.

Medical Department of the Army to Use Moving Pictures.—One of the most important and most progressive educational innovations just announced, is the establishment of a new subdivision of the Surgeon General's Office in conjunction with the Surgeon General's Library and Army Medical Museum, to furnish moving pictures or slides of camp activities relating to the conduct of work in the Medical Department, and the establishment of a suitable repository for these valuable pictorial data. This repository will be for the accommodation of positives or negatives of important military medical films or slides, which are to be available for instruction purposes in camp or cantonments of the army and for instruction in the medical schools of the country. These films and slides will be loaned for use in conjunction with lectures and other courses of study in medical schools and for educational uses in the training camps and cantonments. It is the plan of the Surgeon General's Office to supplement the courses of instruction given under the direction of the Medical Department in officers' training camps, as well as in the National Guard and National Army camps, with these pictures. As it has been repeatedly demonstrated beyond question that students attain a much higher percentage where courses are supplemented pictorially, this innovation, planned and put into operation by the Surgeon General's Office, will be appreciated as of immense value, not only in securing better results, but in making the courses doubly interesting.

The Surgeon General's Office seeks the cooperation of the medical profession in securing access to negatives of unusual cases in every branch of surgery not now possessed by the Library of Moving Pictures of the Surgeon General's Office, and would appreciate the donation of positives where possible. The new branch is under the direction of Colonel William O. Owens, curator of the Surgeon General's Library and Army Medical Museum, Seventh and B streets, S. W., Washington, D. C., to whom correspondence may be addressed.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

TREATMENT OF ACUTE MERCURY BICHLORIDE POISONING.

By Louis T. de M. Sajous, B. S., M. D.,
Philadelphia.

The caustic effects of mercury bichloride on the mucous membranes are favored by the fact that the mercury albuminate formed by it upon contact with the proteins of the tissues is soluble in an excess of protein, especially under circumstances existing in the living organism, viz., with the additional presence of neutral salts such as sodium chloride and of some degree of alkalinity. Mercury is thus the most caustic of all the metals, the solubility of the organic compound formed causing it to penetrate more deeply and exert its immediate toxic action on the cells at a depth which compounds of the other metals would not attain. Hence, furthermore, the fact that cases of death from mercury bichloride through perforation of the stomach or esophagus are sometimes reported.

The rapid penetration of mercury in the tissues manifestly accelerates its absorption into the blood. Burmeister and McNally, 1917, have shown experimentally that mercury can be detected in the blood by chemical methods, frequently in amounts sufficient to permit of quantitative determination, within a very few minutes after its administration. The cause of death in the few cases which succumb promptly, however, is not believed to be operative usually through the bloodstream, but through the nervous system, the excessive injury to mucous membranes creating a condition of shock from which the vital functions cannot recover. The irritation of the oral, esophageal, and gastric mucosæ promptly induces a burning sensation in these areas, much more violent, as a rule, than in acute arsenic poisoning. Nausea and vomiting, apparently due chiefly or wholly to the irritation of the stomach, soon follow, and somewhat later, violent diarrhea and cramps. In a case referred to by Lambert and Patterson, 1915, in which death after five and one half days followed an intravenous saline infusion with which one and one half grains of mercuric chloride had by accident been introduced, vomiting did not occur until eight hours after the procedure, this affording some evidence that, where the poison is not taken by mouth, time for its partial excretion through the gastric walls must elapse before local irritation inducing vomiting can take place.

Where the initial period of shock is successfully withstood, as is usually the case, the effects of the poison consequent upon absorption and beginning efforts at elimination soon appear. The tissues particularly affected are those of the mouth, kidneys, and colon. The former is likely to show evidences of stomatitis in twenty-four hours, though according to Lambert and Patterson it is seldom as marked as in salivation due to calomel. In spite of the delay often noted in the onset of renal disturbance, the deleterious action on the kidneys is known to begin as soon as the poison enters the bloodstream, frequently a matter of but a few minutes, as already noted. Burmeister and McNally, from their recent experimental work, concluded that degenerative changes leading to individual cell death take place rapidly in the kidneys and occur consentaneously with the presence of mercury in the circulating blood, while in the clinical case of accidental intravenous poisoning referred to above, urinary secretion was observed to be hindered from the outset, only about two ounces of urine being secreted during the twenty-four hours following the accident. The nature of the changes caused in the kidneys by mercury, which deserve detailed consideration because of their bearing or treatment, has been carefully noted by Schamberg, Kolmer, and Raiziss, 1915, in the course of an experimental study of the comparative toxicity of various mercurials. The alterations affect chiefly the convoluted tubules, though not limited to them except in mild cases. They are attributed by these authors to a direct toxic action of the mercury on the cells rather than to an inflammatory process caused by its elimination. The first change is a swelling and fragmentation of the lining cells of the tubule. Cloudiness and degeneration are shown by their nuclei, and the tubules become filled with necrotic cells or serum and fibrin. Usually there is little or no infiltration of leucocytes in and about the damaged tubules, but in a few animals Schamberg and his associates found pronounced leucocytic infiltration, a condition ascribed by Mallory to diffusion of mercury in the intertubular tissues. Mercury bichloride has been shown by Adler to be strongly chemotactic toward leucocytes, which therefore would tend to collect wherever the drug penetrates.

Seemingly an important feature noticed by Schamberg, Kolmer, and Raiziss was the frequent presence, particularly in intoxications fatal within a few days, of district edema of the tubules, the lining cells of which were flattened through distention with fluid. The tubular changes as a whole were sometimes clearly noticeable within twelve hours after administration of a fatal dose. Even in animals given small and nonfatal doses, but killed and examined after six or seven weeks, manifest changes in the tubules were found. In all the more severe cases of experimental poisoning, including all cases that proved fatal in a week or ten days, marked tubular involvement was supplemented by hemorrhagic glomerular nephritis. Usually the glomeruli showed simply a marked edematous distention, with a hemorrhagic exudate, but in the most pronounced cases there were also necrosis of the cells of the tufts, leucocytic infiltration, and obscurity of the normal tuft lobulation due to congestion of the capillaries.

The effects of mercury bichloride on the kidneys being so prompt and severe, in the treatment obviously no time should be lost in applying measures calculated to minimize injury to these organs. Direct chemical antidotes and gastric lavage are, however, first in order. Absorption of the poison being rapid, its prompt removal from contact with the mucous membranes is the first important aim and the decision as to which measure is to be applied first should not be arbitrarily made beforehand, but be based on the facilities available in the individual case. Supposing all useful procedures to be immediately applicable, preference should doubtless be given to copious gastric lavage through the stomach tube, as the initial measure, the mass of fluid used being more likely to reach all tissues exposed to the poison and more completely effective in the removal of the latter than a chemical antidote. Where thorough stomach washing is not promptly applicable, or at least less promptly than the use of a chemical antidote, the latter should be given from the start. As regards choice of the antidote, some experiments recently published by Fantus, 1916, are of interest. Administering various antidotes to rabbits by stomach tube either along with or shortly after a one per cent. solution of mercury bichloride, Fantus found that milk and serum albumin solution had no favorable effect. When egg albumin, however, was given immediately after the poison, without having removed the stomach tube in the meantime, a majority of the animals receiving an otherwise fatal dose of the poison survived, and in the remainder the average period elapsing before death was greatly prolonged. If the antidote was given five to fifteen minutes after the poison, no apparent antidotal effect followed; whence the author concluded that egg albumin, as ordinarily given in practice, is not likely to be actually of value. With certain alkali yielding drugs, such as sodium acetate, better results were obtained, and according to Fantus these should clinically be given preference over the former, time honored remedy.

(*To be continued.*)

Syphilis of the Stomach.—William A. Downes (*Surgery, Gynecology and Obstetrics,* October, 1917) points out that owing to the close resemblance between syphilitic infiltration and tuberculosis, and the difficulty of staining for Spirochætæ pallidæ, the diagnosis of syphilis of the stomach is extremely difficult to establish. Specimens were removed for examination in two of Downes's cases, but a positive diagnosis from this tissue could not be made; both were negative for tubercle bacilli as well as for Spirochætæ pallidæ. Vigorous antiluetic treatment should be instituted as soon as the clinical diagnosis is established. If the lesion has not progressed to the cicatricial stage causing obstruction at the pylorus, or hourglass contraction has not taken place from cicatrization in the body of the stomach or from perigastric adhesions, the symptoms will be controlled almost immediately. On the other hand, should symptoms of obstruction be present either from gummatous infiltration or cicatrization, operative intervention may become necessary, in fact, demanded. Gastroenterostomy is the operation of choice if the condition of the stomach wall will permit; if not, jejunostomy is indicated, to be followed later by whatever operative procedure is necessary to restore the stomach to a functioning condition. Efficient antiluetic treatment may so improve the lesion that further operative interference may not be called for. As stated in a previous paper Downes is aware of the fact that all gastric ulcers, syphilitic or otherwise, have potential dangers and for this reason the advisability of excision and resection should be considered in every suitable case. It is Downes's personal belief, however, that since syphilis of the stomach is only the local evidence of a general disease, no case should be subjected to more than the simplest form of operation, necessary to relieve urgent symptoms, until after antiluetic treatment has been given a trial.

Conservative Operation on the Ovaries.—H. Stuart MacLean (*American Journal of Surgery,* September, 1917) concludes with respect to operation on the ovaries, that the ovary is probably vitally concerned in the scheme of internal secretion and while such function may gradually decrease after forty-five years of age, as do the activities of many of the other organs of internal secretion, yet we have no reason for believing that such function ceases abruptly at the menopause. The fact that nervous and mental symptoms following artificial menopause are apt to be more violent and more lasting than those following the natural menopause is additional evidence that the ovary has been concerned in something else beside ovulation and menstruation. Irrespective of age, some ovarian tissue should always be left.

Intravenous Glucose Injections in Shock.—Joseph Erlanger and R. T. Woodyatt (*Journal A. M. A.,* October 27, 1917) report the results of a series of experiments on the treatment of shock in dogs by means of prolonged intravenous injections of solutions of glucose, as well as the treatment of two cases of shock in man. The prevailing opinion is that the low blood pressure in shock is accompanied with a loss in the effective volume of blood and that these two factors combine to make up the essential mechanism of the condition. Previous experiments have shown that glucose solutions can be injected into the veins at given rates and concentrations determined by the body weight, and the sugar will remain in the circulation during the injection and for some time after at a concentration above normal. Its presence in the circulation demands the presence of water, which may either be given with the injection or which can be taken from the tissues. The result is the production of a hydremic plethora with an increase in the volume of the circulating blood. The result of this plethora is an elevation of the blood pressure and an increase in the amplitude of the pulse wave. In some of the dogs the injections seemed to be decidedly beneficial in overcoming induced shock and the results suggest that the method may prove of value for use in man. It is associated with the danger that if too rapid injections be made a hemorrhagic tendency is prone to be developed. The method of treatment is still only in the experimental stage, but it seems to promise more favorable and more lasting results than the injection of saline solutions or the use of epinephrine, both of which are of only transitory value. The use of glucose has the added advantage, also, of providing nutriment for the tissues.

Dysentery.—Aldo Castellani (*Journal of Tropical Medicine and Hygiene,* September 1, 1917) warns against treating bacterial dysentery with astringents from the beginning. The treatment should always start with a dose of castor oil or with magnesium sulphate in dram doses every hour, or two drams every two hours, for twenty-four to forty-eight hours. Then astringents should be given in massive doses, e. g.:

℞ Bismuthi subnitratis, ...gr. xxx (2 grams);
Liquor morphinæ hydrochloridi (B. P. 1 per cent.), ...♏ii (0.12 mil);
Aquæ chloroformi, ...q. s. ad f ʒi (30 mils).

M. Sig.: To be taken every two hours, day and night, for several days.

Irrigations are generally badly borne in acute cases, but in the subacute cases the author finds effective a solution of gallic or tannic acid and opium in water, and in very chronic cases a twenty grain to the quart silver nitrate solution. In the serum treatment, he uses a polyvalent serum in large doses; it should always be supplemented with the internal treatment already described. In polyarthritis from dysentery, in which the salicylates have practically no action, the serum and occasionally the vaccine treatment are useful. In amebic dysentery Castellani has in certain cases witnessed great benefit from high injections of emetine combined with ipecacuanha by the mouth. Emetine may also be given by mouth in salol coated pills. He deems emetine, on the whole, a very safe drug, though if given too long it may induce diarrhea, and he has seen a case of erythematous rash, followed by desquamation, seemingly due to it.

Relative Indications for Cholecystectomy and Cholecystotomy.—Francis Roe Benham (*Annals of Surgery,* October, 1917) states that no absolute rule can be laid down for either cholecystectomy or cholecystotomy. Many circumstances may interfere. There is little doubt that removal of the gallbladder is a longer operation and entails more trauma. Indications for cholecystectomy may be present, but the condition of the patient may not warrant this operation. Every case, it seems to Benham, must be a law unto itself. Generally speaking, cholecystectomy should be performed when the following conditions are present: 1, when the stones occupy the gallbladder; 2, cholecystitis without stones; 3, where the wall of gallbladder is diseased; 4, stone in cystitic duct or any obstruction to cystic duct; 5, adhesions around the gallbladder which interfere with its pumplike action; 6, in the case of the strawberry or papillomatous gallbladder; 7, malignancy. Cholecystotomy should be used; in cases of pancreatitis with jaundice; in the very old and feeble cases or in cases of poor physical conditions; and in those cases where the operation would be dangerous because of the inaccessibility of gallbladder. It seems that both operations have a very important field. It is not a case of elimination of one or the other, but a case where each operation has very definite indications, as has been shown by Deaver, Mayo, Judd, and others. The appendix, according to Deaver, is the focus of infection of most upper abdominal diseases; hence it behooves us in all cases to examine and remove the appendix should there be the slightest indication.

Fulguration in Urethral Caruncles.—Edgar G. Ballenger and Omar F. Elder (*Journal A. M. A.,* October 27, 1917) have been very successful in the treatment of these resistant tumors and describe their technic. It consists of infiltrating the tissues surrounding the caruncle with a one per cent. novocaine solution and then applying the D'Arsonval current until the entire red mass is whitened. The treatment is almost painless and much less pain follows it than follows the usual methods of treatment. There may be slight bleeding at times as the necrosed mass separates from the surrounding healthy tissues. No narrowing of the urethral canal is produced and the healing is rapid and leaves a smooth, soft surface. One or two treatments is all that is required.

Combined Internal Antiseptics in Intestinal Diseases.—L. W. Seymour (*British Medical Journal,* July 28, 1917) recommends the following treatment on the basis of twenty-five years of experience in dysentery and other infectious diseases. Half an ounce, or sixteen mils, of the following formula is given by mouth three or four times daily in the average case:

℞ Phenolis liquefacti, ... 2.5;
Quininæ sulphatis, ... 2.0;
Acidi sulphurici diluti, ... 8.0;
Glycerini, ... 30.0;
Aquam, ...ad 250.0.

The phenol may be increased to 0.25 mil and the quinine to 0.25 gram a dose in severe or chronic cases. The mixture is to be taken with water. Its use gives satisfactory results in the following infections: dysentery, plague, typhoid fever, malaria, erysipelas, septicemia, puerperal fever, and carbuncles. Finally its administration causes infected wounds to heal promptly. No ill effects are produced by the administration of even the larger doses for long periods of time.

Capillary Drainage of the Spinal Canal.—R. A. Gutmann (*Paris médical,* September 29, 1917) calls attention to the practicability of instituting capillary spinal drainage in septic meningitis. The large needle of the Potain aspirating apparatus, two millimetres in outer diameter, is used, the levelled portion having been shortened to three millimetres. The injection is given with the patient in lateral decubitus, the back being held accurately in a vertical plane by an assistant who rests against the anterior superior spine. The needle is inserted in the median line, slightly upward, and in a plane strictly perpendicular to the patient's back. When the spinal fluid issues six or seven capillary strands are inserted at once through the needle, their ends having previously been cut off evenly with scissors. The ends of the strands are to be pushed into the spinal canal and curved out slightly against the anterior surface of the latter. The moment of entrance of the strands into the spinal cavity is easily felt by the operator. They should glide easily through the needle that they may not be pulled out when the latter is withdrawn. Slow drainage along the strands begins at once, and a moist dressing is applied. The discharge should be watched from time to time and slight traction made if it shows a tendency to become arrested. With a well prepared, properly nickelled needle the procedure of introduction is no more painful than with the ordinary lumbar puncture needle.

Intravenous Injection of Sensitized Typhoid Vaccine Sediment.—Frederick P. Gay (*Journal of Laboratory and Clinical Medicine*, August, 1917) recommends the use of Gay-Claypole vaccine, polyvalent sensitized typhoid vaccine sediment, in any case of typhoid fever which is still febrile. In his series of ninety-eight cases so treated the mortality was 6.6 per cent. and complications were few. The initial injection is 0.02 mgm. and each successive dose is slightly increased. A chill usually follows the intravenous injection which is accompanied by a rise of temperature, reaching its height three hours after the injection, when it falls. Leucopenia usually goes with the temperature rise, and the chill is accompanied by an increase in the pulse rate and sometimes slight cyanosis, respiratory distress, and a sense of discomfort. In about twelve hours the temperature is normal or subnormal. This is accompanied by sweating, relaxation, and a general improvement of such symptoms as headache. With the temperature drop there is a rise in the leucocytes. If the fall of temperature is permanent, further injections are not needed, except to prevent a relapse. The occurrence of relapses was reduced in cases where the intravenous injections were followed by three subcutaneous inoculations when the temperature had reached normal. In one third of the cases in the series the typhoid was abortively cured; one third were benefited, and the remainder unaffected.

Wound Treatment by Cultures of a Spore Bearing Organism.—Robert Donaldson and J. Leonard Joyce (*Lancet*, September 22, 1917) present a preliminary report of their observations which have led up to a new method of treating infected wounds. It was observed that all of those wounds which were treated by means of the salt pack and which rapidly became clean and covered with healthy granulations were accompanied by a very foul odor, while those in which infection was not controlled did not emit this characteristic odor. Cultures from the odorous, favorably progressing wounds yielded an anaerobic, spore bearing, proteolytic bacillus and those from the nonodorous wounds never grew this organism. Studies of the bacillus *in vitro* and in animals showed it to be markedly proteolytic and not pathogenic. Further, the products of its proteolysis were nontoxic to animals. Believing this organism to be the cause of the good results in the successful cases under salt pack treatment the authors made a series of carefully controlled observations on the treatment of wounds artificially sown with living cultures of this organism and were able to show that its growth in an infected wound led to the clearing up of the infection, the rapid digestion of all dead tissue, and the formation of abundant healthy granulations. This occurred in the absence of salt treatment as well as in its presence and corresponded to the clinical observations that the wounds which smelled and showed the organism were those which did well. From these studies it is suggested that infected wounds be promptly sown with the organism after all pockets have been laid open and the wound washed with sterile salt solution. The cavity should then be packed with sphagnum moss or salt pack gauze wrung out of salt or sterile water. When firmly and completely packed the wound should be covered with a thick layer of cotton and firmly bandaged. By the third day the wound will begin to smell and clinical improvement of the patient will begin. The outside dressings may be changed when necessary but the packing should be left *in situ* for at least a week, after which the pack can be removed *en masse* and the wound washed with saline or eusol and dressed lightly or closed permanently. The treatment avoids the pain of frequent change of the wound dressing and obviates the necessity of radical surgical excision to remove the dead tissues, which are now digested away by the bacillus.

Progressive Deafness from Chronic Secretory Otitis Media.—Francis P. Emerson (*Boston Medical and Surgical Journal*, October 25, 1917) presents some rather new ideas and condenms the methods of treatment ordinarily followed. He defines chronic secretory otitis media in these words: "In a given case otoscopic examination would show a dull gray or ground glass appearance of the membrana tympani, absence of the light reflex, and retraction. The clinical picture would be one of slowly progressive loss of hearing, usually more advanced in one ear, with or without tinnitus. The hearing test would show a positive Rinné, the Weber lateralizing toward the more deaf ear. The low note by the Dench fork is unchanged, or slightly raised. The bone conduction is unchanged. The whispered voice may be reduced to as low as 2 to 15/25ths." An old fashioned otologist may be somewhat confused by the statement that the bone conduction is unchanged, otherwise he has no difficulty in recognizing the picture as one he has long known as chronic catarrhal otitis media. According to the writer every case of chronic progressive middle ear deafness depends on a primary focus, usually multiple, which may be situated in the sinuses, tonsils, mandible, or epipharynx, is usually constant for the individual, and persists as a low grade infection subject to acute exacerbations, by which the focus may be located. Whatever the appearance of the tympanic membrane may be, he claims that the cause of the deafness is active for a long time outside the middle ear, acting either by direct extension, or as a toxemia through the lymph and blood streams. This includes so called cases of nerve deafness of nonspecific origin. Constitutional diseases have little effect upon the course, except to lower the patient's resistance and make him more susceptible to exacerbations of his localized focus or foci. As regards the treatment he holds inflation in chronic cases to be unscientific and harmful, except when performed for diagnosis, as the Eustachian tube is open and has lost its tone partly in the majority of cases, and in the others does nothing to remove the cause. Nasal obstructions do no harm to the middle ear unless infection is present, though it is admitted that they are the primary cause of imperfect drainage, which predisposes to infection and is always present in cases that originate in the nose. His treatment consists wholly in the searching out and removing the distant foci of infection, with applications to the pharyngeal end of the Eustachian tube to try to restore its lost tone, and exercises that will strengthen the function of the palatine muscles.

Postoperative Treatment of Vesicovaginal Fistulas.—C. G. Child, Jr. (*American Journal of Obstetrics,* September, 1917) advises, in these cases, the use of a rubber selfretaining catheter with continuous bedside drainage. Apart from the discomfort caused during the first few days, he finds no disadvantages in this procedure save, occasionally, the deposition of urinary salts which blocks the catheter and necessitates frequent removal for cleansing. In several cases drainage by retained catheter was carried on for four weeks. After the second or third day a daily irrigation should be given to keep the catheter open and remove any clots or sediment in the bladder; every three to four days, furthermore, the catheter should be removed and freed of incrustations. Sodium benzoate, five grains three or four times daily, or Emmet's prescription of benzoic and boric acids in cinnamon water, tend to prevent undue crusting by keeping the urine sufficiently acid. A difficult form of fistula to manage is that in which the fundus of the bladder has prolapsed through the fistula into the vagina—usually a large fistula measuring two inches or more. In these the bladder fundus tends to break down the suture line, the acts of vomiting, coughing, or straining causing it to press forcibly against the wound. In these cases the author keeps the patient in the Trendelenburg posture, or at least with the hips well elevated, for the first week or ten days after the operation. Just enough urine thus remains in the bladder to hold the fundus by gravity away from the line of suture. The catheter is removed on the fourteenth day, provided the patient can void or be catheterized every two or three hours for the following week. By proper care to prevent distention of the bladder before healing of its wall at the suture line has occurred, the chief cause of failure in the operative treatment of vesicovaginal fistula is eliminated.

Mercury Salicylarsenate in Ophthalmic Therapeutics.—A. Terson (*Paris médical,* October 6, 1917), from twelve years' experience with this compound, deems it more valuable than other soluble salts of mercury or arsenic in various complex ocular affections in which syphilis, generally congenital, is associated with dystrophic and chronic inflammatory processes, in particular tuberculosis in an attenuated form. In a three per cent. solution, put up in ampoules, the preparation is also known as enesol. Used freely twice a day for bathing the eye, the compound rapidly overcomes beginning infection of the cornea, even in the presence of hypopyon, providing dacryocystitis is not simultaneously present or is vigorously treated. When a wound of the cornea becomes yellow and is complicated by suppurative iritis, use of the compound will nearly always lead to recovery. In several instances panophthalmitis was prevented by it, and in multiple corneal wounds due to explosive war missiles its systematic use led to healing with a minimum of permanent injury. Conditions improved by the remedy include sluggish corneal ulcers, phagedenic ulcers, the transparent ulcer of senile subjects, chronic ceratitis, and affections of sclera and choroid, whether syphilitic or nonspecific. Applications of the solution as such or with glycerin, or of the medicament in a three per cent. ointment proved valuable in follicular affections of the lids as well as in furunculous, febrile, and parasitic disorders in these structures. Acute and chronic trachoma, phlyctenular conjunctivitis, and dacryocystitis were also benefited. The compound, being unirritating, is to mercury bichloride what argyrol in strong solution is to silver nitrate. Subconjunctival injections of a 1:500 or 1:1000 solution are feasible and efficacious. Use of the remedy locally in stomatitis, throat and nose inflammations, and in dermatology is also suggested.

The Scabies Problem on Active Service.—H. MacCormac and W. D. D. Small (*British Medical Journal,* September 22, 1917) point out the fact that scabies is capable of causing much invalidism among the troops, specially as a result of secondary skin lesions and infections. Treatment, to be effective, should be carried out properly and at the earliest moment. The patient should strip and rub himself all over with soft soap, massaging it in thoroughly. Then he should lie, completely covered with water, in a hot bath for fifteen minutes to soften the skin. Following this he should scrub all the affected parts of his body with a stiff brush to break the vesicles. If any remain unbroken they should be opened with a needle. Then he should anoint himself from head to foot with sulphur ointment, rubbing it in thoroughly on all affected parts. This inunction should be repeated twice daily for the first three days and on the fourth he is given a bath and all of his clothes are sterilized. This usually effects a prompt cure.

Technic for the Radical Cautery Operation in Breast Cancer.—James Fulton Percy (*Annals of Surgery,* October, 1917) states that the four factors most useful in the heat technic are: 1. Mark out on the iodine covered skin with the cautery knife the limits of the incision to be made. 2. Do not cut with the cautery knife from above downward into the skin in following this line, but from within outward. This can best be done by lifting the skin up with a tenaculum forceps and pushing the hot knife under the skin, and cutting from within outward. To do otherwise causes too great a sloughing of the edges of the skin. The drainage hole should also be made by pushing the cautery knife through the skin from within outward. 3. In dissecting about the axillary vessels and brachial plexus, hold the tissues that are to be removed with the fingers of the free hand encased in a medium weight rubber glove, and keep the fingers close to the cautery knife. This is the most practical way of gauging the degree of temperature that the tissues and bloodvessels will stand, without being injured. If the axillary vein or artery is not actually touched for too long a time with the hot knife, they will remain uninjured. 4. Apply the heat until all the tissues that were fixed by the disease are freely movable. To do otherwise, simply means that heat dissemination in the most effective way has not been obtained. The two most important factors in the aftertreatment are: 1. Keep the wound clean, by alternating the use of adhesive plaster covering with the eusol solution, and exposure to the direct rays of the sun. 2. Keep the arm in a vertical position alongside of the head. This prevents both edema and cicatrical contraction.

Miscellany from Home and Foreign Journals

Leuconychia, or Marble Nails.—R. Sabouraud (*Presse médicale,* September 27, 1917) looks upon the white spots not infrequently noticed in the fingernails of adults and especially of children as a sign of definite prognostic value. It occurs almost exclusively in subjects whose blood pressure is below normal, and very commonly among neurasthenics and in pretuberculosis. It is met with at all ages, the author having noted several instances in old patients with chronic alopecia. It is more common, however, in young girls and women than in any other type. In pessimistic young females who believe themselves unhappy and often develop phobias especially relating to loss of hair or eyelashes or to the growth of hair on the lip, the condition indicates a lasting nervous disturbance based on some as yet obscure organic lesion. Another class of young girls who frequently exhibit leuconychia is that of subjects with normal nervous system but with various skin disorders, such as recurring eczema of impetiginous type, persistent polymorphous acne, chronic eczema of the fingers, etc. These disorders are merely manifestations of a poor general condition which frequently ends in tuberculosis a few years later. At times, however, congenital syphilis or some other less distinct general disturbance underlies leuconychia. The latter is also an accompaniment of alopecia, especially that associated with general depression and asthenia, rebellious to both local and constitutional tonic medication. Leuconychia is a chronic, persistent condition, generally continuing for years, and its final disappearance is of favorable prognostic value. In the male sex it is less common and more significant than in the female, and occurs practically only in young pretuberculous subjects, in neurasthenics with phobias, and in old patients with alopecia. Any obscure, indefinite constitutional ailment should be looked upon as more serious if leuconychia coexists.

Use of Poisonous Gases in the Present War.—Victor C. Vaughan (*Journal of Laboratory and Clinical Medicine,* October, 1917) divides the poisonous gases which have been employed so far in the war into the following classes: 1, those which are directly and immediately poisonous, as hydrocyanic acid, arsenide of hydrogen, sulphide of hydrogen, and phosphide of hydrogen; 2, those producing slow death, by asphyxiation, as chlorine, oxychloride of carbon, known as phosgene, acroleine, bromacetone, chloropicrine, methyl chloride of chloroform, and methyl chlorosulphate; 3, those which put the victim out of action without causing permanent harm, as chloracetone, iodacetone, bromacetic ether, etc. The last class are lacrymogenous, rather than poisonous. The gases are used in waves, hand grenades, and shells. If employed in waves, the gas is most effective when the wind is in the right direction and blowing about thirteen miles an hour, and when the humidity is forty to sixty per cent. Of the protective devices, the individual mask is most useful. The latest French mask is made of gauze impregnated with the neutralizing solution and will protect for four hours when the gas is present in the proportion of 1:1000, but it does not protect against carbon monoxide. Other types of protective apparatus are the Tissot and Draegon, the latter being the only protection against carbon monoxide. The remainder of the paper is an abstract of the official pamphlet by Professor Archard, on the use of poisonous gases from the medical standpoint. He advises medical officers to familiarize themselves practically with wearing masks in rooms filled with gas, and in observations on animals both partially and fatally gassed. While the symptoms in gassed victims and the post mortem findings are of great interest, after all, the treatment of such cases is the most essential thing, and for that reason the most important points in the treatment of those poisoned with chlorine or phosgene may well be quoted: "1. Stop the poisoning by removal from the vitiated air or by protection with a mask. 2. Assist normal aeration by giving a pearl of ether, by the inhalation of oxygen, or by inhaling very dilute ammonia. The last mentioned procedure must be resorted to with the greatest caution. 3. Restore normal circulation and blood pressure by taking from 300 to 500 c. c. of blood and repeating this with due caution if necessary by subcutaneous injections of caffeine or strychnine. Subcutaneous injections of large volumes of fluid, salt solution, alkaline or hyposulphite solutions should never be resorted to. 4. Relieve the obstruction of the bronchi by emetic doses of ipecac. Smaller doses of this drug may be continued for some days. 5. Allay the irritation by rest in a warm, moist air with the inhalation of oxygen. It should be understood that any use of oxygen is only sedative and not curative. One may be poisoned with chlorine in the midst of an excess of oxygen."

Carriage of the Virus of Poliomyelitis.—Edward Taylor and Harold L. Amoss (*Journal of Experimental Medicine,* November, 1917) hoping to add further proof to the belief that every case of poliomyelitis develops from a carrier of the microbic cause, or virus, of poliomyelitis, demonstrate that a proved carrier of the virus may come down with the disease in an acute form. A series of cases of the disease in one family is presented. The source of infection was the eldest boy, who was exposed in a locality where the disease was epidemic. The contact was considered intimate, as the three boys slept in the same room, and two in the same bed. The incubation period was ten days or less. The eldest brother's case was fatal. By the inoculation tests, two of the children were proved to carry the poliomyelitis virus in the nasopharynx. One of the children was found to be a carrier after recovery from a nonparalytic attack of the disease, and in the other case, the virus was detected in washings taken five days before the first symptoms of poliomyelitis, which was attended later with paralysis, appeared. The youngest child, after a severe onset, was treated with immune serum, and recovered. The nasopharyngeal secretions of two of the patients one month after the attack could not neutralize an active poliomyelitis virus.

The Meningococcus of Weichselbaum.—Edward C. Hort (*British Medical Journal,* September 22, 1917) reviews the prevailing opinion as to the nature, morphology, and etiological significance of the meningococcus and presents the results of his long experimentation with this organism, from which he concludes that the meningococcus is very different from what it is commonly believed to be. In the first place the organism, as we know it, is incapable of causing experimental meningitis, while a filtrable virus is obtainable from its cultures which is highly infective. When grown on solid mediums but one phase of the life cycle of the organism is seen, but when grown in fluid mediums it is seen to be an organism allied to the ascomycetes and not a bacterium. The so called giant forms, as well as the smaller ones, are but ascal stages in the cycle of growth. The meningococcus of Weichselbaum is an ascospore, derived from the giant ascus by endosporulation and the filtrable virus is probably but one stage in the complete life cycle of the organism. A part of the life cycle of the organism can be followed readily on the warm stage in fluid mediums, where multiplication is seen to take place by gemmation, endosporulation, and various types of fission. The technic by which these changes can be demonstrated is described.

Phenolsulphonephthalein Investigation of Trench Nephritis.—A. G. Auld (*British Medical Journal,* September 29, 1917) studied the phthalein excretion in forty-two selected cases of young soldiers in the various stages of convalescence from acute trench nephritis. In the stage with abundant urine of generally low specific gravity and containing either much or little albumin with granular and hyaline casts the phthalein excretion was found to vary from twenty to fifty per cent. in the first hour. This variation bore no relation to the abundance of albumin or of casts, but the progress of the case was found to agree with the phthalein response, which, therefore, proved of great prognostic value early in the illness. A high excretion of the dye was never found in cases which ultimately did badly, all such cases having progressed favorably. During the first month the cases showed excretions from fifteen to fifty per cent. and those which had low excretion could be classified as to prognosis by subsequent tests only. Thus good recovery might be anticipated if the excretion had risen to forty per cent. in the first hour by the third month from the onset of the disease. Protracted recovery could be expected if the excretion remained under thirty per cent. at the end of the same period of time. Ultimate recovery was found to be the rule if the excretion rose to forty per cent. by the end of four months, but if it remained as low as fifteen to thirty per cent. at the end of that time the outlook was unfavorable without reference to the presence of albumin or casts. More than half the cases showed high excretion in the second month and of the remainder about equal numbers belonged to the third and fourth types. It was also found that an excretion under thirty per cent. indicated a milk and vegetable diet; at thirty to thirty-five per cent. fish might be added; and over thirty-five an ordinary diet with extra milk could be given with safety.

Reaction of the Pupil to Colored Lights.—James A. Cutting (*Journal of Nervous and Mental Disease,* October, 1917) instituted an investigation to determine whether colored light caused the same pupillary reaction as white light; whether a certain color produced a specific pupillary response in a particular disease, and whether the use of colored lights was of clinical value. The results obtained are thus summarized: The pupil reacts differently to different colored lights, giving a greater reaction in some than in others in the following order: white, yellow, reddish yellow, green, blue, and violet, thus following the luminosity of the spectral colors. There is no reaction specific to different diseases. There is a distinct clinical value in using the green light as a measure for amplitude of reaction, which cannot be obtained from white light. It is a convenient method for measuring the amount of light necessary to produce a pupillary response.

Comparative Value of the Wassermann, the Colloidal Gold, and Other Spinal Fluid Tests.—E. M. Hammes (*American Journal of the Medical Sciences,* November, 1917) gives the following as the results of his study of 203 cases: The most constant finding in a pathological spinal fluid is a positive globulin. It is indicative of an inflammatory process, but is of no specific import. Pathological cerebrospinal fluids usually show some lymphocytosis, but the number may be normal. Fluids from cases of meningitis almost invariably give a high cell count. As an index of pathological change in the cerebrospinal fluid the colloidal gold reaction is more delicate than any other test here employed. Normal spinal fluid usually causes no reduction of colloidal gold. A slight reduction in any of the dilutions is of no diagnostic import, and may occur in normal spinal fluids. Cases of tabes and cerebrospinal lues give a typical colloidal gold curve in the luetic zone. Although in tabes the intensity of the curve is usually greater, it is not sufficiently constant to be of diagnostic value between the two conditions. In paresis the colloidal gold test is sufficiently frequent and characteristic to warrant the term "paretic curve," and is of great diagnostic value. However, it has been observed in cases of tabes, cerebrospinal lues, multiple sclerosis, brain abscess, and once in puerperal eclampsia. In meningitis the colloidal gold curve usually occurs in the higher dilutions, and is probably of value in the diagnosis of doubtful cases. In spinal fluids with normal findings, except a paretic colloidal gold curve in doubtful cases, the possibility of a multiple sclerosis must be strongly considered. The colloidal gold test is more delicate than the Wassermann test. Spinal fluids from luetics have given a colloidal gold luetic curve with a negative Wassermann. We have never observed a normal colloidal gold curve with a positive Wassermann in the spinal fluid. Exceptions to this are the congenital luetics. Under antiluetic treatment there is usually a reduction in the cell count and globulin of the spinal fluid; frequently the Wassermann becomes negative; rarely is there a change in the colloidal gold test. No spinal fluid test, except the presence of bacteria, is specific. Every test is simply so much corroborative evidence and should be combined with the history of the case and the clinical findings.

Proceedings of National and Local Societies

AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

Thirtieth Annual Meeting, Held at Newark, N. J., September 17, 18, and 19, 1917.

The President, Dr. JOHN W. KEEFE, in the Chair.

(Concluded from page 1108.)

Preeclamptic Cæsarean Section.—Dr. JOHN WILSON POUCHER, of Poughkeepsie, N. Y., stated that statistics of puerperal eclampsia showed unsatisfactory results. When a patient at or approaching term, in spite of all means of elimination, showed that convulsions were imminent, she should be delivered at once and by the method which would cause the least delay, produce the least shock, and give both mother and child the best chance for recovery. Since 1914 he had done seven preeclamptic Cæsarean sections. Of these, all seven mothers and eight children survived, one mother having twins. Two were operated on after labor had begun, five before the beginning of labor. Two suffered post partum convulsions, two having two convulsions, the other one convulsion, which were easily controlled. It was constantly pointed out that the scar of a Cæsarean section was likely to weaken the uterine wall and subject the patient to the danger of a possible rupture of the uterus in any subsequent labor. This could not be denied. One danger was, however, very present and very grave, and the other was a remote and improbable one.

Toxemia and Eclampsia and Its Treatment.—Dr. ASA B. DAVIS, of New York, said that all of his eclamptic patients were not delivered by Cæsarean section. He had performed 359 abdominal Cæsarean sections. In twenty-five instances, toxemia of pregnancy had been the indication. These twenty-five Cæsarean sections had been done on twenty-three different women. Eight women died. Twenty-nine children were delivered; twins in two cases. One set of twins was dead when the patient was admitted. The mother lived. Nine of the twenty-nine children delivered failed to leave the hospital alive. It was noticeable that in few pregnant women in private practice under the care of skilled obstetricians did eclampsia develop. Because of this fact and his own experience he believed that the time to treat eclampsia was before it occurred.

Conservative Treatment of Eclampsia.—Dr. ROSS MCPHERSON, of New York, stated that a thoughtful survey of the mortality statistics of patients with eclampsia, taken from the reports of numerous writers, would show that, treated by radical methods, the maternal mortality approached twenty-five to thirty per cent., and that the fetal mortality averaged from forty to fifty per cent. Eclampsia was a frightful complication whose etiology no one knew. His series now included fifty-five true convulsive toxemias. Of these, seven mothers died, showing a gross maternal mortality of 12.7 per cent. Two of these mothers, however, died before treatment of any sort could be administered. One arrived post partum at the hospital and died before anything could be done for her, and the other died of cerebral embolus while apparently in good condition, after having had but one convulsion. In these two cases no treatment whatever would have been successful, so that in a comparative estimate of methods of treatment, it was fair to exclude these. This left a mortality of five mothers, or nine per cent., out of fifty-five patients treated by conservative measures. Abdominal Cæsarean section, he believed, had absolutely no place in the treatment of convulsive toxemia of pregnancy except in the cases where the eclampsia was accompanied by a deformed pelvis or some great disproportion between the relative sizes of mother and child.

Indications for Interference in Preeclamptic Toxemia.—Dr. WILLIAM G. DICE, of Toledo, Ohio, said that the character and quantity of the waste products from a study of urine were not definite indices of severity of the toxemia. The systolic blood pressure taken throughout pregnancy was ordinarily a better index. A steadily increasing rise from the average normal, 110 to 120 up to 150, was significant and there was a sudden increase in the evidence of toxemia when blood pressure reached that point. Elevated blood pressure often preceded albuminuria, and the two were not necessarily proportional. When the blood pressure reached 170, if other signs of toxemia were also present, time for expectant treatment was near an end. Few appreciated the importance of eye symptoms as an index of toxemia. Toxins in the blood gave rise to a retinitis, the first objective symptom being edema, later infiltration, degeneration, and hemorrhage or perhaps detachment of the retina. Both the latter indicated grave toxemia. In the early stage of retinitis, the vision might not be affected, but the ophthalmoscope showed a haziness of the fundus, an inability to make out the fine details which was the first sign of cloudy swelling. The interference with vision depended upon the location of the lesion, whether in the macula or only in the areas surrounding it. The condition cleared up entirely if it did not go beyond the stage of cloudy swelling. In primiparæ this haziness of the retina was easily detected if the pupil was widely dilated, and this haziness was the first indication of retinitis, but if there had been previous eye trouble, it could not probably be made out so clearly. Conservation of vision as well as life demanded prompt induction of labor.

Alcohol Drain in Septic Cases Requiring Cæsarean Section.—Dr. CHARLES L. ILL, of Newark, N. J., advised application of the alcohol drain in all cases of sepsis when a Cæsarean section had been done. He based his views on an experience of ten cases, all of which were severely septic previous to operation.

Treatment of Ectopic Gestation.—Dr. ABRAHAM J. RONGY, of New York, based his paper on a report of twelve cases from the gynecological service of Lebanon Hospital. He stated that repeated ectopic pregnancies were more frequent than was generally supposed. While conservation of the other tube was necessary in women who were operated on for ectopic pregnancy and who had had children, he believed that to patients suffering from ectopic pregnancy and who had three or more children should be explained the danger of a repeated ectopic pregnancy, and with their consent the tube on the other side should either be ligated or resected.

Should the Uterus Be Removed When It Became Imperative to Interrupt Pregnancy?—Dr. Emery Marvel, of Atlantic City, N. J., said that pregnancy should be interrupted only when maternal life was seriously jeopardized. The exciting cause was active within the uterus and involved the uterine structure. Removal of the products of conception and leaving the uterus when serious toxemia existed, invited the recurrence of the condition in a more aggravated form. If maternal life was threatened by coexisting maladies, such as tuberculosis, or renal or cardiac inefficiency, hysterectomy protected against recurrence. Hysterectomy secured freedom from the menace which immediately threatened; it protected against recurrence of the trouble, and provided for the continuance of the sexual life without fear and all that it involved. This could be accomplished with no increased risk over other surgical methods.

Retained Secundines.—Dr. James E. Davis, of Detroit, said that the etiological causes of abortion and early miscarriage must be closely studied in arriving at an appreciation of incomplete abortion. Why should the natural processes usually inadequate in expelling the products of conception in its early period, succeed so efficiently at its maturity? The disproportionate growth of ovum and secundines had an undoubted influence upon the uterine mechanical effort at expulsion. The influences of infection, embolism, and other circulatory changes, the various traumata and pathological uterine tissue changes, especially those following previous abortions after producing an expelling force, were exerted primarily upon the ovum. An understanding of the prevailing changes in the products of conception and their influence upon expulsive force would emphasize the indications for efficient treatment of this condition.

Methods for Overcoming Mechanical Obstruction to Pregnancy.—Dr. Robert T. Morris, of New York, said when observing the work of various operators one was struck by their differences in attitude toward mechanical obstacles to pregnancy. Some surgeons entered into painstaking technical detail in a conservative way, while others made short work of some symptom producing obstacle without regard to conservation of organs. One operator would remove a fibroid tumor, or an entire uterus, in a case in which another operator would conserve enough of the uterus for repair purposes which would allow the patient to have at least one child before recurrence of degenerative change of the uterus. Several forms of salpingitis left mechanical obstruction to pregnancy because of adhesions, or of closed lumina between ovary and uterus, but in a certain proportion of selected cases the buried fimbriated end of an oviduct might be freed and grafted near the fundus of the uterus, thus making a short circuit past adhesions or a closed lumen.

At present, he had a patient about to be delivered of a child who had only one such oviduct allowing of plastic repair of this kind. Perhaps the most extensive plastic work which he had done was for a patient who had lost both ovaries and tubes some years previously; in that case he first grafted an ovary from another patient, and about a month later reopened the abdomen to determine if the graft appeared to be in good condition. This was the case and a new oviduct was constructed from a transplanted loop of ileum, one end of which encompassed the engrafted ovary, the other end being sutured to the walls of the open lumen of the uterus. There had been no practical result in this latter case and it might be that the mucous secretion from the bowel transplant might interfere with impregnation. The work might, however, be done experimentally for a patient who understood and accepted the work upon that basis.

Version.—Dr. Irving White Potter, of Buffalo, reporting on one hundred and fifty cases since September, 1916, stated that version could be more often performed to shorten labor, to lessen the shock to the mother, and to eliminate undue pressure to the head of the child, but it should never be undertaken until the os was fully dilated or dilatable. The majority of occipitoposterior positions were best treated by version. Version could readily be performed in primiparæ and injuries to the child's head were lessened. The face cases were better treated by version. Cases of prolapsed cord, where the cervix was dilated or dilatable and the cord still pulsating, cases of placenta prævia in multiparæ with cervix dilated or dilatable, and cases of moderately contracted pelvis with a small child were best managed by version.

Chloroform in Labor.—Dr. I. L. Hill, of New York, said that in June of last year he reported to the American Medical Association the results of animal experimentation and clinical experience, as well as an exhaustive study of medical literature, and came to the conclusion that there was no analogy between experimental work done on animals and the careful administration of therapeutic doses of chloroform in labor. He had been surprised at the tendency of obstetricians to discredit the use of the anesthetic that had been most useful in their practice, not on the evidence of what had occurred in obstetrics, but what had been found at times in deep surgical anesthesia and what was reported from animal experimentation. It would be contrary to the purpose of scientific advancement to ignore the evidence of the laboratory. It seemed only practical, however, to study the reasons for the apparent discrepancy between obstetrical experience and laboratory findings and also between the use of this narcotic in labor and in general anesthesia. For the analgesia of labor, chloroform correctly used was perfect in results and absolutely safe. Other men had found great satisfaction in the use of nitrous oxide oxygen, and it seemed that as they became skilled in its use, they obtained a satisfactory analgesia just as he did with chloroform. It could not be safer, however, and its exponents must not seek to establish it on the basis of experimental poisoning of animals with chloroform, nor of the use of chloroform in surgery for complete anesthesia, for neither had any bearing on the harmless chloroform analgesia of obstetrics.

Diagnosis and Management of Narrow Pelvis.—Dr. E. GUSTAV ZINKE, of Cincinnati, said that the narrow pelvis was not sufficiently understood and its therapy was practised by comparatively few. Four degrees of narrow pelvis were generally accepted. The treatment in the first and second degrees of pelvic contraction was not so easily determined. Rules for treatment in the two highest grades of contraction were very simple. Points of diagnosis must guide us in our judgment of cases, and assist us in determining the treatment to be adopted. The high forceps was justifiable only when the head was well flexed and fixed in the pelvic brim. In his paper he discussed prophylactic version, craniotomy, hebosteotomy or symphyseotomy, also abdominal Cæsarean section.

Gangrene of Uterine Fibroids Following Parturition; Panhysterectomy.—Dr. RALPH WALDO, of New York, stated that the specimen which he showed was removed from a colored woman, aged twenty-four years. In performing panhysterectomy every possible care was taken to protect the neighboring structures and the abdominal wall with gauze sponges. The upper end of the vagina and the abdominal wall were closed. The morning following the operation the temperature was 99.6° F., but during the afternoon it rose to 103.2°; pulse, 128; respiration, 28. For the next four days the temperature was between 104.4° and 102°, the pulse was between 100 and 156, and the fat in the abdominal wound broke down, a wet bichloride dressing was applied. The woman gradually improved until the eighteenth day after the operation, when a left lobar pneumonia developed with temperature as high as 104.2°; pulse, 158; respiration, 50. This condition lasted for three days after which all of the symptoms gradually improved, and she was discharged from the hospital cured, March 16, 1916. This was a rare complication of parturition; but previous to this it was his good fortune to see two similar cases, and from the experience with these cases, although it was small, he was convinced that early panhysterectomy before the peritoneum was involved, gave the patient the best chance for her life.

Osteoma of the Descending Ramus of the Pubes and Ascending Ramus of the Ischium Obstructing the Pelvic Outlet.—Dr. JAMES N. WEST, of New York, stated that in three works on obstetrics he saw no mention of dystocia from this cause, and in his own examination of women, pregnant and nonpregnant, in his office and hospital work, this was the only one he had seen. In other parts of the body the occurrence of osteoma was not infrequent. The case was reported on account of the rarity of the condition and the extremely satisfactory result of operation, the only adverse circumstance connected with which was the weakening of the pelvic framework of the body. This, however, was in a large measure counteracted by the firm ligamentous structure which had taken the place of the bone and served perfectly for the attachment of the muscles formerly attached to the bone in that situation.

Book Reviews.

[*We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.*]

Diseases of the Nervous System. A Textbook of Neurology and Psychiatry. By SMITH ELY JELLIFFE, M. D., Ph. D., Adjunct Professor of Diseases of the Mind and Nervous System, New York Post-Graduate Medical School and Hospital, and WILLIAM A. WHITE, M. D., Superintendent of St. Elizabeth's Hospital, Washington, D. C.; Professor of Nervous and Mental Diseases, Georgetown University; Professor of Nervous and Mental Diseases, George Washington University, etc. Second edition, revised, rewritten and enlarged. Illustrated with 424 engravings and 11 plates. Philadelphia and New York: Lea & Febiger, 1917. Pp. xix-938. Price $7.

The extensive revision which this textbook has undergone so short a time after its first publication is in keeping with the character of the work. It stands, as in its original purpose, and in its form of treatment, for the most progressive attitude in neurology and psychiatry and seeks to embody the results of the latest research and the most effectively working concepts in either field. It contains a storehouse of material in reference to the three modes of departments of nervous and mental activity. For the authors have divided their study upon the basis of three levels upon which nervous activity is manifest, and each at the service of the mental life behind it. The unifying concept which makes such a classification workable is that of energy distribution and energy exchange between the three levels.

The vegetative nervous system is very fully considered. Much has been added here to the material published in the first edition, making this section of peculiar value as a presentation of the important researches in this newer neurological field. The autonomic and sympathetic systems and the glands of internal secretion are brought to the light of the latest knowledge, while at the same time there is ample suggestion for further research in the future. Special emphasis is laid upon the interrelation of these glands to each other and upon interdependence of organic conditions, glandular activity and the neuronic mechanism. The various syndromes manifesting themselves are given full discussion. The sensorimotor system receives the same well arranged treatment. The material is well classified, presenting an orderly development based upon the actual anatomical and functional arrangement, which has developed through its usefulness. The disorders which arise are therefore grouped according to the same plan and present in orderly sequence the diseases of the cranial nerves, peripheral nerves, lesions of the spinal cord, of the gradually rising levels of the brain, and then of the cortex itself. New material has been added here also in accordance particularly with recent experience in poliomyelitis and war neurosis and fuller and better related knowledge of diseases throughout the sensorimotor field.

This prepares the way into the realm of psychic disturbances where, according to the authors' classification, energy works through a different lever, the symbol, through which it is in fact shifted from one level to another. Thus the unity of life manifests itself, as this plan of the book seeks to set forth, the same psychic force supplying the motive and only working differently as it has at its disposal the one or the other neural mechanism, the vegetative or autonomic to control the metabolic processes, the sensorimotor to provide for and maintain the balanced interrelations of the various motor organs of the body, and the symbolic or psychic, through the idea or the feeling, to direct the individual in his relation to his environment. The hypothesis of a greater portion of this mental life working unconsciously is utilized to explain the varied use of the symbol and its working value in the success of adaptation or in the disturbances which result from nonadaptation. This grants a working dynamic concept with which to understand mental diseases and to reach them. It also introduces that unity of understanding which explains or suggests the way to more complete understanding of the interworking of the three levels of activity. Greater clearness might be introduced into the section devoted to the psychic or symbolic level, and the forms of mental disturbance in which it is there manifest. Nevertheless this book stands by itself as a monument of what can be presented from this viewpoint. It has shown the way and it has succeeded in presenting the best scientific material in the service of a concept at once unifying and workable both for research and practical clinical endeavor.

Leishmanioses, kala-azar, bouton d'orient, leishamaniose americaine. Par A. Laveran, Professor a l'insitut Pasteur; Membre de l'institut et de l'Académie de médicine. Paris: Masson et cie, 1917. Pp. iii-515. Price 15 fr. Doctor Vogel, November 7, 1917.

The lesions produced by the protozoon Leishmania are so unfamiliar to North American physicians that information concerning them must necessarily be obtained from the writings of those having greater opportunities for studying the disease at first hand. In the present monograph the entire ground has been covered and it is the most complete and authoritative discussion of the subject available. Three general forms of leishmaniosis exist, the visceral form, or tropical splenomegaly, often termed in English writings kala azar; the cutaneous form, called tropical ulcer, or Delhi sore; and a closely allied condition occurring in South America, known to local physicians under a wide variety of Spanish names. All of these are due to the Leishmania, the visceral type being caused by Leishmania donovani, the cutaneous type by Leishmania tropica, and the South American type by a form of the parasite closely resembling, though not identical with, the latter organism. In the case of the tropical sore, the credit for the recognition of the nature of the infection belongs to J. H. Wright, of Boston, who discovered parasites in the skin lesion of a child coming to this country from Armenia, which were subsequently found to be identical with Leishmania tropica. Laveran gives a most complete discussion of the morphology and life cycle of the parasites, the probable mode of transmission, and the prophylactic measures to be recommended, as well as of the clinical manifestations of the disease and its treatment. The volume may be accepted as summing up all that is at present known concerning Leishmania infections.

Humanizing the Greater City's Charities. Public Welfare Committee, New York, 1917.

In this monograph the work of the Department of Public Charities of the Greater City of New York is summarized. It is a monumental record which carries on its face the deep gratitude of the citizens to Mr. Kingsbury, the commissioner appointed to office by the Mayor, John Purroy Mitchel. To those of us who can recall the days of Tweed, Boss Kelly, Mayors Van Wyck, Grant, and the like, this monograph holds the mirror up to truth for it shows what a man of courageous conviction, what a man of efficiency may do, if his heart is in his work, not for what it brings to him, but for what it does for the poor, the waif, the orphan, the widow—the Master's legacy to the worker in the field of philanthropy. The foreword of this monograph, written to Stanley H. Howe, epitomizes Mr. Kingsbury's aim. It deals with the charity that comes from the heart, the charity that comes from the head and not the heart, and the charity that comes from the heart and from the head at work in unison.

To an old timer, the reading of this monograph gives rise to a feeling like unto that which surges upon the traveler in the desert who at last views the oasis. The writer served the city for nearly a quarter of a century under Commissioners Porter, Simonds, and Sheehy, and is tempted to exclaim: "Hail to the millennium and woe to any commissioner of charities who in the future wrecks one stone of this structure erected by Mr. Mitchel and by Mr. Kingsbury to the city's poor, the community's waifs. Every physician should read and mark well the monograph. Every citizen irrespective of political affiliation should digest it. The editorial work on the monograph was performed by Robert Bertrand Brown and by Julia Vidal Grandin, and to them grateful acknowledgment is tendered by the Commissioner.

Births, Marriages, and Deaths.

Married.

Calitri-McDonough.—In Lawrence, Mass., on Monday, November 19th, Dr. Constant Calitri and Miss Angelina McDonough.

Dutton-Carlson.—In Stratford Terrace, Mass., on Saturday, December 1st, Dr. Frank K. Dutton, of Springfield, Mass., and Miss Huldah Carlson.

Died.

Adams.—In Philadelphia, Pa., on Tuesday, November 27th, Dr. Quintus Adams, aged fifty-one years.

Armstrong.—In Philadelphia, Pa., on Friday, November 23d, Dr. William A. Armstrong, aged seventy-seven years.

Bachman.—In Rochester, N. Y., on Wednesday, November 21st, Dr. George A. Bachman, aged forty-nine years.

Baker.—In Madison, Mo., on Thursday, November 29th, Dr. John W. Baker, of Granite City, Mo., aged thirty-one years.

Bucher.—In Lebanon, Pa., on Tuesday, November 27th, Dr. Isaac Reily Bucher, aged eighty-five years.

Cato.—In Americus, Ga., on Wednesday, November 26th, Dr. Robert E. Cato, aged fifty-five years.

Cole.—In Kewanee, Ill., on Thursday, November 29th, Dr. William H. Cole, aged eighty-two years.

Collins.—In Mohawk, Ind., on Friday, November 30th, Dr. Oliver A. Collins, aged fifty-eight years.

De Varona.—In New York, N. Y., on Friday, November 30th, Dr. Joseph de la C. De Varona, aged seventy-four years.

Ferebee.—In Oxford, N. C., on Sunday, November 25th, Dr. Nelson M. Ferebee, aged sixty-eight years.

Gerberich.—In Lebanon, Pa., on Thursday, November 29th, Dr. Daniel P. Gerberich, aged sixty-two years.

Gordon.—In Washington, D. C., on Saturday, December 1st, Dr. David Cleaveland Gordon, aged eighty-one years.

Goulding.—In Pittsburgh, Pa., on Thursday, November 27th, Dr. Charles O. Goulding.

Hagemeyer.—In Youngstown, O., on Friday, November 30th, Dr. A. T. Hagemeyer, aged sixty years.

Herriman.—In Chicago, Ill., on Wednesday, November 28th, Dr. Elbridge A. Herriman.

Johnson.—In Springfield, Mo., on Sunday, November 25th, Dr. Samuel A. Johnson, aged fifty-four years.

Karrmann.—In Cheshire, Conn., on Wednesday, November 28th, Dr. Edward Karrmann, aged sixty-three years.

Kurtz.—In Old Ferry, Pa., on Sunday, November 25th, Dr. Clarence M. Kurtz, of Reading, Pa., aged fifty-six years.

McGlumphy.—In Moundsville, W. Va., on Monday, November 26th, Dr. William G. McGlumphy, aged sixty-eight years.

Meigs.—In Manito, Ill., on Monday, November 26th, Dr. John B. Meigs, aged eighty-three years.

Moses.—In Waltham, Mass., on Wednesday, November 21st, Dr. Thomas F. Moses, aged eighty-one years.

Murphy.—In Los Angeles, Cal., on Saturday, November 24th, Dr. Claire W. Murphy, aged forty-seven years.

Phillips.—In Syracuse, N. Y., on Tuesday, November 27th, Dr. James A. Phillips, aged eighty years.

Schaeffer.—In Washington, D. C., on Friday, November 30th, Dr. Edward Martin Schaeffer, aged seventy-three years.

Scott.—In Montreal, Canada, on Sunday, November 25th, Dr. William James Scott, aged thirty-six years.

Steinbrecher.—In Detroit, Mich., on Sunday, November 25th, Dr. Albert H. Steinbrecher, aged fifty-nine years.

Sullivan.—In New York, N. Y., on Saturday, December 1st, Dr. John J. Sullivan, of Passaic, N. J., aged fifty-three years.

Valle.—In St. Louis, Mo., on Saturday, November 24th, Dr. Jules F. Valle, aged fifty-seven years.

Wiley.—In Baltimore, Md., on Sunday, November 25th, Dr. Zephaniah K. Wiley, aged seventy-four years.

Wyland.—In Moline, Ill., on Thursday, November 29th, Dr. Jonathan M. Wyland, aged fifty-nine years.

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Original Communications

FRACTURES.*

Emphasizing the Importance of Improved Technic in Closed Methods of Treatment, with Special Reference to Fractures of the Neck of the Femur.

BY CHARLES OGILVY, M. D., F. A. C. S.,

New York.

It is far from my purpose to belittle the importance of open operations in the treatment of fractures. Many cases of fractures call for open operation. Such cases, however, should be very carefully selected. Of all fractures comparatively few, between five and ten per cent. of all cases, need open operation. Much has been written and spoken regarding the operative treatment of this small percentage and too little time and space have been devoted to the remaining ninety per cent., which are daily being treated by numberless methods with as many varying degrees of success.

Few surgical conditions receive as little serious consideration as do fractures. Many fractures receive little or no proper surgical attention at all. It is not surprising, then, that we see so many cases of malunion, nonunion, fixed joints, and loss of function. The reason for this, in my opinion, is that the mechanical forces involved in the treatment of most fractures are neither carefully studied nor thoroughly understood by the average general practitioner. The opportunity for such study does not present itself sufficiently often to encourage spending so much time in concentrated effort. The remuneration does not, comparatively speaking, repay one for the time and work expended in the services rendered. Good results are too little appreciated by the laity. Poor results, on the other hand, are the cause of a great many lawsuits. There are more malpractice suits in fracture cases than in any other. Precision and accuracy in the setting of fractures spell apposition and alignment. The obtaining and maintaining of apposition and alignment mean good results. To obtain these an anesthetic should be the rule and not the exception.

Mechanical accuracy can better be obtained by special apparatus particularly adapted for this purpose than by any manual power. Thus the several fracture tables now in use with their additional attachments should be employed whenever accessible. Hospital care, with its associated advantages, should always be advised in preference to setting a fracture in the home or office. The application of splints or plaster of Paris should be thoroughly understood with definite relation to the object in view. Personally, I use plaster of Paris almost exclusively.

It is much better surgery, I believe, to obtain a good result by closed methods of treatment rather than by performing an open operation. Other things being equal, a good man who sets a fracture using mechanical aids will obtain better results in a large majority of cases than a good surgeon who performs an open operation on a similar case. The advantages are greatly in favor of the closed method of treatment. This is true, with but a few exceptions, not only of shaft fractures but also of fractures into joints. A few years ago a special committee of inquiry was appointed by the British Medical Association to report upon the methods employed in treating fractures and the results obtained thereby. This committee has reported some startling results, especially in regard to the treatment of fractures of the neck of the femur. Of twenty occurring in patients between twenty-six and forty-five years of age only six good functional results are reported; of thirty between the ages of forty-five and sixty, only eight good results; of thirty-five over sixty years of age, only five. Of the cases at all ages, only 16.4 per cent. show both good anatomical and functional results, and to these can be added 9.8 per cent. with good functional results but not good anatomical results, making altogether only twenty-six per cent. of good functional results.

Scudder reports upon sixteen cases of fracture of the hip many years after the accident. These sixteen cases were treated by traction and immobilization at the Massachusetts General Hospital for a period ranging from a few weeks to a few months. The patients then went about with crutches. These cases reported for examination from two and one half months to twenty-four and one half years after the accident. Of the sixteen cases thirteen have impairment of the functional uses of the leg. In only two cases out of sixteen can it be said that the leg was functionally useful. John B. Walker reported before the New York Surgical Society in October, 1907, 112 cases as follows: "Of the 112 cases eighteen died; thirty-two have not been found; thirty are unable to work because of persistent pain, restriction of movements at the hip, or on account of shortening and abduction which made it necessary

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*Presented in part before the Westchester County Medical Society, March, 1917; also before the City Hospital Alumnæ, October 17, 1917.

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for the patients to use crutches; twenty-two show improvement; twelve are walking comfortably with a cane, and although there is some stiffness and occasional pain, they are beginning to do some work; ten have recovered almost completely, and they are free from pain and stiffness and are able to do their usual work; ten are still in the hospital." Thus out of 112 cases but ten can be traced which are reported as having had a perfect recovery. From these reports it will be seen that the results of fracture of the hip have been far from satisfactory. One writer states that "it may well be said that the treatment is perfunctory because the prognosis is bad and the prognosis is bad because the treatment is ineffective."

We can all remember, especially during our hospital service and perhaps too frequently during the years of our practice, seeing these cases of fracture of the hip being treated by extension with weight and pulley in combination with a long Liston splint, giving results which are disheartening, discouraging, disappointing, and unsatisfactory. It is for this reason that I wish to direct attention to a method of treatment which offers very much better results. It is the abduction method advised by Whitman. It is applicable to mostly all of the varieties of fracture of the neck of the femur. The question as to whether or not the fracture is intracapsular or extracapsular is not of very great importance. As a matter of fact, fractures are frequently oblique and may be partially intracapsular and partially extracapsular, owing to the fact that the capsule extends farther in front and below than it does above and behind the neck. "If it be at the junction of the neck with the shaft it should be comparatively easy to secure union because of the large area of the fragments and because the fracture is often incomplete, as in the younger class of patients. If it be of the small part of the neck, apposition and retention will be more difficult and union of course unlikely if the primary shortening of the limb is not overcome. If the head of the femur be involved as in epiphyseal fracture or separation in young subjects, the irregularity at the articulating surfaces will inevitably cause interference with function" (1).

In regard to impacted fractures of the neck of the femur there is a diversity of opinion in reference to treatment. Whether or not the impaction should be broken up should depend entirely upon the amount of deformity in which the impaction has occurred. There are many fractures of the neck of the femur with impaction which should not be disturbed. There are more, however, in which the deformity occurring should be corrected.

Case I.—A young girl, seventeen years of age, slipped on an icy pavement, falling upon her hip. With difficulty she arose and was able to walk home, a distance of three blocks. When I saw her there was no deformity whatsoever; the limbs were within one quarter of an inch of being the same length; flexion, extension, abduction, adduction, and rotation of the thigh were practically normal, and my diagnosis at the time was one of simple contusion. An x ray, however, showed a distinct fracture of the neck with impaction, in which the angle of the neck with the shaft had been made slightly more oblique than normal, thus overcoming the shortening of the limb which would otherwise have occurred. Nothing could be gained by breaking up this impaction.

Case II.—A young girl on the other hand fifteen years of age having suffered from a similar accident was found upon examination to have sustained a fracture of the neck of the femur, associated with outward rotation, three quarters of an inch shortening, and an impairment of function to the extent of being unable either to rotate or flex the thigh, or walk without a great deal of discomfort with the foot turned outward at an angle of forty-five degrees. I operated very carefully and, gently breaking down the impaction and rotating the leg inward, applied a plaster of Paris spica, as I shall describe, thereby obtaining an excellent result.

There are borderline cases in which it may be difficult to decide whether or not an impaction should be broken up, but such cases must be left to the good judgment of the individual surgeon.

The first case reported emphasizes the necessity of an accurate diagnosis. Fractures of the neck of the femur occur much more frequently than we have heretofore considered possible. This is especially true in children and young adults. When an impaction takes place we are liable to overlook such a fracture. This is unfortunate as the results are apt to be disastrous unless a plaster of Paris spica or other means of support is applied to protect the hip at the time from body weight bearing.

I cannot emphasize too strongly the importance of an x ray picture being made in all these cases. If there is any doubt whatsoever, you will always benefit by seeing a radiograph and it will frequently relieve you of much anxiety and sometimes of considerable embarrassment. Between the ages of thirteen and sixteen years, inclusive, we may expect to find a separation of the epiphysis. These patients often give a history of two injuries. After the first they are able to walk about with but little inconvenience; after the second, greater friability results. It is probable that at the first the epiphysis has been loosened and upon being injured a second time, has been separated. Fractures of the base of the neck occur in children under thirteen years of age. They usually take the form of a greenstick fracture with impaction; these cases are very often overlooked. If not cared for at the time, even although but little impairment of function has immediately resulted, coxa vara will develop, symptoms of which may not be noticed for several years. Therefore, all suspected cases should be very carefully examined.

TREATMENT.

Fixation in abduction.—This abduction method of Whitman is advised as a routine measure in all cases of fracture of the neck in which local treatment is to be attempted. "If the fracture is complete, the shortening is overcome by traction. The limb should then be abducted to utilize the tension on the capsule to direct the outer toward the inner fragment contained within the acetabulum and to bring them into more or less accurate apposition. The attitude of complete abduction makes muscular contraction powerless to induce deformity. This influence, which is described in all textbooks as of great importance, is more directly that of the abductors, the internal rotators, and the iliopsoas muscles. In abduction the former group is entirely relaxed and impotent, while contraction of the iliopsoas would tend to draw the former directly inward and thus to oppose rather than to support the fragments. The fixation, however, is more directly assured by contact of the neck with the rim of the acetabulum and of the trochanter with the side of the pelvis. In this attitude the comprehensive support of the plaster bandage should provide the rest most favorable to repair."

Application of the plaster spica.—"The patient is anesthetized and placed upon a firm, substantial hip rest. Counterextension is obtained by a band of cloth or sheeting passed around the peroneus and extending back up beyond the head of the patient. If the fracture is incomplete, as is usual in young subjects, the limb, under gentle traction, is slowly abducted, the assistant at the same time abducting the sound limb to prevent the pulling up of the pelvis and to demonstrate the normal range. If the fracture is complete, the shortening is first entirely overcome by traction and countertraction. The limb in the extended attitude is slowly abducted by the assistant until the trochanter is fairly apposed to the side of the pelvis, the operator meanwhile pressing the trochanter downward and inward. In some instances there is a distinct snap as the upper part of the neck slips beneath the rim of the acetabulum. In any event the abduction is increased until the trochanter is firmly apposed to the side of the pelvis. The leg is rotated inward until the foot points directly upward. In the first instance the primary object of the abduction is by leverage against the upper border of the acetabulum to overcome deformity; in the second, by tension on the capsule to remove folds, to appose fragments, and by actual contact of bone with bone to oppose redisplacement. The limb being held in this attitude, the pelvis, the ribs, the bony prominences of knee and foot are protected with a layer of sheet wadding and the limb and body are then covered in carefully with cotton flannel bandages.

"The plaster of Paris spica is then applied extending preferably from the mammary line to the toes. This should be drawn snugly about the hip, and, most important of all, should completely enclose and support the buttock. The insertion of thin strips of wood about the hip and knee permits of a lighter bandage than would otherwise be possible." The spica is then trimmed out to allow cleanliness to be maintained and also is cut away to allow complete flexion of the sound limb. The spica should extend to and include the foot. "This long spica is most efficient in that it absolutely prevents rotation of the limb, but a short spica may be used in impacted or incomplete cases in which displacement is unlikely."

Some have objected to the application of this spica on the ground that it is uncomfortable, but from personal experience I have not found this to be the case. Rather, on the contrary, I have found that even when applied to patients between the ages of sixty and seventy years it can be made more comfortable than any other fixation support that I have ever employed. The patient can be moved about in bed much more easily and the nursing in such a case thereby made infinitely more advantageous, as complete fixation is not only obtained but also continuously maintained by this means. The head of the bed may be raised and in six to eight weeks the patient may be allowed to stand up for a few minutes each day. Support of the body weight upon the fractured hip should not be permitted for at least three to four months after the setting of the fracture. This should receive very careful consideration and can be very nicely regulated by using crutches and gradually permitting the patient to put more and more weight upon the injured side.

A useful, practical point to remember is that this long spica may frequently be cut off at the knee joint after it has been worn for two months. This permits of more freeedom of motion without disturbing the fracture. If this method of treatment were properly carried out, and an accurately fitting, correctly applied, plaster of Paris spica in abduction, as has been here described, employed, there is no doubt but that our results would be much more satisfactory than heretofore.

REFERENCE.

1. WHITMAN: *Medical Record*, March 19, 1904.

40 East Forty-first Street.

CARE OF THE EARS.*

By Wendell C. Phillips, M. D.,
New York,
Senior Attending Aural Surgeon, New York Post-Graduate Hospital.

The term deafness means loss of the function of hearing. It is found in varying degrees from slight deafness to total loss of the hearing function. It may be congenital or it may result during infancy from various diseases, in which event, providing it is total or nearly so, the acquisition of speech is lost and these persons are commonly referred to as deaf and dumb. Fortunately this type of deafness is rare and we are to consider here the more common forms which have their onset later in life.

The tendency of people to hide their deafness from their friends is a very important physiological feature of this complaint. This, no doubt, arises as a result of another "D" which is closely associated with this affection. I refer to despondency. Unfortunately, deafness and despondency are close friends. Deaf people are extremely sensitive regarding their affection and usually will make every effort to conceal this defect both from their friends and their employers. Fear of losing their employment may be the chief underlying feature but their extreme sensitiveness is manifest even when independent. It has been aptly said that the blind are less despondent for the reason "that if you speak to a blind man you make him forget his troubles, while if you speak to a deaf man you remind him of his troubles." When the deafness is profound and affects both ears so that the individual is unable to converse readily with his friends and to hear conversation in the ordinary events of social life he is prone to give in to his despondency, to absent himself from all social intercourse, and to become more or less of a recluse. It may surprise you to know that twenty-five per cent. of all persons over thirty-five years of age are more or less deaf in one ear, but fortunately in the majority the deafness is confined to one ear. I am constantly confronted with the fact that young people who are slightly deaf are prone to select occupations the nature of which is ill adapted to their condition as the deafness increases in as much as many of them are teachers, stenographers, and telephone operators.

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*An address delivered to the city employees at the Municipal Building of the City of New York, November 15, 1916, under the auspices of the Committee on Education of the Welfare Committee of the Borough of Manhattan, Leonhard Felix Fuld, Ph. D., chairman.

For the purpose of definiteness let us divide the ear into three parts. The first part includes the external ear, the visible portion, and the canal which extends inwards to the ear drum. This canal is about an inch and a quarter in length. The second part is the middle ear cavity which contains the little bones known as the ossicles and which communicates with the throat through the Eustachian tube. This cavity also is in such relation to the inner ear that vibrations are directly conducted thereto. The third part is the inner ear, or that portion where the terminal filaments of the auditory nerve are located and which in turn take up the sound waves and convey them to the brain where they are reproduced into what we call sounds or tones. The external ear has not much to do with the hearing function, excepting the auditory canal through which the sound waves pass on their way to the delicate structures of the inner ear. It is possible for deafness to result from some defect, disease, or obstruction of the external ear. The majority of cases of deafness arise from disease of the middle ear and a considerable proportion of all cases of deafness result from disease of the inner ear or the auditory nerve. Deafness from the external ear comes chiefly as a result of some growth or some body which completely occludes the canal. Such a condition may persist for months or years with large masses of wax without much interference, when suddenly, as a result of bathing or getting water mixed with this mass, it swells and completely fills the canal. Then the hearing is shut off until the mass is removed. Many of these cases come to our clinics in the early summer after the bathing season commences. Upon removing the mass of ear wax the hearing is usually restored.

Middle ear deafness, or what we usually speak of as chronic catarrhal deafness, has already been referred to as the most common type. The real deafness in this type, as a rule, does not appear during the early years of life. The noticeable deafness commences at from twenty-five to forty years of age. The majority of physicians would say that it was a disease of middle life. This is not true for the foundation of this affection is usually laid during childhood. Children who have colds in the head and complain of slight pain or blocking up of the ears and have not been given proper treatment, gradually become affected by tissue changes in the middle ear which result in more or less catarrhal deafness. The little tube which connects the middle ear with the pharynx admits air into the middle ear which serves as an equalizer of atmospheric pressure. The temporary closing off of this tube on account of the swelling of the membranes, when the individual has colds in the head, interferes with the atmospheric pressure to such a degree that there is thrown out into the middle ear spaces some serous exudate which, unless air is inflated into the middle ear through the nose by a mechanical measure during this period, becomes organized into connective tissues. This produces thickening of the lining membrane of the middle ear and often the ear drum itself may become more or less thickened and bound down by adhesions. It may take a series of such colds, covering a long period of years before sufficient changes take place to interfere with the hearing function. Middle ear deafness is largely a preventable disease but the prevention must commence in early life and the preventive treatment must consist of cleansing measures applied to the nose and throat during the process of colds in the head, but more particularly the maintenance of the permeability of the Eustachian tubes by frequent inflation during that period while the patient complains of stuffed up ears. Middle ear deafness is also caused by suppurative diseases commonly known as abscesses of the ear. These abscesses arise from the blowing or forcing of infectious material from the nose into the Eustachian tube and thence into the middle ear. As a rule abscesses clear up under proper treatment without loss of hearing. In complicated and prolonged cases of abscess in the ear the hearing may finally become impaired. The treatment of this condition will be referred to later on.

Finally we have to deal with internal ear and nerve deafness. In the majority of instances internal ear deafness is hereditary, probably resulting from some underlying constitutional disease. This type of deafness is usually permanent and not preventable. It first manifests itself between the eighteenth and twenty-fifth year and gradually progresses until in the majority of cases the entire hearing function is practically lost. Nerve deafness may also result from an injury to the head, tumors of the brain, or meningeal affection, such as poliomyelitis. I have already referred to congenital deafness which also comes under this heading.

I now come to the question of prevention. Even though many of you may be more or less deaf already these hints may help you to stay the progress of the disease to a certain extent and it surely will be of benefit if you carry the information to your families, especially if you have children. Any measures which you may employ that will enable you to keep from having colds in the head will prove of vast benefit in the prevention of deafness. Good bodily health, strenuous exercise in the open air, and proper dressing are important measures. No person can live in a changeable climate like that of the city of New York by coddling himself. As much harm may come from overdressing or bundling up the neck as from neglect to wear sufficient clothing. No one should permit his skin to become so sensitive that the slightest exposure to a draft of air would result in taking cold. The more you coddle the more liable you are to take cold. For the most part the citizens of a large city spend their time indoors. This means that in general the clothing should be of light texture but warmer in winter than in summer. The short time spent out of doors required much warmer clothing, anyhow, sufficient to prevent chilling of the body. I need not say that it would be difficult to find any young woman in this city guilty of wearing too much in the line of warm clothing.

There is a period of development of child life when certain glands are prone to become much diseased and enlarged. These are termed "lymph" glands. They are present in all the mucous membranes but more especially in the throat and upper pharynx. When located here they are termed large tonsils and adenoids. They are irregular in shape and full of creases and depressions and they readily become the seat of infection. Furthermore they interfere with nasal breathing and thus the whole upper breathing tract becomes more or less obstructed. The discharge is always profuse. The efforts of this child to clear the nose and throat is liable to force some of the infected secretions into the Eustachian tube and thence into the ear. There is no more prolific cause of ear trouble in young children than diseased tonsils and adenoids.

Regarding suppurative diseases of the ear, the infectious process must enter the middle ear through the Eustachian tube in order to cause abscesses. A word or two about the treatment of middle ear abscesses. They usually arise from grippe or severe colds which more or less exhaust the patient. The onset is characterized by severe pain in the ear accompanied by fever. A patient suffering with this disease should be confined to bed for several days. The drum membrane should be opened by a physician as soon as it is determined that an abscess is present without waiting for the abscess to open spontaneously. Discharge follows and the external canal should be douched with warm sterile water several times a day. In other words the patient should rest in bed and have the external ear kept perfectly clean. The nose and throat should be looked after. In the way of prevention in young children, all who have large tonsils and adenoids should be submitted to operation, especially after they have reached the age of four years. I wish to emphasize the importance of abscesses in the ears being completely cured for there never should be such a thing as chronic discharge from the ears. These are all due to neglect. In a small proportion of cases the mastoid operation should be performed and failure to submit to this operation when needed results in chronic running ears with bad odor and a great deal of danger to life whereas the timely mastoid operation will terminate the discharge and leave the patient with good hearing. It is a mistaken idea that to puncture the ear drum will result in deafness. The ear drum has but little to do with the function of hearing.

Finally I must speak of the treatment or management of inner ear deafness. These are usually not amenable to local treatment of any kind. Occasionally some of the aids to hearing may be employed with some benefit with this type of deafness but the same aids are more helpful when the deafness is due to middle ear disease. Many of these patients have become totally deaf and they must be taught some other way of conversing. Lip reading is of great benefit. A person of good eyesight and quick perception can become adept at lip reading. I heartily recommend it to those who are nearly totally deaf and there are schools, some held in the evening, where instruction can be obtained. For young children who are congenitally deaf or have acquired deafness at a very early age it is most important that they begin school work extremely young. Private teaching for this is best but unfortunately private teaching is expensive. I wish to speak of the effort of our Board of Education to solve this problem by establishing a public school in East Twenty-third Street for the education of deaf children. The building is old and inadequate but still they are accomplishing remarkable results in the training of deaf children.

I am frequently asked about noises in the ear. These come from a variety of causes and often are most persistent and annoying. Unfortunately, no treatment is of avail in many cases, while in others considerable may be done for its relief. Patients with perforations in the ear drum should never dive into the water without first packing the canal tight with cotton. Those with normal drums may dive freely and without danger providing they avoid forcible efforts to clear the nose and throat after diving. May I close with a word of caution against worthless newspaper advertisements of all sorts of devices and treatments for the deaf. These advertisers are purely commercial people and if they had anything worth while the otologists would know of it. If you have been informed by a competent otologist that your hearing cannot be improved, it is useless to spend more money, especially upon newspaper advertisements.

40 West Forty-second Street.

QUININE AND UREA HYDROCHLORIDE.*

The Ideal Local Anesthetic for Rectal Operations.

By Joseph F. Saphir, M. D.,
New York,
Assistant Surgeon, Rectal Department, O. P. D., Gouverneur Hospital; Visiting Surgeon, Diseases of the Rectum and Anus, People's Hospital; Chief of Clinic, Rectal Department, German Poliklinik.

I daresay that most practitioners at some time or another have come across patients suffering with some rectal ailment which required operative treatment but either due to the physician's or the patient's objection to the taking of a general anesthetic, operation was not done. The patient entered into a life of daily disagreeable and disgusting rectal attention and unnecessary waste of time, with the use of salves or suppositories, powders or lotions. Some got slight temporary relief, while the great majority either continued suffering and became invalids, or fell into the hands of quacks or charlatans who promised relief without the knife or a general anesthetic and without confinement to bed or interference with the patient's business or social duties. I do not exclude our brother physicians who either through lack of time or actual cowardice, neglect themselves or have an idea that local anesthesia is not what it is "cracked up to be." It is these men particularly whom I wish to impress with the fact that there is a local anesthetic which produces anesthesia with no ill or untoward effects upon the patient.

Local anesthesia is not indicated in all rectal operations, but in my hands has proved successful and dependable in about seventy to seventy-five per cent. of all rectal ailments requiring operative measures. In a series of over 2,000 cases requiring local anesthesia, I have used quinine and urea hydrochloride with most gratifying results. Local anesthesia is indicated in, 1, patients suffering with pulmonary, tuberculous, nephritic, or cardiac diseases; 2, patients who through general neglect have permitted themselves to become so thoroughly exsanguinated that a general anesthetic on account of enfeebled condition would prove dangerous or fatal; 3, patients who cannot afford to be confined to bed for any length of time on account of social or business duties; 4, patients who fear taking a general anesthetic.

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*Read at the twentieth annual convention of the American Medicopharmaceutical League, May 28, 1917.

For the past twenty-five years since Schleich introduced his infiltration method of using cocaine, the profession has been interested in local anesthesia. Until the advent of quinine and urea hydrochloride, weak and strong solutions of cocaine, beta eucaine, stovaine, novocaine, alypin, and chloretone were used in solutions ranging from six to 0.1 per cent. All of these proved successful to a certain degree, but did not approach the ideal local anesthetic. Even salt solution and sterile as well as unsterile water by infiltration have produced local anesthesia, but each had objectionable features. Strange as it may seem, cocaine and its derivatives, in fact all of the above enumerated drugs, when administered in and about the rectum for local anesthetic purposes, even in as weak solutions as 0.125 or 0.1 per cent., produce toxic symptoms more rapidly and more frequently than when administered in any other part of the body. Patients complain of no pain during the injection or the operation, but usually within five or ten minutes after the operation severe and excruciating pain, which can only be controlled by large doses of morphine, weakness and faintness, accompanied with a cold clammy sweat, manifest themselves. The sterile or salt water solutions produce severe pain during infiltration on account of the distention of the tissues, but cause no pain during or after the operation. The water solutions may be used in mucous membrane work where there is practically no nerve supply, but they are not feasible where skin tissues are involved. All or the greater majority of these objectionable features are overcome when quinine and urea are used.

Quinine and urea hydrochloride ($C_{20}H_{24}N_2O_2$. HCl. CO $(NH_2)_2$. HCl.+$5H_2O$) may be prepared by dissolving quinine hydrochloride in the requisite amount of dilute hydrochloric acid and to this solution adding the proper quantity of urea, subsequently evaporating the solution to obtain crystals of the double salt of quinine and urea hydrochloride. It forms hard, white, four sided prisms, which are transparent if of large size, are not hygroscopic, and do not change through exposure to the air except when warm. They melt at between 70° and 75° C., forming a yellowish liquid. It is odorless and very bitter in taste and liable to discoloration by the action of light. It is extremely soluble in water, dissolving in its own weight at ordinary temperature; quite soluble in alcohol, and nearly insoluble in ether and chloroform. The aqueous solution shows a strong acid reaction with litmus, and when boiled for any length of time the urea decomposes with the evolution of carbon dioxide, hence special care should be used in sterilizing solutions by heating. The salt having the chemical composition as given above contains about fifty-eight per cent. anhydrous quinine alkaloid and about 16.5 per cent. of water of crystallization.

Quinine and urea hydrochloride solution is nonirritating when injected hypodermically in any part of the body, and produces local anesthesia lasting from three to ten days, depending upon the strength of the solution injected. Injection of quinine and urea hydrochloride solution produces a chemical change in the tissues into which it is injected. An exudation of fibrin begins to appear a few minutes after the injection is made in the tissues. The amount of exudation depends upon the strength of the solution used; the greater the strength of the solution, the greater the amount of the exudation. A one per cent. solution produces a greater amount of fibrinous exudate than a 0.125 per cent. solution, and the strength of the solution also determines the length of time in which this fibrinous exudate is absorbed. It has been proved that the greater the strength of the solution, the greater the exudate or production of fibrin, the more rapid the anesthesia, and the longer the anesthetic effect, due to the greater length of time it takes for the absorption of the fibrinous exudate. The weaker the solution, the greater the length of time for complete anesthesia, and the shorter the period of complete anesthesia, which is due to the more rapid absorption of the smaller amount of fibrinous exudate. The one per cent. and the 0.5 per cent. solutions give complete and immediate anesthesia without pain during injection, and within one or two minutes after injection, induration with the production of fibrin is produced; the duration of the anesthesia lasts from three to ten days, the sensation to the parts not being restored for ten days in the 0.5 per cent. solution and not until two weeks when the one per cent. solution is used. With the 0.25 per cent. solution, anesthesia takes place in a few minutes, and is as complete as after the use of stronger solutions. With the 0.125 per cent. solution ten to fifteen minutes is required for the production of anesthesia, but here too, complete anesthesia is produced, unless you depend upon the mere infiltration or distention of the tissues and pressure on the nerve endings for anesthesia, which can also be produced with the sterile water or normal salt solution. When less than a 0.25 per cent. solution is injected, induration of the tissues does not become manifest on palpation, although production of fibrin does take place.

The advantages of quinine and urea hydrochloride as a local anesthetic are: 1, its nontoxicity even when given in unlimited doses; 2, its prolonged anesthetic effect, lasting for from three to ten days or two weeks, a sufficient length of time in which the wound may heal, and 3, its production of fibrin with its attendant compression about the walls of the bloodvessels supplying the tissues to be operated upon. This pressure from without upon the blood vessels by the almost spontaneous exudate of fibrin acts as an excellent hemostatic. This effect lasts for three to ten days, a sufficient length of time to permit healing by granulation, thereby minimizing the danger of operative or postoperative hemorrhage to almost nothing. This certainly is a great advantage when the temporary influence of adrenalin in conjunction with cocaine as a hemostatic with anesthesia is considered. The adrenalin merely causes a temporary contraction of the muscular coat of the bloodvessels with a greater amount of relaxation and increased danger of hemorrhage as soon as the effect of the adrenalin wears off, which takes place in fifteen or twenty minutes after injection.

The only objection raised against the use of quinine and urea hydrochloride as a local anesthetic is delayed healing or inability to get primary union, but that can be easily overcome by using weaker solutions. A one per cent. or a stronger solution is never necessary in any rectal operation, and may produce sloughing or delayed union especially where skin tissue is involved. In mucous membrane work where sloughing of the tissues followed by scar tissue formation is desirable, a one per cent. solution is indicated. Personally, I never use a stronger solution than 0.5 per cent., and where skin tissue is involved, a 0.3 or 0.25 per cent. with equally good results. Recently patients suffering with ulcerated internal hemorrhoids who had bled profusely but had absolutely refused any form of operative relief, were greatly relieved by the injection of a five or ten per cent. solution of quinine and urea into the ulcerated hemorrhoids. In these cases, due to the production of fibrin, compression of the bloodvessels with resultant checking of the bleeding was produced for a sufficiently long time to allow the ulceration to heal.

For the production of local anesthesia, any metal or glass syringe can be used. I(1) have had constructed an all metal syringe holding about half an ounce of fluid, with a gooseneck and revolving rings for convenience in working in and about the rectum and with but one washer to diminish leakage. This syringe holds enough solution for a complete rectal operation without the necessity of refilling. A fine needle with a very sharp point should be used for more easy and less painful introduction. Elaborate preparation of the patient is not necessary when local anesthesia is used for rectal operations. Preparing the patient with strong cathartics or frequent enemata previous to the operation is annoying to the operator, and the dribbling of the feces over the raw surfaces of the wound is a source of great discomfort and pain to the patient after operation. My patients are not restricted as to food or drink, but are warned not to take any cathartics or enemata previous to operation. An enema is ordered to be taken about ten or twelve hours before the time set for operation, except in ambulatory cases when the patient comes into the clinic or office and desires an immediate operation, under which circumstances we operate at once.

The patient is placed in the left lateral or exaggerated Sim's position with knees flexed on the abdomen and legs flexed on the thighs. The parts are thoroughly washed with green soap and water, the hair is not shaved, and the rectum is swabbed out with cotton moistened in a weak lysol solution until the swab comes out clean of all fecal particles. This cleanses and renders as sterile as possible the lower inch or two of the bowel, which constitutes the operative field feasible under local anesthesia. This process prevents postoperative pain in operations not only under local but also under general anesthesia. Patients operated on under general anesthesia usually complain of postoperative pain because they had been purged or had been given enemata for two or three days previously and especially on the morning or the night before operation. The feces become liquefied, a certain portion of the enema remains in the sigmoid, and during and after the operation, a dribbling of fluid with minute fecal particles irritates the fresh wounds sufficiently to produce pain when the pain is not directly caused by that ancient relic of barbarism, the rubber hose surrounded with iodoform gauze mesh, or the tearing of the sphincter muscle caused by the too rapid, too energetic, too violent stretching of the sphincter, or its dilatation with instruments.

The solution of quinine and urea should always be freshly prepared and should never be injected too rapidly, nor should the needle be permitted to reach or perforate the lumen of a fistulous tract, ulcer, or other lesion, or puncture the skin or mucous membrane. This would permit the fluid to escape from the injected tissues, and interfere with the success of the operation as far as the anesthesia is concerned. Absence of pressure in any form of infiltration anesthesia prevents thorough anesthesia. Local anesthesia should never be used in rectal operations, where the operator does not know exactly what is to be done before operating, where there are any complications or conditions to prevent thorough or complete work, or in major operations where excision, resection, or sutures are to be employed.

Thrombotic hemorrhoids.—With the Saphir syringe for local anesthesia inject a sufficient quantity of 0.5 per cent. solution of quinine and urea hydrochloride to distend the hemorrhoid until the tissues become blanched or glassy white. Grasp with a clamp, and remove *en masse* an elliptical section in which is included the clot or thrombus. Where I was in the habit of transfixing and turning out the clot with a curved bistoury, I found that frequently the cavity would refill and a new clot would form and cause more intense pain than the original thrombus. I now remove the clot bearing area *en masse;* insert a small drain; apply a gauze dressing and a T binder; send the patient home or about his business; have him return the following day for change of dressing, and in eight or ten days there is complete healing. The patient has no pain during or after the operation, is not laid up, and the operation does not interfere with his business.

External hemorrhoids or skin tags.—These are injected with the same syringe and in the same manner; a 0.5 per cent. solution is used, the hemorrhoids are then grasped with clamps and snipped off at their bases with a pair of scissors, making an elliptical incision to permit better union and healing by granulation. These hemorrhoids do not require ligature or suture of any kind, and should never be removed by means of cautery. A sterile gauze pad and a T binder are applied, the patient is sent home, and returns for daily dressings, which consist of keeping the parts clean and permitting the wounds to heal by granulation. Healing takes place in eight or ten days.

Internal hemorrhoids.—Unless there is some special indication for general anesthesia, internal hemorrhoids can be operated upon by means of local anesthesia. Of the many and numerous methods and surgical procedures devised for the removal of internal hemorrhoids, I am partial to the ligature method in preference to the clamp and cautery, excision, or injection, on account of the simplicity, reliability, and the smaller danger of hemorrhage. The patient is placed in the left lateral or exaggerated Sim's position, thighs flexed on the abdomen and the legs flexed on the thighs, the edges of the anus are everted, and the patient is asked to strain down. This will cause greater eversion of the anus and engorgement of the hemorrhoids resulting in the protrusion of their tips. With the author's syringe for local anesthesia, a 0.5 or one per cent. solution of quinine and urea hydrochloride is injected into the tip of the protruding hemorrhoid, local anesthesia being indicated when the tissues begin to show a pearly white or blanched appearance. This infiltrated tumor is now grasped with a clamp and drawn down so as to get as much of the redundant tissue as possible; a nick is made at the mucocutaneous junction, in which incision a string of heavy linen thread is placed and tied tightly about the mass of infiltrated hemorrhoidal tissue so as to assist in more rapid sloughing. When the hemorrhoids are not very large, I never clip them off, but allow them to remain in the rectum, and in five to seven days they usually slough off. If the hemorrhoids are large, or when operating on externointernal, or combined, hemorrhoids, part of the hemorrhoid is clipped off leaving a sufficiently large stump to prevent slipping of the ligature and hemorrhage. All of the hemorrhoidal masses are in this way successively removed, and at the completion of the operation, the stumps or ligated masses are returned into the rectum. A narrow strip of gauze is now inserted into the rectum to stimulate contractions of the sphincter, and incidentally to prevent bleeding, a sterile pad and a T binder are tightly applied to produce pressure, and the patient is permitted to go home and about his business. These patients sometimes complain of slight pain due to the teasing or stretching of the parts, which can be controlled by giving 0.25 grain morphine. They move their bowels the following day without any inconvenience and attend to their daily routine of life as if nothing had happened. These patients should be seen for about two weeks after treatment on alternate days. It might be wise to state that where many internal hemorrhoids are to be removed, whether under local or under general anesthesia, they should be ligated at different planes to prevent subsequent annoying narrowing of the lumen of the bowel or stricture due to the formation of an annular scar, when all the hemorrhoids are ligated in the same plane. When internal hemorrhoids are high up, they can be reached through a rectal speculum and injected through a long needle attached to the syringe. These are then brought down with clamps and ligated in the same manner as the more easily reached internal hemorrhoids.

It is never necessary to stretch the sphincter muscle in the sense that we have been taught in our old fashioned textbooks, nor is it necessary, as pointed out previously, to insert into the rectum a piece of rubber tubing surrounded with iodoform gauze, which merely keeps the anus and the sphincter muscle in an unnatural state of continuous dilatation, causing excruciating pain to the patient, on account of the spasmodic contractions of the sphincter muscles, due to the effort on the part of nature to get rid of or expel this foreign mass. Removal of this barbaric plug three or four days later causes severe laceration of the already injured parts, due to the tearing away of the healthy granulating tissue which has begun to grow into the meshes of the idoform gauze; this removal is very frequently followed by a severe hemorrhage and possible infection of the extensive raw surface left after the extraction of the anal plug. Nor is it necessary to keep the patient "doped up" for a period of five days to a week with opium or morphine, or to have his bowels tied up for the same length of time with bismuth.

I mention these facts because they are still practised by the general surgeons in some of our best hospitals, and it is the above practices which have instilled into our patients the dread fear of rectal operations. It is necessary to remember that healthy strips of mucous membrane between removed hemorrhoids should be left to prevent stricture. The same holds good in skin work. Leave enough skin between removed external hemorrhoids to prevent stricture from too great contraction.

The patient should move his bowels the day after operation. Clamp and cautery can be used under local anesthesia, but most patients fear the glowing cautery, and there is danger of postoperative hemorrhage. There is also the danger of causing a burn of the skin, which takes a long time to heal and is very painful entirely out of proportion to the extent of the burn. Due to the thickness of the clamp, a large portion of the pile bearing area is left behind making the operation not as complete as the ligature operation. The clamp and cautery operation is not advisable in combined or externointernal hemorrhoids. The excision method is not very feasible under local anesthesia. The Whitehead operation is now very rarely used, except in some cases of prolapsus ani, and consists of removing a two inch cuff of the lower bowel or the pile bearing area, and suturing the mucous membrane to the skin. This is a very difficult and bloody operation, usually followed by pain, incontinence and stricture, delayed healing, severe chronic ulceration, itching, and loss of sensation when primary union fails.

Excision of one pile after another as if they were so many warts, picking up the bleeding vessels and closing with catgut sutures, or alternately cutting and tying one hemorrhoidal tumor after another, have been tried. Injection of carbolic acid in glycerin has been used, but this procedure is very often followed by swelling, pain, sloughing, fistula and abscess, phlebitis, pyemia, and death from embolism, although it stops bleeding and protrusion at once. Recently I have tried injecting a ten per cent. solution of quinine and urea hydrochloride into internal bleeding hemorrhoids in patients who rebelled against operation either under local or general anesthesia. They got temporary relief, due to the anesthetic effect, checking of the bleeding, and were able to continue their business, but subsequently had to be operated upon. The injection method is now practically obsolete, but is still being used as a lure by some quacks and advertising doctors who promise the poor and unsuspecting public a cure for all rectal cases without operation.

Fissura ani.—No other human ailment causes greater or more severe and excruciating pain than anal fissure, nor is the relief from it followed by more sincere expression of gratitude by the patient. Continued attempts on the part of nature to heal this wound caught in the grasp of the sphincter muscle and repeated tearing and reopening of this ulcer during each act of defecation are the real reasons for the nonhealing of fissure. To permit the wound to heal, the sphincter muscle must be put at rest; when the sphincteric contractions are discontinued, the patient gets relief. Divulsion or stretching of the sphincter is unsatisfactory to a degree on account of the possibility of tearing the muscular fibres of the sphincter, or possibly a recurrence later. Besides, this must usually be done under a general anesthetic on account of the severe pain. If done under local anesthesia, injection of the entire circumference of the sphincter must be performed. Since this is the case, it is wiser to incise or cut the sphincter muscle and put it at rest.

With the author's syringe for local anesthesia, inject a 0.5 per cent solution of quinine and urea hydrochloride at a point about one half an inch posterior to the anal margin into the tissues between this point and the fissure and into the sphincter muscle; a sufficient amount of solution should be used to raise the fissure up a bit and bring it into view. The sentinel pile, if large, should also be injected, but through the same opening, so as not to permit the solution to escape through more than one puncture. With a blunt pointed straight bistoury, the blade of which is one and one half or two inches in length, the tissues including the sphincter muscle are cut in a wedge, the apex being located in the rectum. The edges of the wound as well as the sentinel pile are cut away to prevent inversion of the edges of the wound and to insure proper drainage. A strip of moist gauze is inserted into the wound for drainage, a tight pad and a T binder are applied, and the patient goes on his way, having felt no pain during or after the operation; he comes for aftertreatment every other day for about four to five weeks, until the wound has healed by granulation from below.

Prolapsus ani.—Prolapsus ani of light degree can be relieved, like so many internal hemorrhoids, by injecting a number of portions of mucous membrane, grasping with clamps, and ligating. This produces sloughing followed by cicatricial scar tissue formation, with a sufficient amount of contraction to tighten up the rectum and the prolapse is relieved. With an extensive prolapse only a radical operation under a general anesthetic is indicated.

Hypertrophied papillæ and polypi.—Inject with a 0.5 per cent. solution of quinine and urea hydrochloride, ligate, and clip off as in internal hemorrhoids.

Fistula ani.—Here the division method is preferred to the excision method on account of its simplicity and the rapidity with which it can be performed; the results are just as satisfactory. Insert a probe into the canal, inject the tissues above the sinus or the tissues to be incised with a 0.5 or one third per cent. solution of quinine and urea hydrochloride. Inject these tissues more slowly, because in skin work too rapid distention caused by the injection gives slightly more pain than in mucous membrane work. Inject until you get thorough infiltration or until the tissues become blanched, and then you are sure of anesthesia. Be very careful that the needle does not perforate the tissues and enter the canal. Pass a grooved director through the external opening and into the opening in the bowel; with a curved bistoury or pair of scissors divide the tissues overlying the fistulous canal in the path of the grooved director. The edges of the wound are then trimmed off to prevent their turning in and for the purpose of getting better drainage and more rapid healing. If the sphincter muscle is in the line of the fistulous canal, the muscle should be cut at right angles to the circular muscular fibres, regardless as to the distortion of the overlying tissues in the operation. A moist gauze drain is placed in the bottom of the wound, a tight gauze dressing and a T binder applied, and the patient goes home and attends to his affairs without any inconvenience. These patients should call for change of dressing every other day and keep the parts clean; the wound usually heals in about six weeks. The excision method consists in passing the probe into the canal. As it is passed out of the internal opening, the probe is twisted together at both ends; the parts are injected with the solution; the sinus is dissected out with a knife and the edges are sewed together with catgut suture, then bandaged with a sterile gauze pad and a T binder. Blind external as well as blind internal fistulæ should be made complete, treated as above described, and allowed to heal by granulation.

Abscesses, cysts, diseased crypts of Morgagni, hypertrophied Houston's valves, impaction of feces, removal of foreign bodies, and the modified Ball's operation for pruritis ani, can all be as successfully operated upon under the influence of quinine and urea hydrochloride as a local anesthetic, in same manner as those conditions described above.

In conclusion, I would sum up the question of quinine and urea hydrochloride as a local anesthetic as follows:

1. Quinine and urea hydrochloride is an ideal local anesthetic, as it gives no pain during or after operation.
2. The anesthesia lasts for a sufficient length of time—three to ten days—to permit the wound caused by the rectal operation to heal.
3. There are no toxic effects or symptoms even if used in very large quantities.
4. It acts as a hemostatic, diminishing danger of postoperative hemorrhage.
5. It is very easy to use, is soluble in water, and is easily sterilized.
6. For the production of local anesthesia, never use a stronger solution than a one third or 0.5 per cent., especially in skin work.
7. A one per cent. solution may be used in mucous membrane work, where sloughing followed by the formation of cicatricial scar tissue is desirable.

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62 WEST EIGHTY-NINTH STREET.

REPORT OF EXPERIMENTAL WORK IN THE PRODUCTION OF AN ANTITUBERCULOUS SERUM.

Its Effects on Induced Tuberculous Lesions in Animals, with a Preliminary Report of Results in Pulmonary and Surgical Tuberculosis in Human Beings.

By Max Staller, M. D.,
Philadelphia,
Medical Director, Jewish Consumptive Institute, Philadelphia; Visiting Surgeon, Mt. Sinai Hospital.

Tuberculosis is still the most dreaded disease of civilization, in spite of its receiving more attention and study by the profession, laymen, and commonwealths than any other single disease. Since the discovery in 1880 by Koch of the tubercle bacillus, hosts of scientists flocked to laboratories for further study and investigation of the organism, the tubercle bacillus, and it was studied from all angles: 1, its life history; 2, the products to which it gives rise; 3, conditions favoring its multiplication in the animal and human body; 4, changes it produces in the localized tissues and on the general body economy; 5, modes of transmission; 6, the best way to combat it. And, yet, in spite of our extensive knowledge it has baffled scientific investigation.

In order to understand the development of tuberculosis, we must first have a clear conception of all the elements entering into it. On the one hand there is the tubercle bacillus, a unicellular parasite, which during the ages of its parasitic life, although nonmotile, has developed the power to combat billions of cells of a higher grade through its powerful, strong, waxy membrane, as well as an accumulation of endotoxins and exotoxins. Opposed to it stand a great army of leucocytes, the enzymes and the seroalbumins and seroglobulins of the plasma, and the body cells, as well as the fixed cells.

Let us now analyze in minute detail all the opposing forces. According to V. C. Vaughan, the tubercle bacillus is simple morphologically, but not chemically. Chemically it is composed of highly organized and complex protein molecules. Since all protein molecules are composed of groups of molecules linked together, free ions are always present for taking in or shedding off new molecules, as circumstances require. Since all proteins do not contain the same amount of C, H, N, and O, they are able to undergo either degradation or supergradation. The toxoalbumins of the tubercle bacillus readily unite with the ions of the enzymes found in the circulation, thus depriving the body cells of the nutrition in the form it could assimilate; hence starvation of the cells and wasting of the body. If any toxic substance interferes with the free union of enzymes, the essential function of absorption is lacking, metabolic disturbances occur, and the individual's nutrition is thrown out of equilibrium.

It is now a generally accepted fact that an infection can occur only with living things, which must multiply, grow, consume, and excrete. The bacillus, as well as the host, is armed and equipped for the defence of its life. It is a struggle for food, growth, and reproduction. The battlefield is not only the small part of the animal body invaded, but it involves the entire body, through the circulation. All living things feed by means of digestive ferments, and in order that a living germ may infect an animal, the former enzymes must be able to digest the animal protein. A bacterium that cannot digest the ferments of the body cells cannot grow or multiply and therefore cannot cause an infection. On the other hand the normal composition of the component parts of the blood, its power of assimilation, the normal rate of travel without hindrance anywhere through the circulation, are the first requisites of preparedness of the animal body against infection. The virulence of an infection does not depend as much on the virulence of the germ, as on the amount of resistance the animal is able to offer to that particular germ. Therefore all forces of the animal body must be mobilized, and each unit forced to perform its function, thus adding every mite to overpower the enemy, which is provided, as is the case of the tubercle bacillus, with powerful poisonous arrows and fortifications.

Nature has provided the animal body with natural defences against all invaders, and it is only necessary to stimulate these defences to action, to overcome the invading enemy. These defences are: 1. The leucocytes, acting as phagocytes, absorb all foreign products, such drugs, food or bacilli, or their toxins, both in the alimentary canal and in the blood, and perform multiple functions. A nerve cell, a muscle cell, a connective tissue cell, and the cuticle cells all have a special function in the economy of the animal body, but the leucocytes are the plebians; they must feed the body cells, carry away the harmful garbage, the poisons in all forms, fight all the battles with invading bacteria or toxins, and must always be ready to die in order that the body may live. The destruction of the bacilli can be accomplished only by the leucocytic enzymes, which if successful, breaks up the bacilli into molecules and disseminates them broadcast through its journey, every cell picking up what it needs by chemical affinity. But if intracellular digestion is imperfect and its foreign elements cannot be digested, a general disturbance of the entire cellular system is brought about. Ehrlich's side chain theory and Wright's opsonic index have thrown a great light on the importance of the leucocytes in infectious diseases, as well as in diseases due to metabolic changes in an organ. 2. The fixed cells play an important part locally in the curative action of tuberculosis. Their rôle is as great locally as the leucocytes in general. According to Adami and McCrae, there are three varieties of these cells: the hyaline mononuclear cells, the fibroblasts, and the plasma cells. The hyaline mononuclear cell, which originates from the endothelium of mucous surfaces, is the first cannonier appearing in the centre of the battlefield, and proliferates, holding the enemy in abeyance until assistance arrives from the fibroblasts, which are born large and round, then becoming oval, then spindle shaped, forming fine fibrillæ which unite with the neighboring cells, forming a connective tissue fence. The plasma cells have no leucocytic power, nor do they play any part in the development of fibroblasts. These cells seem to strengthen the fibrous wall by adding a cement in the form of a secretion. Thus

Nature has provided her defences against all invaders. In minor infections the destruction of cells is less, hence connective tissue formation occurs, thus presenting a strong barrier to the entrance of toxins. 3. The plasma of the blood, free from its corpuscular elements, is composed of serum albumins, serum globulin, salts of organic and inorganic nature, enzymes, hormones, toxins, and antitoxins. The chemical composition of the blood is important, since plasma and its corpuscles are not only the feeding channels of the body, but also the sewer. In normal individuals, the blood is a fluid, in which ferments and antiferments are fairly well balanced. Any disturbance of its equilibrium will cause either a disorganization of the ferments present or a formation of new ones. Any extra new enzyme, suddenly thrown into the circulation, causes an entire disorganization of the elements entering into formation of new enzymes and proteins, which may have a deleterious effect on the body cells. 4. The cellular system, by the formation of amboceptors, stimulates the other forces to increased activity, thus adding its mite to the destruction of the invader.

The characteristic and specific lesions produced by the tubercle bacillus is the tubercle. Histologically all tubercles, wherever found, are of like consistency. It has been proved by Straus, Gemalia, Morse, Prudden, and others that not only is the tubercle formed by living bacilli, but also by dead organisms. These tubercles are formed at the seat of infection and in experimental animals at the site of injection, which proves that a certain substance passes through the waxy capsule of the tubercle bacillus during life, unites with the proteins of the cells, and forms a destructive toxin which causes molecular death. Even the dead bacillus still retains the original poison, therefore we must conclude that this substance is not a product, but a component part of the bacillus. The specificity of germ diseases has had a strong and powerful impulse since the discovery by Ehrlich of salvarsan, and immunological research has become the watchword of every laboratory worker. The antigen antibody conception of Ehrlich has been of great value, and all experiments were done with the original germ causing the infection. It occurred to Mathes, Frankel, Shaffer, Wright, Schmidt, von Wagner, and others that it might be possible to call forth a specific antigen by a nonspecific protein body when injected into the circulation. Joseph L. Miller and Lusk report a number of cases of arthritis with cures by injecting foreign proteins.

Of late years many workers, including Jobling, Peterson, Kraus, Ichikova, Culver, and others report the treatment of specific diseases with nonspecific vaccines with better results than the so called specific treatment. Smallpox, typhoid, scarlet, and typhus give the individual a certain amount of immunity. In these diseases the conception of specificity is clear cut. Pasteur proved, by injecting animals with modified living germs, as chicken cholera and anthrax, that the animal became resistant to natural infections, while the injection of other germs did not protect. Based on this principle he tried the preventive method in rabies in animals as well as in man by injecting a modified, attenuated living or dead germ for the protection against certain diseases to which they would be exposed. In typhoid fever marked success has been obtained. In tuberculosis, however, the use of vaccines has failed, and the hopes of tuberculin treatment have come to naught. The theory of opsonins, as promulgated by Wright, is based upon the theory of specificity, and is today considered the dogma of the profession. While favorable results are reported from time to time by prominent men on the specificity of diseases, a perusal of the reports indicates results of interest in the line of prevention rather than of cures.

No discovery was hailed with more joy by physicians and laymen than the announcement by Robert Koch, late in 1890, of the discovery of tuberculin as a cure for tuberculosis. At last the long sought for specific had been discovered, and patients flocked to receive the blessings of the new discovery, which, however, ended disastrously in 1891, as a result of a protest by Professor Virchow against its use, due to unfavorable autopsy findings. It was scientifically based upon the theory of immunity, i. e., when a foreign protein body is introduced into the blood the tissues respond by producing a specific antibody to the specific germ that caused the disease and establish a toxin tolerance. It was soon discovered that a tolerance to the toxins could be established, but no immunity to tuberculosis. Modifications and dilutions soon appeared, but with no better results than the old tuberculin. The accumulated evidence may be summarized as follows: Tuberculin judiciously given in carefully selected cases as an adjunct to hygienic treatment, has a definite therapeutic value. Many attempts to make serums for tuberculosis have been made: Marmoreck's antituberculosis serum, Maraglianna, Valle, Ruppel, and Rickman serums. As was expected all these serums were really antibodies developed to combat the antigen, tuberculin, used in immunization. As the most potent reasons for the failure of tuberculin treatment rest on the immunological fact that after several injections of this substance the body produced sufficient amboceptors to neutralize the substance at the locus of inoculation so that it does not reach the focus of infection. In going over all the facts and evidence in the treatment of specific diseases with a specific virus and taking into account all available reports, we must come to the conclusion that a specific virus, as such, is able to cause immunity, but the curative action depends, not upon its specificity, but on the nonspecific proteins present. Since nonspecific proteins are able to cure a specific disease, and the cure can be accomplished only by providing all the elements of the animal body with amboceptors and antibodies, according to Wright, we may draw a logical conclusion, that a nonspecific protein is able to produce in the animal body a specific antibody.

With this theory in mind I searched for an allied group of tubercle bacilli, studying some ten different species of organisms found in bony and glandular tuberculosis. They were all spore bearing bacilli; whether these bacilli were due to contamination, or in the process of evolution toward a tubercle bacillus, or in the process of metamorphosis or devo-

TABLE I.

Animal.[1]	*Date of injection of tubercle bacilli.*	*Amount of tubercle bacilli.*[2]	*Date normal goat serum injected.*	*Amount c. c.*	*Date of death.*	*Days lived.*	*Autopsy.*
C	June 1, 1913	0.1	None	...	June 28, 1913	28	
C	June 1, 1913	0.1	None	...	June 30, 1913	30	
E	June 1, 1913	0.1	June 1, 1913	2	June 30, 1913	30	
E	June 1, 1913	0.1	June 1, 1913	2	June 29, 1913	29	
E	June 1, 1913	0.1	June 1, 1913	3	July 1, 1913	31	
E	June 1, 1913	0.1	June 1, 1913	4	June 27, 1913	27	

This table shows that the normal goat serum possesses no virtues whatever.

[1] C indicates control; E indicates experimental on which immunized serum was used.

[2] An agar slant dissolved in twelve c. c. of normal salt solution of which the doses were taken and injected.

TABLE II.

Animal.	*Date of injection of tubercle bacilli.*	*Amount of tubercle bacilli.*	*Dates immune serum injected.*	*Amount c. c.*	*Date of death.*	*Days lived.*	*Autopsy.*
C	December 4, 1913	0.5	None	...	December 15, 1913	11	
C	December 4, 1913	0.5	None	...	December 18, 1913	14	
E	December 4, 1913	0.5	December 4, 1913 December 7, 1913 December 9, 1913	1 1 2	June 12, 1914	173	
E	December 4, 1913	0.5	December 1, 1913 December 4, 1913 December 7, 1913 December 9, 1913	1 2 1 2	May 28, 1914	168	
E	December 4, 1913	0.5	December 4, 1913 December 7, 1913	3 1	June 28, 1914	189	
E	December 5, 1913	0.1	December 4, 1913	4	September 15, 1914	275	
E	December 4, 1913	0.1	December 4, 1913	2	August 10, 1914	251	
E	December 4, 1913	0.1	December 1, 1913 December 4, 1913	2 0.5	May 10, 1914	158	

TABLE III.

C	February 15, 1914	0.5	....	...	March 20, 1914	33
E	February 15, 1914	0.5	February 15, 1914	1	May 30, 1914	104
E	February 15, 1914	0.5	March 1, 1914	2	May 20, 1914	90
E	February 15, 1914	0.5	March 1, 1914	3	May 30, 1914	104
E	February 15, 1914	0.5	February 15, 1914	4	June 2, 1914	107

TABLE IV.

C	June 1, 1914	1	....	..	June 30, 1914	30
E	June 1, 1914	1	June 1, 1914 June 6, 1914	0.5 1.5	September 1, 1914	93
E	June 1, 1914	1	June 1, 1914 June 4, 1914	0.5 1	August 28, 1914	89
E	June 1, 1914	1	June 1, 1914 June 6, 1914	1 1.5	August 30, 1914	92
E	June 1, 1914	1	June 1, 1914 June 8, 1914	1.5 1	August 29, 1914	91
E	June 1, 1914	1	June 1, 1914 June 8, 1914	1 2	August 28, 1914	89

TABLE V.

C	September 1 1914	0.5	....	...	October 10, 1914	41
C	September 1, 1914	0.5	....	...	October 16, 1914	47
E	September 1, 1914	0.5	September 1, 1914 September 5, 1914	1 1	December 21, 1914	113
E	September 1, 1914	0.5	September 1, 1914	2	December 25, 1914	117

TABLE VI.

C	October 5, 1914	1	....	...	November 20, 1914	46
C	October 5, 1914	1	....	...	November 23, 1914	49
E	October 5, 1914	1	October 5, 1914	1	February 1, 1915	118
E	October 5, 1914	1	October 5, 1914	1	February 10, 1915	127
E	October 5, 1914	1	October 5, 1914	1.5	February 28, 1915	148
E	October 5, 1914	1	October 5, 1914	2.5	March 8, 1915	206

TABLE VII.

C	December 4, 1914	0.5	....	...	December 28, 1914	14	General tuberculosis.
C	December 4, 1914	1	....	...	December 23, 1914	9	Tubercle bacilli; liver, spleen, kidney, peritoneum; tubercle bacilli demonstrable.
E	December 4, 1914	0.5	December 4, 1914	2	January 25, 1915	52	Tubercle bacilli; liver and spleen.
E	December 4, 1914	1	December 10, 1914	1	January 15, 1915	42	Tubercle bacilli; liver, peritoneum; living tubercle bacilli.
E	December 4, 1914	1	December 10, 1914	0.1	December 30, 1914	27	General peritonitis.

TABLE VIII.

C	January 1, 1915	1.5	....	...	January 28, 1915	28	Tubercles; liver, spleen, lungs.
E	January 1, 1915	1.5	January 1, 1915	2	March 26, 1915	85	Tuberculosis of peritoneum.

TABLE IX.

C	February 3, 1915	0.1	....	...	March 30, 1915	55	Tubercle bacilli; liver, lung, intestine; plus tubercle bacilli.
E	February 3, 1915	0.1	February 3, 1915	2	June 6, 1915	123	Liver alone involved.
E	February 3, 1915	0.1	February 3, 1915	1	May 18, 1915	104	Tubercle bacilli; testicles.
E	February 15, 1915	0.1	February 3, 1915	0.5	May 2, 1915	88	Liver, spleen; no tubercle bacilli.
E	February 3, 1915	0.1	February 3, 1915	3	July 18, 1915	175	No tubercle bacilli found.

TABLE X.

C	July 9, 1915	0.5	....	...	August 15, 1915	37	Found miliary plus tubercle bacilli.
E	July 9, 1915	0.5	July 9, 1915	2	December 22, 1915	166	Liver involved.
E	July 9, 1915	1	July 9, 1915	3	December 15, 1915	159	Spleen, testicle.
E	July 9, 1915	1.5	July 9, 1915	3	December 2, 1915	146	Liver; no tubercle bacilli.

TABLE XI.

Animal.	*Date of injection of tubercle bacilli.*	*Amount of tubercle bacilli.*	*Dates immune serum injected.*	*Amount c. c.*	*Date of death.*	*Days lived.*	*Autopsy.*
C	August 1, 1915	1	....	...	September 14, 1915	41	General tuberculosis.
C	August 1, 1915	1	....	...	September 14, 1915	45	General tuberculosis.
E	August 1, 1915	1	August 1, 1915 August 5, 1915	1 1	November 30, 1915	122	Liver; tubercle bacilli.
E	August 1, 1915	1	August 10, 1915	2	October 31, 1915	92	Tubercle bacilli; spleen, testicles.
E	August 1, 1915	1	August 1, 1915 August 10, 1915	0.5 1.5	March 20, 1915	112	Liver, peritoneum.
E	August 1, 1915	1	August 6, 1915 August 20, 1915	1 1	October 29, 1915	90	
E	August 1, 1915	1	August 20, 1915	1	September 30, 1915	61	Liver and lungs.
E	August 1, 1915	1	August 12, 1915	1	October 24, 1915	85	Local peritonitis.
E	August 1, 1915	1	August 12, 1915	2	November 22, 1915	114	No tubercle bacilli demonstrable.

TABLE XII.

C	October 2, 1915	1	....	...	November 6, 1915	36	Liver, spleen, lung, testicle.
C	October 2, 1915	1	....	...	November 10, 1915	40	General tuberculosis.
E	October 2, 1915	1	October 2, 1915	1	December 31, 1915	91	Local peritonitis.
E	October 2, 1915	1	October 4, 1915	1	December 29, 1915	89	Kidney, testicle.
E	October 2, 1915	1	October 6, 1915	1	December 26, 1915	86	Local peritonitis.

TABLE XIII.

C	November 1, 1915	1.5	....	...	December 4, 1915	34	All organs involved.
C	November 1, 1915	1	....	...	November 30, 1915	30	Liver, spleen, testicles, lungs.
E	November 1, 1915	1.5	November 1, 1915	2.5	February 5, 1916	97	Liver.
E	November 1, 1915	1	November 1, 1915	1.5	February 15, 1916	107	Testicle, peritoneum.

TABLE XIV.

C	December 1, 1915	2	....	...	December 26, 1915	26	Liver, spleen, lungs.
E	December 1, 1915	2	December 1, 1915	4	March 21, 1916	111	Liver, testicles.
E	December 1, 1915	2	December 1, 1915	2	March 10, 1916	100	Lungs.

TABLE XV.

C	February 1, 1916	1	....	...	March 4, 1916	32	Miliary tubercle bacilli.
E	February 1, 1916	1	January 1, 1916	1	April 26, 1916	85	Testicles, tubercle bacilli.
E	February 1, 1916	1	January 1, 1916	2	May 4, 1916	93	Tubercle bacilli of spleen.
E	February 1, 1916	1	January 1, 1916	3	May 25, 1916	114	Tubercle bacilli of liver.
E	February 1, 1916	1	January 1, 1916	4	May 31, 1916	120	No tubercle bacilli nor tubercles found.

TABLE XVI.

C	March 1, 1916	1	....	...	March 30, 1916	30	All organs involved
E	March 1, 1916	1	January 1, 1916	1	May 5, 1916	66	Tubercle bacilli of testicles.
E	March 1, 1916	1	January 1, 1916	2	May 20, 1916	81	Tubercle bacilli of spleen.
E	March 1, 1916	1	January 1, 1916	3	June 5, 1916	97	No tubercle bacilli found.
E	March 1, 1916	1	January 1, 1916	4	June 20, 1916	112	No tubercle bacilli found.

TABLE XVII.

C	April 1, 1916	1	....	...	May 10, 1916	40	Spleen, lungs, testicles, peritoneum.
E	April 1, 1916	1	January 1, 1916	1	May 31, 1916	61	
E	April 1, 1916	1	January 1, 1916	2	June 6, 1916	67	Liver, lungs, spleen.
E	April 1, 1916	1	January 1, 1916	3	June 30, 1916	91	No tubercle bacilli found.
E	April 1, 1916	1	January 1, 1916	4	July 10, 1916	101	No tubercle bacilli found.

TABLE XVIII.

C	May 1, 1916	0.5	....	...	May 30, 1916	30	
E	May 1, 1916	0.5	January 1, 1916	1	June 10, 1916	41	
E	May 1, 1916	0.5	January 1, 1916	2	June 20, 1916	51	
E	May 1, 1916	0.5	January 1, 1916	3	June 26, 1916	56	
E	May 1, 1916	0.5	January 1, 1916	4	July 2, 1916	63	

TABLE XIX.

C	July 1, 1916	1	....	...	August 10, 1916	41	Spleen, liver, lungs.
E	July 1, 1916	1	July 1, 1916	2	December 5, 1916	158	No tubercle bacilli.

TABLE XX.

C	August 1, 1916	0.5	....	...	February 23, 1917	176	Pig, emaciated; no tubercle bacilli nor tubercles found.
E	August 1, 1916	0.5	August 1, 1916	1	Pig still alive, May 14, 1917		
E	August 1, 1916	0.5	August 1, 1916	1.5	Pig still alive, May 14, 1917		
E	August 1, 1916	0.5	August 1, 1916	2	Pig still alive, May 14, 1917		
E	August 1, 1916	0.5	August 1, 1916	2.5	Pig still alive, May 14, 1917		
E	August 1, 1916	0.5	August 1, 1916	3	Pig still alive, May 14, 1917		

TABLE XXI.

C	September 1, 1916	2	....	...	September 20, 1916	20	General tuberculosis.
E	September 1, 1916	2	September 1, 1916	4	November 25, 1916	86	Liver, but no tubercle bacilli.

It seems that the culture used for table No. 20 was of a very mild strain, and I would not hold that the serum prevented the development of tuberculosis.

VITRO VIVO TEST.

C	December 13, 1916	2.5	....	...	January 8, 1917	27

E December 13, 1916 2.5 in ten c. c. of serum, prepared as follows: 2.5 c. c. of living tubercle bacilli were put in a test tube containing ten c. c. of immune serum which was put in an incubator for four hours, then on ice for twenty-four hours, then injected into the guineapig, while the control pig received 2.5 c. c. of the same strain as tubercle bacilli in ten c. c. normal saline solution. The control pig died in twenty-seven days on post which showed tuberculosis of the liver and living tubercle bacilli demonstrable, while the other pig lived 220 days, having died July 21, 1917; on autopsy it showed tubercles in the lungs and peritoneum on several sections No tubercle bacillus was demonstrable.

lution, I am not ready to say. I have chosen one which seemed to be the strongest on account of its rapid and luxuriant growth on glycerin agar. It is Gram positive on staining and free from polar staining by Neisser's method. It is a spore bearing bacillus, spores are killed by 100° C., and it grows luxuriantly on plain, neutral bouillon, plain agar, and ascitic fluid. No gases are produced. It stains well with methylene blue. The bacilli are motile and are not acid fast. I tested their pathogenesis on guineapigs, injecting quite large doses with no bad effects. In my further experiments this bacillus will be referred to as Bacillus X. I desired to produce a serum of Bacillus X, and test it for its efficiency on tuberculous lesions in animals. I chose the goat as the medium, not because the goat has any specific preferences, but on account of its domesticity; it is easily controlled and can be kept in the back yard. Having secured three goats, blood was drawn from each and tested for complement fixation prior to inoculation with Bacillus X, with the following organisms, which resulted as follows: Bacillus X, negative; tubercle bacillus, negative; Wassermann, negative; Bacillus coli communis, one goat slightly positive; staphylococcus, negative; gonococcus, negative. The normal goat serum was also tested out on guineapigs to determine whether or not the serum had any retarding action upon tuberculous lesions. All animals, however, died within a short time of each other. After nine months of injections of Bacillus X at different intervals and amounts, I succeeded in obtaining complement fixation test, with tubercle bacilli, one plus positive; by continuing the injections at certain intervals and amounts, I at last succeeded in producing a serum which gives four plus positive complement fixation with tubercle bacilli; also with Miller's and Craig's tuberculous antigen. The agglutination and precipitation tests are also positive. A favorable *vitro vivo* test was also obtained. Having at my disposal a serum, although produced by a nonspecific organism, which conformed with all the standard tests for a specific known in serology, I proceeded to test it out on induced tuberculous lesions in guineapigs.

The guineapig is the most susceptible animal to tuberculosis; it is, therefore, the best available for experimental purposes. Since the leucocytes of the guineapig are not able to elaborate an enzyme to digest the tubercle bacillus or its products, it makes them an easy prey to the enzymes of the bacillus. Hence, any substance that tended to retard, delay, arrest, or decrease the virility or the violence of the disease may be accepted as good evidence of its value as a trial on patients suffering from tuberculosis. Since the virulence of bacteria is measured by the amount and quality of toxic substances it is able to elaborate, either in growth or disintegration, those products are the protective agencies of the bacteria, as lysins are to the animal body. Bacteria, according to Adami and McCrae, of allied groups of an allied species produce multiple toxins, some of which are common to all groups of that particular species, and only one of these toxins gives it its specific character. All infectious diseases depend upon the capacity of the cellular system to combat with its natural forces any foreign element that dares to enter the circulation. As the power of resistance of the host may modify the tubercle bacillus or cause a degeneration or disintegration of the bacillus, or may at least so modify the specific virus by the nonspecific common properties of the other proteins that the particular virus which is the specific will undergo a disintegration, the germ itself will become latent. Weber has found latent bacilli in calves eleven months after primary infection with the human type of tubercle bacilli. Typhoid carriers are known to have carried the germs for years in a latent state as far as the host was concerned. It is therefore clear that the guineapig, having little or no resistance to the tubercle bacillus nor power to create an enzyme to combat the toxins and enzymes of the tubercle bacillus, always falls an easy victim to the disease. Any substance injected into the animal, therefore, serum, drug, etc., which would give the guineapig some protection in repeated experiments, would tend to create a resistance which would greatly modify the course of the disease.

Humanity's struggle for the eradication of tuberculosis expresses itself in the following three factors: 1, the hygienic, or the destruction of the germ in transit, from man to man; 2, the raising of resistance in man by producing, or helping to produce a protein favoring the formation of enzymes in the leucocytes; 3, rendering harmless the bacilli found in the body by administering specific antibodies. The first could be accomplished by complete isolation of each individual afflicted with tuberculosis, which is impossible. The second could be accomplished by vaccines, which have proved successful in smallpox, rabies, and typhoid, but only as a preventive, but not as a cure. In tuberculosis, however, it has proved a complete failure. The third could be accomplished by specific antibodies which, as far as my knowledge goes, was first produced by me in 1913 after almost one year of experimentation on the goat. In those experimentations I used an allied bacillus and succeeded in producing a specific protein in the blood of the goat which stands the complement fixation test, the precipitation test, and the agglutination test, as well as the *vitro vivo* test. This convinced me of the possibility that a nonspecific element having all protein virtues of the specific, minus the specificity, is able to call forth in the animal body a specific element, thus effecting a cure plus a cellular substance, which in the future can cope with the original virus and therefore act as a specific. The curative action, however, is not in its specificity but in its numerous nonspecific proteins. After a thorough test of this serum on a large number of guineapigs for a period extending over three years, the tables which I herewith produce, with all data at my disposal, are exceedingly interesting in the uniformity of their action on the susceptible guineapig.

A thorough analysis of the results obtained by the action of this serum on animals so highly susceptible to tuberculosis may be summarized as follows:

1. Guineapigs receiving one to four c. c. of serum prior to inoculation of tubercle bacilli will resist tuberculous infection for a longer period than pigs that were not previously treated.
2. The larger the primary dose of serum used the longer the protection.
3. The simultaneous use of tubercle bacilli and serum gave good protection and the infection was delayed for a longer period in these animals than in pigs receiving the immune serum after the inoculation of tubercle bacilli.
4. The longer the administration of the immune serum was delayed, the shorter the protection.
5. In fully developed tuberculous processes in the guineapig the immune serum offers only slight, if any, protection.

6. All control pigs posted had tuberculosis of more than two organs and always tended toward general tuberculosis, while pigs receiving immune serum showed tuberculous processes in one or two organs and a tendency toward localization. In fact in many cases a calcareous nodule was found at the site of injection, which consisted of broken down debris of tubercle bacilli with several bacilli in the centre; in some of these no tubercle bacilli were demonstrated.

7. In thirty-four posts that were made on pigs that received immune serum, fifty per cent. showed tuberculosis in two organs or more, and demonstrable bacilli. Twenty-five per cent. showed tubercles, but no bacilli demonstrable on repeated slides, while twenty-five per cent. showed neither tubercles nor bacilli.

8. The fresh serum gives a longer protection up to four months old. Although phenolized and kept on ice, serum over four months old gives lessened protection.

9. A pig receiving two c. c. of the immune serum every three months was kept together with control pigs dying of tuberculosis for one year. He outlived nine controls lasting eleven months and twenty days and never developed tuberculosis.

10. The principle generally accepted as to the amount of tubercle bacilli injected and the amount of artificial resistance given the pig by the serum proved correct, also that the pig with the general local character of infection lived the longest.

11. In all cases the serum delayed the fatal termination and gave some protection in comparison with the control.

12. In pigs receiving the immune serum and injected respectively thirty, sixty, ninety, and 120 days later with tubercle bacilli, the protection decreased from month to month, according to the amount of immune serum administered. The animals receiving one to two c. c. of the immune serum thirty or sixty days prior to inoculation with tubercle bacilli lived two and a half to three times longer than the control, while pigs receiving three to four c. c. of immune serum thirty to sixty days prior to inoculation of tubercle bacilli lived three to four times longer than the control, thus showing a certain specificity of the immunity.

(*To be concluded.*)

Obstetrics.—Marion T. Benson (*Medical Record,* November 3, 1917) states that the consensus now is that scopolamine morphine, or "twilight sleep," is dangerous and should not be employed. Chloral and morphine, however, may be given with benefit in the first stage to aid dilatation, relieve muscular spasm, and diminish shock. In the second stage we have gas oxygen, ether, and chloroform, and care must be exercised to safeguard both mother and child in their use. The writer has used pituitrin in 500 cases without ill effect either on mother or child. It should never be given until the cervix is completely dilated and the head presenting in the pelvis, just above the ischial spines, or on the pelvic floor. Pituitrin when used in the second stage seems to have a marked action in preventing afterpains.

HIGHWAY ACCIDENTS IN THE CITY OF NEW YORK.

By Shirley W. Wynne, M. D.,
New York.

For many years past the mortality resulting from accidents in the city has attracted the attention of the Department of Health, and while the prevention of this cause of death does not fall within the province of this department, it has been felt, nevertheless, that since the department is charged with guarding the health and lives of the residents of and visitors to the city it is but logical that it should be interested in such a numerically important cause of death; and since the death toll of highway accidents has been on the increase this group presents itself as our first point of attack.

The following table gives the deaths resulting from street accidents segregated according to the character of the vehicle and the death rates per 100,000.

TABLE I.

Death and Death Rates from Street Accidents in the City of New York.

Year	*Horse-drawn vehicles*	*Rate per 100,000*	*Cars (horse, trolley, and cable)*	*Rate per 100,000*	*Automobiles*	*Rate per 100,000*
1898	88	2.69	113	3.45	...	....
1899	103	3.07	167	4.97	1	0.03
1900	105	3.04	181	5.25	5	0.14
1901	106	2.93	185	5.25	6	0.17
1902	156	4.26	175	4.77	9	0.24
1903	184	4.87	180	4.76	12	0.32
1904	192	4.92	167	4.28	14	0.36
1905	176	4.37	212	5.26	36	0.89
1906	223	5.35	252	6.05	64	1.53
1907	236	5.47	318	7.37	42	0.97
1908	158	3.53	257	5.75	81	1.81
1909	161	3.47	186	4.01	84	1.81
1910	169	3.52	168	3.50	111	2.31
1911	271	5.50	124	2.51	128	2.60
1912	194	3.83	111	2.19	188	3.71
1913	186	3.58	130	2.50	293	5.64
1914	168	3.15	121	2.27	310	5.81
1915	119	2.18	85	1.55	346	6.33
1916	144	2.57	110	1.96	407	7.26

The death rate resulting from accidents caused by wagons increased from 1898 to 1907, when the mortality rose to 5.47 per 100,000. After that, while the rate of deaths caused by wagons fell steadily, there was a compensating increase in the death rate of automobile accidents, which in 1916 rose to 7.26. The reduction, therefore, in the mortality of accidents resulting from horse drawn vehicles has been caused by a diminution of the number of this class of vehicles operated. On the other hand, while the mortality of street car accidents rose steadily until 1907, it steadily decreased from that time until 1915. In 1916 there was a slight increase due probably to the construction work being carried forward on many of the important streets and avenues in connection with the new subways.

The next table gives similar data for the Borough of Manhattan alone and the results correspond very closely with those found in the first table which dealt with the statistics of the city as a whole. The mortality from accidents caused by horse drawn vehicles rose steadily until 1907, from that year on decreased. On the other hand, the automobile accidents increased steadily since they first made their appearance on the streets. The mortality from street car accidents increased until 1907 and thereafter decreased. We may conclude, therefore, that an actual decrease in the number of deaths caused by street car accidents has been accomplished through more careful operation and the use of safety devices. We may further conclude that while there has been a decrease in the deaths caused by horse drawn vehicles it is to be accounted for by the substitution of motor vehicles for horse drawn vehicles, rather than by more careful operation.

TABLE II.

Deaths and Death Rates from Street Accidents, Borough of Manhattan.

Year	*Wagons, trucks, etc.*	*Rate per 100,000*	*Cars (horse, trolley, and cable)*	*Rate per 100,000*	*Automobiles*	*Rate per 100,000*
1898	65	3.59	60	3.31	..	....
1899	80	4.37	87	4.75	1	0.05
1900	79	4.26	81	4.37	5	0.27
1901	80	4.20	102	5.36	6	0.31
1902	123	6.29	93	4.76	7	0.36
1903	142	7.07	81	4.04	8	0.40
1904	148	7.18	75	3.64	8	0.39
1905	132	6.24	83	3.92	22	1.04
1906	157	7.27	83	3.84	27	1.25
1907	163	7.40	136	6.17	23	1.04
1908	108	4.80	135	6.00	51	2.27
1909	102	4.44	98	4.27	54	2.35
1910	110	4.70	77	3.29	63	2.69
1911	174	7.28	65	2.72	77	3.22
1912	109	4.47	55	2.25	120	4.92
1913	121	4.86	51	2.05	173	6.95
1914	107	4.22	56	2.21	168	6.62
1915	78	3.02	37	1.43	202	7.81
1916	95	3.61	50	1.90	217	8.24

Since there has been an increase in the number of automobile accidents and also in the rate per 100,000 of population, it is only fair to inquire whether the increase has been due to increased negligence or to the increase in the number of vehicles operated. The next tabulation shows conclusively that in proportion to the number of automobiles operated the deaths caused by them have steadily decreased since 1908.

TABLE III.

Number of Deaths Caused by Automobiles in New York City and the Number of Cars Licensed in New York State and the Ratio of Deaths to Cars Licensed.[1]

Year	*Number of automobiles in state*	*Number of deaths in city*	*Rate of deaths to automobiles per 1,000*
1898	...	...	....
1899	...	1	....
1900	...	5	....
1901	954	6	6.29
1902	1,082	9	8.32
1903	6,412	12	1.87
1904	6.799	14	2.06
1905	8,625	36	4.20
1906	11,753	64	5.45
1907	13.985	42	3.00
1908	15.480	81	5.23
1909	24,059	84	3.49
1910	62,655	111	1.77
1911	83.969	128	1.52
1912	105.749	188	1.78
1913	132,220	293	2.22
1914	170.171	310	1.82
1915	234.032	346	1.54
1916	317.866	407	1.28

[1] Secretary of State is unable to state the number of automobiles licensed in New York City.

In 1908 the ratio of deaths caused by automobiles to the number of automobiles licensed in the State was 5.23 per 1,000. In 1916, the ratio was 1.28 per 1,000 cars licensed. In other words had the ratio of 1908 prevailed in 1916, over 1,600 persons would have been killed by automobiles instead of 407, and if we assume that the ratio of deaths to accidents remains fairly constant year after year, about 30,000 persons would have been injured instead of 7,500. There has, therefore, been a real saving of life and suffering accomplished by the traffic regulations enforced by the Police Department, but the large number of persons injured and killed every year in this city by motor vehicles calls for most active measures to reduce this needless suffering and waste of human life.

It must be remembered, when studying street accidents in New York, that in no other city in the world do the same conditions of traffic exist as exist in New York and more particularly in the Borough of Manhattan, for the reason that in no other city in the world is there the extreme congestion of population during the business day as there is in New York. In no other city are there to be found the immense business skyscrapers, the huge hotels, colossal department stores, the multitude of theatres. The Police Department in its 1915 report segregated street accidents into those that were the fault of the injured person and those that were the fault of the driver and it is particularly worthy of note that 8,661 accidents resulted from carelessness or incapacity of the injured person, while but 700 accidents were caused directly through the fault of drivers and 851 were caused by defects of vehicles and skidding. If the latter groups are also charged to drivers of vehicles, since they are responsible for the condition of their vehicles and are forbidden by law to drive and operate defective vehicles upon the highways, the total number of accidents chargeable to drivers is still less than one fifth of the number chargeable to carelessness of pedestrians. This very pertinent fact suggests that the next step in traffic regulations is the regulations of foot traffic. The police report further shows approximately one third of the accidents chargeable to the carelessness of pedestrians result from their crossing streets elsewhere than at the crossings and it would therefore seem that an ordinance prohibiting pedestrians crossing streets save at crossings and crossing streets other than in accordance with the signals of the traffic officer stationed at the crossings should be immediately passed and vigorously enforced. The next most frequent accidents were those resulting from passengers improperly boarding and alighting from vehicles. The universal adoption of safety doors that cannot be opened until the car has been brought to a stop should eliminate these accidents as far as street railway cars are concerned. Next in order of frequency of accidents chargeable to the carelessness of pedestrians were those resulting from children playing in the streets. This source of injury can only be eliminated by supplying adequate playgrounds for the children of the city. Accidents

TABLE IV.

Deaths Caused by Surface Cars, Automobiles, and Horse Drawn Vehicles (1914-16, Inclusive), Death Rate per 100,000 Estimated Population at Different Age Groups, Average for Three Years, City of New York.

Year	*Total all ages*		*Under 1 yr.*		*1 to 2 yrs.*		*2 to 3 yrs.*		*3 to 4 yrs.*		*4 to 5 yrs.*		*Total under 5 yrs.*		*5 to 9 yrs.*		*10 to 14 yrs.*		*15 to 24 yrs.*		*25 to 54 yrs.*		*55 yrs. and over*	
	M.	*F.*	*M.*	*F.*	*M.*	*F.*	*M.*	*F.*	*M.*	*F.*	*M.*	*F.*	*M.*	*F.*	*M.*	*F.*	*M.*	*F.*	*M.*	*F.*	*M.*	*F.*	*M.*	*F.*
1914	483	113	3	..	7	2	11	7	14	5	22	5	57	19	110	27	56	9	47	6	145	23	68	29
1915	435	120	..	..	3	1	11	3	13	12	20	7	47	23	93	21	59	9	35	11	148	28	53	28
1916	522	130	1	3	3	2	3	3	12	15	14	5	33	28	120	27	47	6	54	9	183	39	85	21
Three yrs. total	1,440	363	4	3	13	5	25	13	39	32	56	17	137	70	323	75	162	24	136	26	476	90	206	78
Average	480	121	1	1	4	2	8	4	13	11	19	6	46	23	108	25	54	8	45	9	159	30	69	26
Rate on average	1.76	.44	.02	.02	.07	.03	1.40	.71	2.28	1.97	3.42	1.10	1.57	.80	4.29	.99	2.23	.33	.84	.15	1.31	.26	3.60	1.22

chargeable to the drivers of vehicles can be eliminated or certainly greatly reduced by vigorous and impartial enforcement of the traffic regulations. If drivers of vehicles are made to understand that they are granted the privilege of using the streets of the city upon the condition that they drive or operate their vehicles so as to avoid accidents and that if they do not exercise great care in the operation of their vehicles they will be summarily and severely punished, and that the second offense will cause the revocation of their licenses, there is no question but that accidents from this source can be reduced to the minimum.

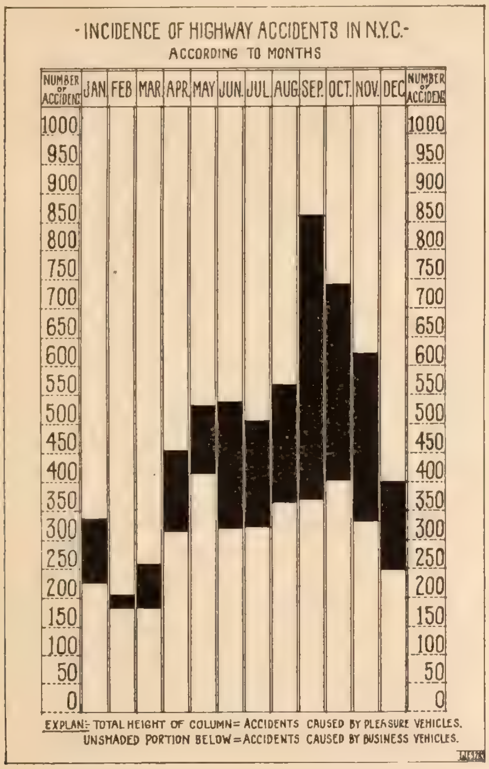

Fig. 1.—Incidence of highway accidents in New York according to months.

The chart (Fig. 1), which is based upon the data published in the 1916 report of the Police Department,[1] and which shows the incidence of the accidents caused by business and pleasure vehicles during each month of the year, indicates that the number of vehicles operated in the streets is a most important factor in determining the number of accidents. During the winter months, the number of cars are few and the accidents are correspondingly few. As the spring advances the number of cars and the number of accidents increase. The great increase in the number of accidents in September indicates, not only the return of many cars to the city, but that the drivers, absent from the city during the summer months, become accustomed to country driving and are, therefore, more apt to meet with accidents in the congested traffic of the city.

The next chart (Fig. 2), which is also based upon data published in the 1916 report of the Police Department, shows the relative frequency of street accidents during every hour of the day and night. This chart confirms the evident fact that the degree of congestion determines the frequency of the accidents. The number of accidents increases from the hour beginning 4 a. m. to the hour beginning 11 a. m., from 12 noon until 2 p. m. the accidents decrease; from 2 p. m. to 6 p. m. they increase very rapidly. Coincident with the dismissal of children from school in the afternoon, the frequency of accidents increases, but the greatest increase is during the hour from 5 to 6 p. m., due to the congestion of the streets by persons hurrying home from business and shopping. During the hour from 6 to 7 p. m. the frequency of accidents is second only to the frequency between 5 and 6 p. m. Between 7 and 8 p. m. the number of accidents drops almost one third and thereafter there is a gradual decline in the number of accidents until 5 a. m.

Based upon the number of highway accidents in the city as published in the 1916 report of the Police Department, the accident rates for males is almost three times as high as for females, the respective

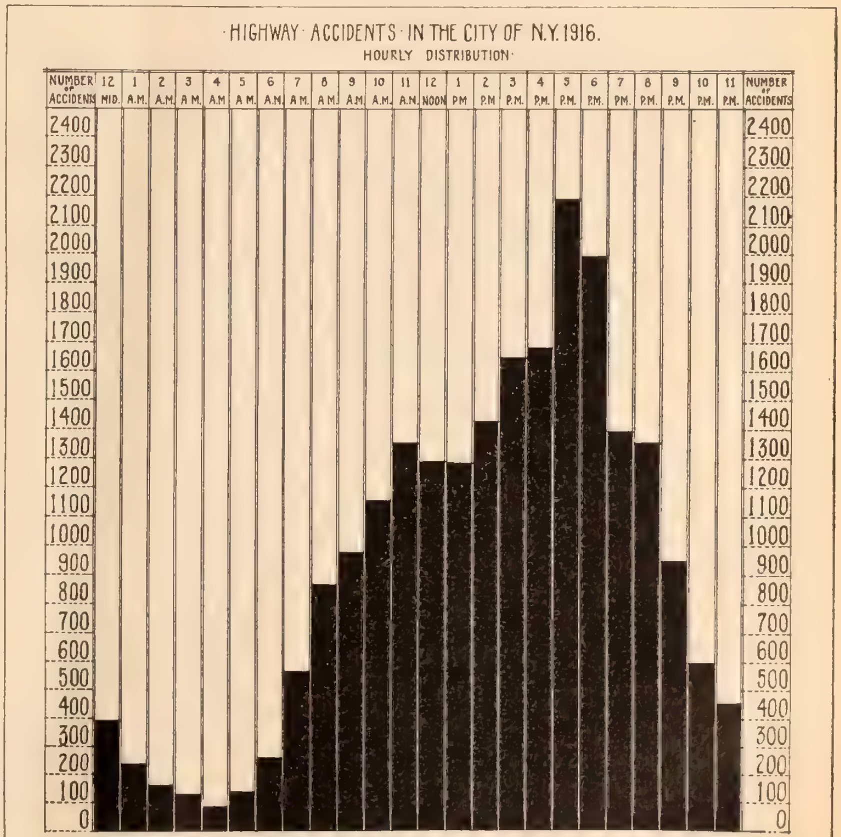

Fig. 2.—Incidence of highway accidents in New York, hourly distribution.

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[1] Thanks are due Police Commissioner Woods for the privilege of studying the 1916 report of the Police Department prior to publication.

rates being 64.9 and 22.5 per 10,000 of the estimated number of males and females living in the city. The rate for children under six years of age was 28.8 per 10,000 of the children at this age. This rate, however, is misleading for the reason that it is based upon a population which includes all the children from the moment of birth to six years of age and it is evident that few children under two years of age are exposed to highway accidents, therefore their inclusion reduces the rate for children between two and six. A rate for the latter group would probably be higher than for any other age group. Between six and fifteen years of age inclusive, the rate rose to 33.4 per 10,000, between the ages of sixteen and forty-nine years inclusive, the rate was 41.5 per 10,000, and after the fiftieth year the rate was 59.7 per 10,000. It is to be regretted that the Police Department did not in their tabulation segregate the accidents of each sex by ages, as it is impossible from the present tabulation to tell at which ages the accident rate is greater for males than females. The tabulation (Table IV) of the deaths, compiled in this office, however, indicates that shortly after children commence to walk and consequently play upon the streets, their liability to highway accidents commences; for a short period the rate increases for both male and female alike and then the rate for males rises rapidly, whereas, the rate for females remains stationary. The cause of this interesting phenomenon is that as boys reach the age of four and five they indulge in the more active sports that necessitate the use of the streets; also they are less cautious and are prone to steal rides on wagons and cars, whereas girls are more cautious and naturally take to the less active forms of amusement.

CONCLUSIONS.

1. The number of accidents in New York caused by horse drawn vehicles has decreased since 1907. The decrease has been accompanied by an increase in the number of accidents caused by automobiles.

2. The number of accidents in New York caused by automobiles has increased, but the ratio of automobile accidents to automobiles operated has very markedly and very steadily decreased since 1908.

3. The increase in pedestrian traffic in certain districts of the city, business, theatre and shopping, has been a most important factor in causing the increase in highway accidents. It is quite clear that, as the congestion in these districts increases, additional measures for the prevention of accidents must be instituted, because, while the present traffic regulations are the best that can be devised under present conditions they increase to a very great extent the conditions they seek to overcome; in other words, the necessity of shutting off north and south bound traffic to permit east and west bound traffic to pass increases congestion on the avenue, which is still further augmented because traffic is not stopped and started at all the streets crossing the avenue at the same time.

RECOMMENDATIONS.

1. More stringent enforcement of the traffic regulation and the vigorous prosecution of reckless drivers.

2. Amendment to the present traffic regulations forbidding pedestrians to cross streets elsewhere than at the crossings and to cross streets except in accordance with the signals of the traffic officers stationed at the crossings.

3. Provision of more public parks in the congested areas of the city.

4. The above recommendations are but palliative and in order to permanently improve traffic conditions, to prevent the immense yearly toll of traffic accidents in injury and death, to increase efficiency and comfort of travel in the city streets, more radical measures must be adopted, such as the old suggestion of sinking the cross streets below the level of the avenues in congested districts; the building of at least one subway in Manhattan for north and south bound traffic, this subway to be reserved for traffic between distant points by having entrances and exits not less than ten blocks apart.

Some time ago the Police Commissioner suggested a viaduct or elevated roadway for north and south bound traffic. While it would be less expensive than a subway, it would create greater opposition upon the part of owners of property fronting on the avenue upon which such a viaduct might be built, as it is generally conceded that elevated structures have depreciated property values on every avenue or street on which they have been built. Until some such radical methods of handling traffic in congested districts are adopted, traffic accidents, other than those due to speeding and reckless driving, cannot be eliminated.

255 West Ninety-eighth Street.

SPORADIC PELLAGRA.

Report of a Case.

By M. E. Alexander, M. D.,
Waterbury, Conn.

That pellagra occurs sporadically throughout the United States has long been established. The sporadic cases, particularly those in Connecticut, are still not very numerous. It might, therefore, be of interest to report the following case as a typical one, and one which throws doubt upon the accepted corn theory as the etiological factor of pellagra

This case is from the medical wards of the Waterbury Hospital and is reported with the kind permission of Dr. A. Variell, attending physician.

Case.—Mrs. A. M., housewife; forty-five years of age; German; white. Her father died at the age of thirty-one years, cause unknown. Her mother died at the age of sixty-four years. She complained when alive of a great deal of headache. The cause of her death was unknown. One brother and one sister were alive and well. The patient was born in Strassburg, Germany, and came to the United States twenty-two years ago. She lived all this time in Naugatuck, Conn., for more than twenty years near the centre of this town, and for the last eight months on a little farm on the outskirts of the same town. As a child she had measles, whooping cough, and chicken pox. She was never addicted to the use of alcohol and drugs. She began to menstruate at fourteen years of age and has always been regular. She gave birth to ten children, two of whom died in infancy, cause unknown. Eight are alive and well. There were no stillbirths or miscarriages.

Patient stated she had been in perfectly good health until about two years ago, when she began to have headaches, irregular pains in her limbs and back, gastric distress, loss of appetite, and occasional vomiting. She entered the hospital November 12, 1915, with the above complaints. Physical examination at that time was apparently entirely negative. Her temperature on admission was 100.2° F.; pulse, 72; respiration, 20. The temperature never rose above 100° during her stay in the hospital. Her blood pressure at that time was 150 systolic, the diastolic not being recorded. The urine was amber; acid; specific gravity 1028; heavy cloud of albumin; no sugar; numerous hyaline and granular casts. The diagnosis of chronic nephritis was made. Patient was readmitted to the hospital January 3, 1916, with about the same complaints as before. This time her urine was: Specific gravity, 1030; heavy cloud of albumin; no sugar; no casts. Her temperature never rose above 100° F. Blood pressure, 180. No mention of the diastolic. There was no mention in the clinical notes of any cutaneous or trophic disturbances.

About seven or eight weeks after the patient left the hospital for the second time, she first noticed that the back of her hands were "sunburnt" or "tanned." A slight tenseness, but no itching accompanied the erythema. The patient's skin condition became gradually worse. The discoloration spread to the forearms and elbows. Her stomach became more and more irritable; for the last three months she vomited almost every day. Her mouth became very painful and salivation was profuse and disturbing. Her tongue was ulcerated in several places, so that mastication became painful and distressing. Patient was admitted to the hospital with the above complaints, plus that of high fever for the last week or ten days prior to admission. There was no history of epistaxis nor of any particular headache. Physical examination showed a female of middle age and of poor general nutrition. Pupils reacted to light and accommodation; sight was poor; hyperopia. There were several fissures and ulcers on the inner surface of the lips. Tongue was glazed and bright red; epithelium was denuded in several places and there were also several definite ulcers and fissures on the dorsum and margins. The breath was extremely fetid. Pharynx was congested. There was a slight enlargement of the heart; second aortic was slightly accentuated; no murmurs. Blood pressure: systolic, 126; diastolic, 88. Lungs were negative. Abdomen was negative. Spleen, liver, and kidneys were not palpable. The discoloration of the skin was entirely symmetrical. The nails were slightly discolored but showed no inflammatory or degenerative changes. The discoloration of the skin began on the dorsal surface of the fingers about one quarter inch from the nail bed, and spread along the dorsum of the hand, wrist, and forearm to about the junction of the upper fourth and the lower three fourths of the forearm. Around the wrist it formed a band of about one and one half inches wide which encircled the entire wrist. Otherwise the flexor surfaces of the fingers, hand, and forearm were entirely spared. The color of the skin lesions was a dull brown, almost black. Around the webs of the fingers there were a number of deep fissures, some of which bled readily and others were markedly infected and discharged abundant thick, very foul, purulent material. These fissures extended between the fingers for a short distance on the flexor surfaces of the webs of the fingers. Otherwise, as said, the palmar surfaces were entirely spared. In several places these infected spots had apparently dried up, formed scabs, and left some scaling of the discolored epidermis. On the dorsum of the hand the skin felt somewhat thickened. On the forearm a trifle atrophied. Both elbows were ulcerated and dull red in color and bled very readily. For a circumference of about two and one half inches around the anus the erythema was plainly seen and merged with the similar discoloration of the vulva.

Central nervous system: Pupils reacted to light and accommodation. Knee jerks were exaggerated; Babinski present; ankle clonus present. Sensation to pain, heat, and cold was diminished below the knees. Hyperesthesia above knees. Trunk and upper extremities showed no changes of sensation. Laboratory findings: Urine was cloudy; dark amber; acid; specific gravity, 1030; urea, 0.0085 gram to one c. c.; albumin, moderate trace; sugar, negative; sediment, moderate. Microscopically a moderate number of amorphous urates, no casts, no white or red blood cells were noted. There was a considerable increase of indican. There was no acetone and no diacetic acid. Hemoglobin in the blood was seventy-five per cent.; red blood cells, 3,700,000; white blood cells, 10,400; polymorphonuclears, 68; lymphocytes, 24; mononuclears and transitionals, 7; eosinophiles, 1. Widal test was negative. Wassermann test was negative. Feces contained no ova and no blood.

On the day of admission the patient's temperature was 104.2° F.; pulse, 132; respiration, 26. Next day her temperature was 103.2° F.; pulse, 100; respiration, 28. Her sensorium was never very clear. She muttered and at times was actively delirious. She did not complain of any pain except in mastication and swallowing. Her temperature on the third day after admission was 104.2° F.; pulse, 130; respiration, 28. She gradually sank into a deep stupor and died on the third day after admission. No autopsy was permitted.

The salient features of the case seem to point without a doubt to pellagra. We have here practically all the pathognomonic findings of this disease: the cutaneous erythema with symmetry and its presence on exposed surfaces, etc., stomatitis, and nervous phenomena. The acute infections can be ruled out. The absence of large spleen, negative Widal, rose spots, etc., rule out typhoid. There were absolutely no signs in the chest to indicate pneumonia and no intestinal disturbances to indicate a terminal infection in that tract. Uremia is ruled out by the lack of marked diminution in urinary output, casts, high blood pressure, ammoniacal odor to the breath, etc. There was no sugar and no acetone in the urine to indicate diabetes. The blood examination excluded pernicious anemia. The cutaneous manifestations suggest nothing but pellagra. The exact symmetry, the involvement of hands and forearms, the sharp line of demarcation from the surrounding tissues, its wet manifestations on the back of the hands with fissures and ulcers, associated infection and hemorrhage were all very typical. The erythema and ulcerations on elbows were there long before patient became confined to bed, so that it cannot be called a decubitus.

As noted above there was no pellagra in the family. The patient had not gone out of the State of Connecticut for twenty years; her family never owned a farm and never planted corn. They always bought flour at the grocer's and always the ordinarily used brands. The patient's home was on a hill and the hygienic surroundings were poor, but were not at all of the worst.

As far as we know, there were no cases of pellagra reported from that section of the State.

Morphine in Peritonitis.—R. J. Behan (*Interstate Medical Journal*, October, 1917) advises the administration of morphine if the patient is seen at the very beginning of the disease in order that the quiescent intestine may offer more opportunity for the formation of lifesaving adhesions. If the intestine is quiet, as determined by the absence of peristalsis on abdominal auscultation, then morphine should not be given, but rather some intestinal muscle excitocontractor such as pituitrin or eserine. Pituitrin is better, as it stimulates the intestine to a tonic contraction, and in early and active cases it may be combined with the morphine. A localized peritonitis which is becoming diffuse is favorably influenced by morphine and it may also be used to quiet a suffering and restless patient.

FROZEN FEET, OR TRENCH FOOT SO CALLED.

First Communication: Symptoms and Complications.

By Henri Authelain, M. D.,
France.

Having had a large number of cases of frozen feet under my care, both while at the front and in base hospitals, I have been greatly impressed by their special clinical aspect and particularly by the curious fact that severe cold was not necessary to produce the lesions, since usually they resulted from a temperature above 32° F. and in such considerable proportions that at one time the affection looked as if it would become quite as menacing as the enemy's projectiles. On the other hand, the length of the evolution and the very slow recovery caused me to search carefully for those remedies, among the great number at our disposal, which gave the best results. It also was most interesting to search for the causes of the process and more particularly the symptoms and complications of the morbid process. In this paper my remarks shall be confined to the latter question, while in a second paper I shall refer to the treatment.

Three quite distinct forms of frozen feet can be differentiated, the first of these being the mild type. This is characterized by an edema of the lower limbs. It is peculiar in having usually a whitish hue, being rarely cyanic, and not pitting on pressure. It extends up to the level of the malleoli, sometimes to the middle of the leg and can be very well compared to the infiltration met with in some cadavers of the dissecting room. The edema involves the entire thickness of the part; the toes are greatly increased in size and their joints distended with fluid. The first symptoms usually arise after a stay in damp trenches where the men have been on their feet for two or three days at a time. The patient does not recall having had any particularly violent pain from cold, complaining only of a certain sensation of numbness in the lower limbs. It is only after leaving the trench and after walking a mile or two that the patient begins to complain; he feels as if he were walking on needles. Most of the men then take off their boots, even if they have to cut them open, and then the edema referred to will be found. In some cases, the foot is anesthetic to a pinprick, but more commonly painful phenomena of varying intensity exist, extending quite high up in the calf and sufficiently severe to prevent walking. It is to be noted that in this type, no matter how slight the lesion itself may be, the pain may be very sharp.

Palpation of the parts is sometimes horribly painful and sets up pain which lasts for fifteen minutes or more; it assumes the burning type or of an atrocious pricking sensation. Mere light contact is painful and dressings or a covering of any description increases the pain. Even when spontaneous, the pain prevents the patient from taking any rest. He constantly suffers from paroxysms of shooting or burning pain, particularly at night. The pain is intensified by the heat of the bed or a slanting position of the feet. A curious fact is that the men all try to keep their legs elevated as high as possible. The pain may persist for a very long time, even after the lesions have almost completely cleared up. I have seen many subjects who, when they entered the hospital, presented such apparently slight lesions that the reality of their affection might well be doubted. Their feet had resumed their normal color, and a close examination was necessary in order to detect a few spots on the dorsal aspect of the foot and the slight edema present. In spite of the almost complete absence of lesions the patient was quite unable to walk; a slight pressure or contact was enough to set up fearful pain which occurred also in spontaneous paroxysms. Furthermore, these very painful feet offered an almost complete anesthesia over their anterior half.

So much for the mild type of this morbid process, which is all the more striking by the paradox in the intensity of the pain and mildness of the lesions. Unquestionably, in the other forms of the affection, pain as a symptom likewise exists, but I have devoted a detailed description of it here because it has really seemed to me that it presented the greatest activity and severity in the milder types of the morbid process. In the more severe type the accidents are more serious A phlegmonous aspect of the foot follows the edema. Vesicles appear on the dorsal aspect of the foot which may develop into enormous painful blisters containing a lemon colored serous fluid. Sometimes their contents are tinged red by blood; this is generally an indication of deeper lesions. In some cases I have seen blisters the size of a mandarin orange on the back of the foot, while at the same time the toes are cyanic and anesthetic.

These vesicles lie upon edematous integument, giving the impression of fullness and complete tension to the touch from which arises the smooth, varnished look of the skin. On the end, as on the sole of the foot where the thickness of the integument prevents the production of blisters, the epidermis becomes detached *en masse,* this being produced by infiltration of serum. During the next few days the circulation becomes reestablished or black spots of cutaneous slough appear usually at points of pressure or friction, particularly on the plantar surface of the toes. These become eliminated slowly, like dry gangrene, and the foot remains painful for a long time after.

The last form of the affection, the serious type, is represented by massive gangrene which, according to the date of production, varies from a livid hue of the dermis seen after the epidermis has been removed to absolute mummification, passing through every bronze tint. This type may be moist or dry. Both varieties seem to be governed by the rapidity of the process, the moist types being related to the sudden involvement *en masse* of an important arterial territory, the dry form occurring in cases of slow progressive involvement of less extensive arterial territories. The toes alone may be involved, in which case the line of demarcation is noted at their roots. The metatarsus may also be involved, offering more or less deep seated lesions, which may also be quite extensive. The line of demarcation becomes evident rather quickly and is always situated over the level of a joint, most frequently the metatarsophalangeal joint. After elimination the wound granulates but the process of repair is often disturbed by complications. Lesions of infection are almost always present.

Sicard has made a deep study of certain nervous and arterial phenomena. In cases of medium intensity, without massive gangrene but with or without areas of slough and toward the second or third week in the evolution of the process when the inflammatory phenomena subside, a sensitive syndrome of the syringomyelic type is almost always encountered. At the base of the toes or in the anterior third of the dorsal region of the foot, tactile sensibility remains undisturbed, while sensibility to thermic pricking is considerably diminished or may be completely absent. Plantar hypersensibility of long evolutive duration is also noted, unaccompanied by any distinctly objective sign, in conditions such that simulation cannot be invoked. Quite often the tendo Achillis reflex is absent for several weeks and sometimes that of the patella as well. Mechanical and electrical examination of the nerves and muscles of the leg involved reveals only the reactions belonging to the neuritides in general, with an increased mechanical excitability and frequent diminution of faradic and galvanic excitability, but without inversion of the formula.

The local temperature is entirely subordinated to the local inflammatory reactions. The thermometer shows a decided rise during the congestive phase of the process, the temperature dropping when mummification of the tissues is being effected. Arterial tension is decreased in the affected limb. From the viewpoint of the general circulation, Longin noted in three cases an increase of minima tension, a probable lowering of the maxima tension, and as a consequence, a very feeble differential pressure. This would indicate that the heart is forced to do an exaggerated amount of work for which it is inadequately fitted.

In mild cases the evolution of the process does not give rise to any disturbance. Generally speaking, the deeper seated the lesions, the more will the patient's general health be involved. What strikes one first in these cases is the impression of general fatigue and overwork. The features are drawn, the skin ashy in hue, similar to that met with in cases of infection. Frequently there is an enteritis with dysenteriform diarrhea. Occasionally there is a subicteric tint of the skin, and edema of the face and eyelids, perhaps resulting from an albuminuria, a fact observed by several physicians. Fever is very frequent in the severer forms of the morbid process and is prone to persist after removal of the diseased parts and drainage of all foci of infection, so that it is quite legitimate to suspect that a general infection of the organism of unknown cause exists whose importance is capital in the production of the gangrenous accidents. Finally, septicemia and pyemia may arise during the progress of the suppuration and result in death if an appropriate treatment has not been resorted to in time.

A few words now as to the evolution and complications of frozen feet. In the first place I would mention the lesions of infection which appear secondarily but which undergo evolution almost simultaneously and are usually the rule in cases of gangrene. Purulent infiltration of the tendon sheaths is not uncommon and may extend quite high up in the leg. The joints themselves may become involved; they suppurate and fistulæ form. The bones may even be destroyed, but it is particularly underneath a perforating ulcer that this takes place, because this destructive process slowly invades the structures and at length involves the bones. These patients will die of septicemia if surgical interference is not resorted to in time. The evolution of the process is very long and recovery slow. Cicatrization stops upon the slightest pretext and the neoformed dermis ulcerates upon the simplest occasion. Bullæ, blisters, all the manifestations of cutaneous trophic disturbances appear with ease. Intractible ulcers, incomplete cicatrization, and atrophy of the limb have been noted.

Eruptions of blisters occurring without any apparent reason have been observed. Sometimes a very slight compression has caused them to appear. Occasionally following their disappearance, the integument remains black or bronzed; the pigment accumulates in the horny layer; the sudoral secretion becomes exaggerated or diminished; the epidermis is rough; the hair becomes thick, harsh, and brittle; the nails change in shape and their nutrition is disturbed. Paraplegia and trophic disturbances in the opposite limb have been observed, which can be explained only by an ascending neuritis and consecutive myelitis. During convalescence and even long after complete recovery, these patients should be closely watched from the standpoint of ascending neuritis—excessive and prolonged pain, local and distant amyotrophies and various trophic disturbances. These neuritides are sometimes most serious.

Finally, there is a complication of capital importance, namely, tetanus. It is all the more to be borne in mind, because these patients, not being wounded, are not apt to be given a prophylactic injection of antitetanic serum. In the majority of cases there are areas of tissue mortification preceded by blisters. The integument of the feet is impregnated directly with earth or by the intermediary of socks, either before the process has begun or at the time the boots are removed. Tetanus has occasionally developed following freezing where, at the beginning, there was no ulceration or mortification, a fact that must be borne in mind. In one case a tetanic infection developed in a case of frozen foot in which there was no solution of continuity.

Aeroplane Transport for Wounded Impracticable.—In a discussion before the War College, Colonel T. H. Goodwin, R. A. M. C., said that the transport of wounded by aeroplanes was not practicable since the ground for a considerable distance around the fighting area is rough and pitted with shell holes, which would make it unsuitable for aeroplanes, which require a level landing place.

The Surgeon General's Office

Expansion Caused by War—Organization of Work by Divisions—Leaders from Civil Life Enlisted—Organizing the Specialists of the Country

(Concluded from page 1140.)

The New Assistant to the Surgeon General of the Army.

Since the material for this article was collated, Brigadier General Charles Richard, Medical Corps, National Army, has been assigned to duty as assistant to the Surgeon General of the Army. General Richard is a native of New York and entered the army as assistant surgeon, in June, 1879. He has served continuously since that date in all the grades of the Medical Corps and has had an interesting and creditable service. He has served the usual tours of duty in the Philippine Islands, has been commandant of the Army Medical School, officer in charge, Medical Supply Depot, New York, and department surgeon, Headquarters, Eastern Department, Governors Island, New York, the last having been his latest assignment. He is a graduate of the College of the City of New York and of the Medical Department, New York University. While commandant of the Army Medical School, he held the chair of Military Surgery in that institution.

Photo Clinedinst

BRIGADIER GENERAL CHARLES RICHARD, M. C., N. A.,
Who has been assigned to duty in the Surgeon General's Office.

The Army Medical School

The Army Medical School at 721 Thirteenth street, Washington, D. C., is primarily a teaching institution, but its work has become expanded and it has virtually become part of the Surgeon General's Office, that is, it is in a way the scientific headquarters of the Surgeon General's Office. The work of the school may be said to consist of the following departments: 1, the teaching department; 2, the vaccine department, bacteriological and pathological laboratories; 3, the department of chemistry; 4, the department of röntgenology and photography; 5, the department of physical examinations and vaccinations; 6, the property department; 7, the foreign service department; and 8, the central Army Medical Examining Board. The commandant of the school is Brigadier General William H. Arthur, Medical Corps, National Army, and the adjutant is Major Harold W. Jones, Medical Corps, U. S. Army. The teaching staff is as follows: Brigadier General William H. Arthur, M. C., N. A., military surgery; Major Harold W. Jones, M. C., U. S. A., medical department administration and sanitary tactics; Colonel Champe C. McCulloch, Jr., M. C., U. S. A., military hygiene; Lieutenant Colonel Eugene R. Whitmore, M. C., U. S. A., bacteriology, pathology, and laboratory diagnosis, and military medicine and tropical medicine; Lieutenant Colonel Edward B. Vedder, M. C., U. S. A., bacteriology; Major Corydon G. Snow, M. C., U. S. A., bacteriology; Major William T. Davis, M. R. C., U. S. A., ophthalmology and optometry; Captain Howard E. Ashbury, M. R. C., röntgenology; Lieutenant Cyrus B. Wood, M. C., U. S. A., sanitary chemistry; Lieutenant Raymond W. Whittier, M. C., U. S. A., sanitary tactics; Lieutenant Charles B. Reed, M. R. C., röntgenology; Lieutenant Carl Henning, M. R. C., ophthalmology and optometry; Lieutenant Lawrence T. Fairhall, Sanitary Corps, National Army, sanitary chemistry; and Captain Charles G. Harvey, Cavalry, U. S. A., equitation.

Photo Harris & Ewing

BRIGADIER GENERAL WILLIAM H. ARTHUR, M. C.,
Commandant, Army Medical School.

The vaccine department is under the direct charge of Lieutenant Colonel Eugene R. Whitmore, M. C., U. S. A., who is also in charge of the bacteriological and pathological laboratories. The vaccine department manufactures all vaccines used for the army, navy, National Army, and National Guard, but does not manufacture any vaccines ordinarily except typhoid, paratyphoid A and B, and certain horse vaccines. Assisting the head of the vaccine and laboratory departments are the following officers of the Medical Officers' Reserve Corps, who are on duty here in addition to the regular officers enumerated among the teaching staff: Lieutenant William F. Peterson, formerly of Chicago, Ill.; Lieutenant Michael L. Casey, formerly of Rochester, N. Y.; Lieutenant J. Creighton Barker, of New York City; Lieutenant Joe H. St. John, of Chattanooga, Tenn.; Lieutenant Harry E. Ungerleider, of Philadelphia, Pa.; Lieutenant Weir Mitchell Miley, of Anderson, Ind., and Lieutenant Eric A. Fennel, of Cincinnati, Ohio.

The department of chemistry, in addition to the work of teaching, makes analyses of water, food, stomach contents, etc., as called upon. This department is in charge of Lieutenant Cyrus B. Wood, M. C., U. S. A., assisted by Lieutenant Lawrence T. Fairhall, Sanitary Corps, National Army, who is a doctor of philosophy of Harvard in chemistry.

The department of röntgenology and photography is now a very important one and is constantly expanding. Practically every variety of x ray work is done here and in addition a school for training enlisted men as röntgenologists and x ray technicians has been established. This department also does a considerable amount of photograph work such as enlargements, photomicrographs, etc. The department is now in charge of Captain Howard E. Ashbury, M. R. C., formerly of Baltimore. Captain Ashbury is a specialist in x ray work in private practice. He is assisted by Lieutenant Charles B. Reed, M. R. C., of New York.

The property department of the school has to do with the procurement and distribution of large quantities of medical supplies, technical apparatus, etc., used at the school and purchased for shipment elsewhere to supply certain other departments. It also maintains a shipping office, carpenters and workshop, moving picture outfit, and a printing office. It is under direct charge of the Adjutant. The foreign service department was occupied principally during the summer in caring for, equipping, and instructing officers of the Medical Reserve Corps ordered to the Army Medical School prior to departure for foreign service. It is under direct charge of the Adjutant.

Photo Harris & Ewing

ARMY MEDICAL SCHOOL, WASHINGTON, D. C.

The department for physical examinations and vaccinations occupies most of the sixth floor of the building, and during the last half year has examined more than 8,000 candidates for commission in the various departments of the army and candidates for promotion. It has been in direct charge of Lieutenant Calvin H. Goddard, M. C., U. S. A., assistant to the adjutant, with the following assistants who are now in the examining rooms: Lieutenant Frederick F. Alsup, M. R. C., of Honolulu, H. I.; Lieutenant Cedric E. Filkins, M. R. C., of Philadelphia, Pa.; Lieutenant Guy V. Forney, M. R. C., of Chicago, Ill.; Lieutenant Walter C. Fox, M. R. C., of Fort Plain, N. Y.; Lieutenant Alfred E. Jones, M. R. C., of Chicago, Ill.; Lieutenant Neils P. Paulsen, M. R. C., of Portland, Ore.; Lieutenant Harold V. Raycroft, M. R. C., of Brooklyn, N. Y.; Lieutenant Leo E. Reimann, M. R. C., of Franklinville, N. Y.; Lieutenant LeRoy A. Schall, M. R. C., of Philadelphia, Pa.; Lieutenant William W. Southard, M. R. C., of Los Angeles, Cal.; and Lieutenant Joseph E. Strode, M. R. C., of Bates City, Mo.

The Army Medical School is the headquarters for the Central Army Medical Examining Board which consists of the following members: Brigadier General William H. Arthur, M. C., N. A., president of the board; Major Harold W. Jones, M. C., U. S. A., secretary; Colonel Champe C. McCulloch, Jr., M. C., U. S. A.; Lieutenant Colonel Eugene R. Whitmore, M. C., U. S. A.; Lieutenant Colonel Edward B. Vedder, M. C., U. S. A.; and First Lieutenant Raymond W. Whittier, M. C., U. S. A. The duties of the Examining Board are to pass upon the qualifications of all candidates for the Medical Corps of the Army, and this includes the consideration of the preliminary examination papers and also all records and qualifications of the candidates after they have passed through the Army Medical School, or have received a course of training at one of the medical officers' training camps.

Photo Harris & Ewing

COLONEL EDWARD L. MUNSON, M. C.,
Chief of the Division of Medicomilitary Instruction, Medical Officers' Training Camps.

Sanitary Corps.

The Sanitary Corps of the Army was authorized and partially organized under General Order No. 80, dated June 30, 1917. For scientific work, applicants must be graduates of reputable institutions in sanitary engineering, chemistry, chemical engineering, bacteriology, and public health work, and must have at least four or five years' practical experience. For nonscientific work, applicants must possess knowledge of special use and benefit to the Medical Department. The personnel consists of administrative forces, with offices in the Mills Building, Washington, D. C., and includes officers up to the rank of major, together with the necessary civilian clerks for the proper disposition of the business which comes before it. The field personnel consists of sanitary engineers, general sanitarians, gas defense chemists, bacteriologists, psychologists, and medical supply officers. Their duties are widely diversified, and take them to the various training and concentration camps throughout the States, as well as abroad.

The activities of the Sanitary Corps include: Sanitary engineering which has to do with supervision of water supplies and sewage disposal, disposal of garbage and other refuse, mosquito and fly eradication, and general camp sanitation; chemistry which embraces such activities as water and sewage analysis, food analysis, experimentation in gases as offensive and defensive measures, and physiological chemistry; bacteriology, especially as applied to the routine work of the medical laboratory of a hospital; x ray work; psychology; administration; and medical supply work. The future activities of the corps are naturally prospective, inasmuch as each sanitary problem must be considered by itself and treated as the demands require. Up to, and including, December 8th there were 510 men in the Sanitary Corps. The number of men required in the Sanitary Corps at the present time is 1,500. It is expected that this number will be doubled if the war continues for another year.

AMBULANCE SERVICE.

The United States Army Ambulance Service was organized June 23, 1917. The admission requirements for enlisted men are the same as for all branches of the service, with the exception that applicants with previous experience in the American Ambulance Field Service and the Red Cross Ambulance Service in France, applicants with automobile driving experience, and mechanics capable of making repairs are given the preference. A few of the officers at the United States Army Ambulance Training Camp at Allentown are medical men, the great majority being technical men. About eighty per cent. of the enlisted strength at Allentown are college graduates. This came about by the different colleges organizing sections, donating their ambulances and equipment, and enlisting in a body known by the name of their college, such as Cornell Section, Harvard Section, etc. Of the sections now on duty in France, of which there are approximately seventy, most of the enlisted strength are college men who had volunteered in the two services, i. e., the American Field Service and the Red Cross, before the United States entered the war. The enlisted strength of the Ambulance Service represents the highest type of men we have in the United States. The United States Army Ambulance Service

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COLONEL C. C. McCULLOCH, JR., M. C.,
Librarian of the Surgeon General's Library.

was created at the request of the French Government, to take over the ambulance work of the French Army on the French front. These sections were to serve with the French army, and not with the American Army, and were to remain with the French Army during the period of the war. There are, at present, in France about 1,400 officers and men, and in training at Allentown there are approximately 5,000 officers and men. The United States Army Ambulance Service is authorized to have 214 officers and 7,605 enlisted men.

The Sanitary Corps and the Ambulance Service are under the direction of Major William D. Wrightson, S. C., sanitary engineer, United States Public Health Service, and member of the Yellow Fever Commission, International Health Commission, and the Rockfeller Foundation, with Captain Luke C. Doyle, of Boston, member of the American Ambulance in France, and Lieutenant John F. Newport as assistants.

Library of the Surgeon General's Office

The surgeon general's library began as a small outfit of medical books in the office of Surgeon General Lovell who became surgeon general of the army in 1818. In 1840, it contained 228 volumes; in 1862-63, 587 volumes; in 1864, 1,365 volumes, and when Surgeon John S. Billings was appointed librarian in 1865, the whole collection numbered 2,253 volumes. Billings obtained the use of a slush fund of $80,000 turned in from the army hospitals at the close of the Civil War, and by 1871 his catalog contained 133,303 titles. He subsequently obtained suitable Congressional appropriations for the purchase of medical books, and, in 1880, for the publication of the present *Index Catalogue,* the first and second series of which are now completed in thirty-seven folio volumes, comprising a combined subject and author catalog of the entire medical literature of the world from the earliest times up to 1916. Under Colonel McCulloch's administration, Volume I of the third series of the *Index Catalogue* is now printing.

The present personnel consists of Colonel Champe C. McCulloch, Jr., M. C., librarian; Major Fielding H. Garrison, M. R. C., former principal assistant librarian, now attached to the Library in connection with his work on the medical and surgical history of the war; Dr. Albert Allemann, principal assistant librarian, and Dr. Frank J. Stockman, assistant librarian. The immediate function under ordinary conditions of the Library is the selection and purchase of all available medical literature not already in the library, their entry in the annual volumes of the *Index Catalogue,* the preparation of a card catalog of author titles of books and pamphlets for public service in the Library Hall, the loaning of books and periodicals, the supplying of desired information to the medical public, handling interlibrary exchanges or loans—in short, the functions of a national medical library. This Library is now second only to that of the Paris Faculty of Medicine in size, including a number of volumes and pamphlets, and, as having the best collection of medical periodicals in the world, it is undoubtedly the most useful and important medical collection now in existence.

The prospective activities of the Surgeon General's Office Library will be to complete the third series of the *Index Catalogue* and the printed card catalog in the Library Hall, published in cooperation with the Library of Congress; to secure an additional hall, either below stairs or in a building proposed by Colonel Owen, for additional book stacks; to secure duplicates of books and periodicals in order to help and encourage other medical libraries by interlibrary gifts and loans; and to furnish increased facilities for historical and scientific research work among visiting physicians at the Library, thus expanding its cultural activities and functions, over and above its routine functions, as

ARMY MEDICAL MUSEUM AND SURGEON GENERAL'S LIBRARY, WASHINGTON.

the national collection of medical books and periodicals. Under war conditions, these functions are necessarily inhibited in so far as the immediate function of the library at the present time is to furnish medical information, medical periodicals, and pamphlets to the now much enlarged Medical Department of the United States Army for war purposes. In time of war, the immediate function of the Medical Corps of an army is to assist the line in winning victories by keeping the whole military establishment and its camps and barracks in proper sanitary condition, by preventing epidemic disease, and by evacuation and care of the wounded from the field; even a library can play a helpful and important rôle with this end in view. An exhibit of books and pictures relating to the history of military medicine will shortly be made under Colonel McCulloch's direction in the Library Hall of the Army Medical Museum.

Photo Harris & Ewing

COLONEL W. O. OWEN, M. C.,
Curator of the Army Medical Museum.

Army Medical Museum.

The Army Medical Museum was commenced during the Civil War, and it has a very large collection of medical curiosities and likewise of much pathological material. The Surgeon General's desire is to make this museum a great central pathological clearing house for the United States, to which all pathological material may come, where the case histories of this material may be filed, and where investigation of such material may be made; where desks may be furnished research workers to study the material; where the history of cancer cases may be followed; where the specimen and case history may be filed and from which a follow up system may emanate so that the case may be studied from operation to death, and thus determine the true mortality of cancerous disease.

The Surgeon General has also added a moving picture laboratory to this museum, in order that the movements of diseases may be recorded and reproduced with absolute precision. It is intended that each moving picture shall have in the future a clock whose hands revolve twenty times to each minute, and whose face is divided into such subdivisions as to indicate the thousandth part of a minute, so that the operator can reproduce the motion in exact time. Plans are also being laid whereby the Museum and Library Division of the Office will be properly housed so that they may serve the profession in a better and more efficient way in the future, if possible, than they have done in the past. The present curator of the museum is Colonel W. O. Owen, M. C., United States Army.

Medical and Surgical History of the War.

By special order of the Adjutant General's Office, No. 196, August 23, 1917, a board consisting of Colonel Champe C. McCulloch, Jr., M. C., U. S. A., executive; Major Fielding H. Garrison, M. R. C., redaction; and Major John S. Fulton, M. R. C., professor of state medicine at University of Maryland, statistics, was appointed to collect and prepare materials for a medical and surgical history of American participation in the European War. Since its organization, this board has been engaged in planning the future details of the work, in collecting printed and manuscript materials, in arranging for the proper handling of the statistical data, in establishing communication with medical officers in England, and France who are engaged upon the same duties, and in preparing a preliminary history of the present administrative expansion of the Surgeon General's Office. In a few months' time, the Surgeon General's Office, under the able leadership of General Gorgas, has increased its personnel of officers from six to 106, and its clerical forces from twenty to 535. The history of this expansion, the

Photo Harris & Ewing

MAJOR FIELDING H. GARRISON, M. R. C.,
Chief of the Division on the Surgical and Medical History of the War.

selection of some of the ablest physicians in the country for administrative service in the Surgeon General's Office, the formation of administrative divisions for special work, sometimes by cooperation with the Council of National Defense, the completion of the work of organizing and perfecting these divisional units until they are ready to carry on their work overseas, will make an interesting narrative. This will be introductory to the actual medical and surgical history of American participation at the front, which will be writ large in the activities of American medical officers in France, Russia, and Italy. This phase of the history is only just beginning. If we may judge by *The Medical and Surgical History of the Civil War,* and those of other wars, the term "history," strictly applied in this connection, is a misnomer. *The Medical and Surgical History of the Civil War* consists mainly of a study of medical and surgical cases. Apart from the carefully tabulated statement of successive battles, arranged in chronological order, with data of killed, wounded, and missing, and the detailed medical reports of campaigns and battles by individual medical officers, there is no narrative portion in this history, although what is known of the histories of the surgical operations and therapeutic procedures employed is given in great detail. In the prospective history, when completed, there will be an introductory narrative of the successive events of the present war in their bearings upon military medicine, a tabulated statement of killed, wounded, and missing in successive battles, the administrative history of American medical organization for the campaign, and the medical history of American participation at the front, followed by the individual reports of division surgeons, directors of base hospitals, and other medical officers at the front, with an alphabetical list of all medical officers in active duty in the war, and lists of those who have been killed in action or have died from wounds or disease. The rest of the work will consist of four sections; viz., statistical, in which all statistical data will be interpreted by modern mathematical methods (Major Fulton); clinical medicine, including neurological cases; surgery, including analysis of surgical cases, wound treatment, etc.; and sanitation, prophylaxis, food, water supply, etc. As it will be some time before the materials for this work accumulate in sufficiently large quantity to justify the assignment of special phases of it to experts, the activities of this board have, for the present, been limited, by special order, to the three officers composing it. As the materials for this history, however, will be largely written by the medical officers on active duty, in the central administration, the camps and cantonments, or at the front, the intention of the work will be democratic rather than bureaucratic, and all medical and administrative reports, medical and surgical cases, etc., included in it will be duly credited to their authors.

Army Nurse Corps.

The Army Nurse Corps, which is part of the Personnel Division of the Surgeon General's Office, was organized February 2, 1901, as a direct result of the Spanish-American War, the nurses during that period having demonstrated their great value in army hospitals. It consisted at first of but 100 nurses, which number was gradually increased until in 1916 it numbered 206. The mobilization of troops on the Mexican border necessitated a further increase, so at that time approximately 500 nurses were employed.

Since the declaration of war, however, nurses have been sent to the various cantonment hospitals in this country and to new general hospitals which have been opened, and a large number has been sent abroad for duty with the American forces. At the request of the British Government, nearly 600 nurses have been sent for duty in the British hospitals, which number will be increased in a short time. It is estimated that in the course of the next year, should the war continue, at least 20,000 nurses will be needed by the War Department for duty at home and abroad. They will be assigned to duty at general hospitals, base hospitals, evacuation hospitals and hospital trains and ships.

The enrolled nurses of the American Red Cross constitute the reserve of the Army Nurse Corps for service in time of war, and as many as are available are assigned to duty from the Red Cross lists as reserve nurses. Nurses, however, will be admitted to the regular Corps as rapidily as they qualify. Thirty-five hundred are at present in the Corps, but many more are needed. In order to obtain an adequate reserve list for the Corps, a campaign has been started to arouse the interest and bring to the attention of the nurses of the country the great need for their services. Circular letters have been sent to the superintendents of accredited training schools, presidents of the nurse alumnæ associations, and presidents of state associations and state nurses' examining boards; and articles have been published in the various papers and nursing journals of the country. This has already brought forth a large response, so that it is believed the future need for nurses will be more than filled. Nurses desiring to enter the service should apply to the superintendent, Army Nurse Corps, Mills Building, Washington, D. C.

Miss Dora E. Thompson, R. N., a graduate of the New York City Training School for Nurses, Blackwell's Island, New York, is superintendent of the Army Nurse Corps, and Miss Edith A. Mury, R. N., a graduate of the Waldeck Hospital, San Francisco, California, is assistant superintendent.

Veterinary Corps.

By the Act of Congress approved June 3, 1916, the Veterinary Corps was placed in the Medical Department of the United States Army. Up to the time of the present war this serivce was not organized and no enlisted personnel was authorized. Under the Act of Congress approved May 18, 1917, a special order was issued by the Secretary of War authorizing the organization, for the period of the existing emergency, of a Veterinary Corps, National Army, which should consist of one commissioned officer and sixteen enlisted men for each 400 animals in service. The proportion of animals to men in war is about one to four. One good horse or mule is capable of doing practically as much work as four men. Animals are afflicted with many diseases that are common to man and some of them are communicable to man. Statistics show that about ten per cent. of the animals in the army are constantly incapacitated. In former times this percentage has been much higher and the unfit animals were carried along with those that were working. This plan necessarily interfered with the mobility of an army. Much better results have been obtained by sending unfit animals back of the lines for treatment, where supplies and trained assistance are provided. Under the old plan it was possible to cure about sixty per cent. of those incapacitated, while under the more modern method practically ninety per cent. are cured and become more useful than green horses that are purchased for the army service.

Photo Harris & Ewing

MAJOR CLARENCE J. MARSHALL, V. C., N. A.,
Chief of the Division of Veterinarians.

The veterinary service in the United States Army is comparatively a new organization. In our Civil War most of this work was done by a chief farrier or the chief blacksmith. In March, 1863, Congress passed an act abolishing these positions and provided one veterinary surgeon for each regiment of cavalry. President Lincoln evidently appreciated the value of veterinary service to the army. He offered to some of the best veterinarians in the Civil War the subaltern rank of lieutenant. They believed that they should have the rank of captain and unfortunately declined the rank offered. It is believed now that they should have accepted the rank, demonstrated their ability, and made their service a necessity.

In later years veterinary schools were organized and decided progress has been made in preventing and treating the diseases of animals. At the present time there are a number of state schools all of which require a preliminary education of at least four years high school and a professional course of four years. These schools are now turning out men who are well trained in the diseases of animals, animal hygiene, and meat and milk inspection. With the necessary organization and direction it should be possible to utilize these men in building up a veterinary service for the army that will be a credit to the government. It is unfortunate that the work of organizing this service could not have been completed in times of peace. Under present conditions it has required a great deal of extra effort on the part of the War Department and the Surgeon General to provide for the service.

Up to the time of the present war the veterinary service was unorganized. There was no system of keeping records or directing the service. Fortunately, there were among the few men in the regular veterinary service of the army some who had served long and faithfully in the army and had kept informed of the progress made in veterinary medicine in general, and especially in that part which pertained to army veterinary service. The Surgeon General ordered three of these men together with a few veterinarians from civil life to come to Washington to assist in organizing the veterinary service. The following veterinarians have been assisting the Surgeon General in this work for the past two months: Major Gerald E. Griffin; Captain Ray Stanclift; Lieutenant A. L. Mason; David S. White, dean of the Veterinary School, Ohio State University; L. A. Klein, dean of the Veterinary School, University of Pennsylvania; Charles E. Cotton, member of the Minnesota State Livestock Sanitary Board and president of the American Veterinary Medical Association; and C. J. Marshall, State Veterinarian of Pennsylvania.

The plan of organization outlined for the Veterinary Corps is practically the same as that of the Medical Corps. Provisions are made for advance and base veterinary hospitals, veterinary service in connection with the purchase and transportation of

Photo Harris & Ewing

MAJOR WILLIAM J. MAYO, M. R. C.,
Member Advisory Surgical Staff, Surgeon General's Office.

animals at posts, in camps, on the march, embarkation depots and on transports. The veterinary officer in charge of the administration of the Veterinary Corps is under the Surgeon General. Other veterinary officers in charge of corps, divisions, brigades, posts, detachments, regiments, etc., have the same relative titles as those of the Medical Corps and stand in the same relative position to the Surgeon General. The work of organizing the veterinary service is practically completed. It is hoped that good results will be obtained. The service will be useful to the army and animal husbandry in general, and will encourage schools to extend or maintain the high standards which some but not all have already adopted.

Division of Field Sanitation

The Division of Field Sanitation looks after health conditions in the field and at camps. It was organized in May. It prescribes and enforces regulations to maintain sanitation and to control communicable diseases and receives and records all sanitary reports. The sanitary inspectors, who are experts in that branch of the medical profession, make frequent sanitary inspections of camps and other places. Thus actual health conditions always are known at Washington. The office receives daily telegraphic reports of meningitis and pneumonia cases from camps and weekly telegraphic reports of the number sick in hospitals and elsewhere, and number sick at the beginning and end of the week. The reports are consolidated, and copies are sent to the Secretary of War, chief of staff, commanding general in France, commanding generals of camps at home, and medical journals. The office maintains graphic charts showing comparison between present and past army sick rates and rates from week to week.

The important work of the Sanitary Division is under the supervision of Colonel F. P. Reynolds, M. C., as chief of the division with the following personnel, Colonel H. C. Fisher, M. C.; Colonel Henry Shaw, M. C.; Colonel Weston P. Chamberlain, M. C.; Major Albert G. Love, M. C.; Major Victor C. Vaughan, M. R. C., Dean of the Medical School of the University of Michigan; Major J. T. Bowles, S. C.; Captain E. J. Tucker, S. C., formerly physiologist to the Canal Zone, and Lieutenant H. N. Fuller, S. C., formerly hospital sergeant in the regular army.

Dental Division.

The Dental Division looks after all matters pertaining to dentistry in the military establishment, including the personnel of the Dental Corps and Dental Reserve Corps. It has at its head Major William H. G. Logan, Medical Reserve Corps, of Chicago, one of the foremost dental surgeons of the country. He is president of the National Dental Association and chairman of the dental committee of the general medical board of the Council of National Defense. Captains Julien R. Bernheim and John R. Ames, of the Dental Corps, are his assistants.

At the time the United States entered the war, the army had only eighty-six dental officers, who were members of the Dental Corps, and of whom nineteen were captains and the remainder first lieutenants; and it was necessary to obtain an almost entirely new dental personnel to provide for the greatly expanded military establishment. No appointments had been made to the Dental Reserve Corps, which was established by the National Defense Act of June 3, 1916.

Up to December 15th, a dental personnel of about 1,500 officers actually was on duty, of whom 178 belong to the Dental Corps of the regular army, 227 to the Dental Corps of the National Guard, and the remainder to the dental reserve corps, this being the number required for an army of 1,500,000 men on the basis of one dental officer to every 1,000 men as prescribed for the regular army. Moreover, enough additional dentists have been commissioned in the Dental Reserve Corps, but not placed on active duty, to provide, with those already on duty, a dental personnel for 5,000,000 men. Owing to the enrollment of dentists in sufficient number to take care of all anticipated needs, the issue of further commissions was suspended on September 18th, except where men of well known attainments were required for special duties, and enrollment of the latter class was suspended on December 15th.

The first appointments to the Medical Reserve Corps were made in May, and at the outset many difficulties and considerable expense were encountered by candidates in going to a military post for examination, which in many cases resulted in rejection for physical or professional reasons. For this reason, in June one or more boards for examination of dental candidates were established in every State, the boards including deans of dental schools of recognized standing, secretaries of State dental boards, and others particularly fitted for the work. In accordance with the system, a candidate's application does not reach the Surgeon General's Office until after he has been before one of the local boards, and in that case only when he is found professionally and physically qualified. In this way the office at Washington has been relieved of much work that otherwise would come to it. About 23.1 per cent. of the applicants have been rejected for physical and professional reasons. A chief dental surgeon, a member of the regular Dental Corps, has been placed on duty at every camp and cantonment.

Dentistry naturally plays an important part in the oral section of the Division of Surgery of the Head at the hospitals. Oral surgeons are on duty at all of the base hospitals in the field and at cantonments and in the evacuation hospitals in France, and 200 dental oral surgeons have been provided as assistants to these oral surgeons. Special training of dentists for such assignments has and is being given at the Evans Dental Institute at Philadelphia, the Dental School at the Northwestern University at Chicago, and at the Dental School of Washington University at St. Louis. Each class includes about thirty students, of whom about half are dentists and half general and oral surgeons, and the course covers a period of about four weeks. It includes plastic operations on the face and jaws and the making of appliances for holding fractured bones in place.

In carrying on the general dental work of the army, dental surgeons are organized i[illegible] each of which a dental infirmary is provided. While not permanently assigned to any definite organization, a dental unit ordinarily serves a brigade, with such additional organizations as may be conveniently assigned. Each unit operates under an assistant dental surgeon, selected by the chief dental surgeon. All dental officers are under the immediate control of the dental surgeon, who in turn is under the immediate supervision of the division surgeon. Ordinarily one assistant dental surgeon and ten operating dental surgeons are assigned to each dental unit.

Dental officers in the United States are charged with the performance of the dental work usually falling to general dental practitioners. The base hospital dental laboratories, dental units, general hospitals, and other important stations do the following work in addition: repair of crowns, bridges, and plates for men who have been accepted wearing these appliances, and making new plates for men for whom their regimental surgeon or dental surgeon recommend such work as necessary for health. Dental units are being sent to France with personnel and equipment sufficient to do practically the same types of work as at home. These units are assigned to such hospitals, tactical organizations, and territorial sections as the chief surgeon in France may decide. The units attached to the head surgery hospitals are specially organized with necessary personnel and equipment.

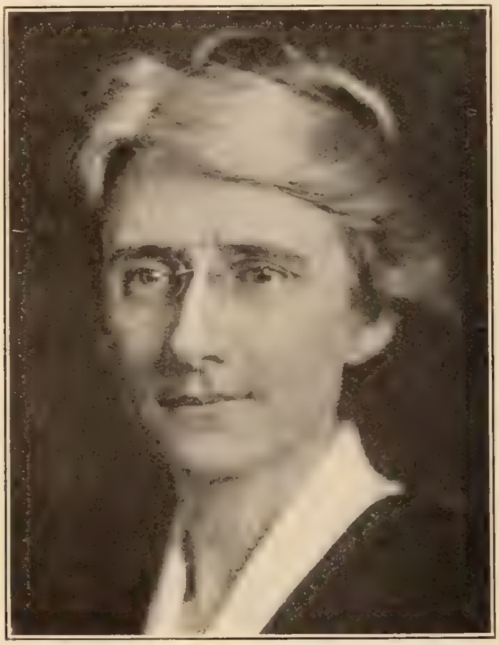

Photo Harris & Ewing

MISS DORA E. THOMPSON, R. N.,
Superintendent Army Nnrse Corps.

Office Development and Filing System

The office development and the filing system have been managed by Captain J. L. Gooch, S. C., formerly circulation manager for the Curtis publications and later for the Butterick publications; Lieutenant H. E. Springmann, S. C., formerly with the Curtis publications, and Lieutenant C. H. Wilson, S. C.

Statistical Division

So much depends upon the use of proper methods in handling the immense mass of statistics accumulated by the Medical Department that two experts have been commissioned to supervise the organization of the statistical work of the Surgeon General's Office which of course means the Medical Department as a whole. These are Lieutenant R. H. Delafield, S. C., formerly of the National City Bank of New York, and Lieutenant F. A. Ross, S. C., who is also an expert in statistical work.

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In concluding this much condensed and necessarily fragmentary summary of the activities of the Surgeon General's Office, THE NEW YORK MEDICAL JOURNAL wishes to express its appreciation of the uniform courtesy and the kindly cooperation extended by the Surgeon General himself and by all the chiefs of divisions who were interviewed in connection with the compilation.

Ruling on Promotion of Lieutenant in the Medical Corps.—Several questions have arisen as to promotion of first lieutenants of the Army Medical Corps. One of them is whether, under the act of May 18, 1917, vacancies in that corps, which by reason of the requirement that first lieutenants of the corps shall not become entitled to promotion until they have served a period of years, can be filled by temporary appointment of lieutenants now in the corps. The act of October 6, 1917, provided that, during the existing emergency, first lieutenants in the Medical Corps of the regular army and national guard shall be eligible to promotion to the rank of captain, upon such examination as may be prescribed by the Secretary of War. It is held that this provision removes, for the period of the war, the requirement of the national defense act that first lieutenants of the Medical Corps shall serve five years as such before promotion.

The provisions of the national defense act, relating to temporary vacancies in the regular army, are mandatory in that they require temporary vacancies created in the higher grades to be filled by temporary promotion according to seniority in rank over officers holding commissions in the next lower grade, and all vacancies to which there can be no promotions may be filled by appointment of other qualified persons. Therefore, it is decided by the War Department that the vacancies in the Medical Corps must be filled by permanent or temporary promotions according to seniority and according to the character of the vacancy of officers in the corps below the grade in which the vacancy exists, subject to examination, so long as there are officers in the corps in lower grades, and their temporary appointments can be resorted to only when possibilities of promotion by seniority have been exhausted. Thus the bar to promotion of first lieutenants having been removed, those that qualify on examination may be advanced to the grade of captain to fill the permanent and temporary vacancies therein, and they may be advanced to the grade of major as vacancies occur therein, and such vacancies as may exist in the grades as a result of temporary advancements may be filled by temporary appointments.

Editorial Notes and Comments

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EDITORS
CHARLES E. DE M. SAJOUS, M.D., LL.D., Sc.D.,
Philadelphia,
SMITH ELY JELLIFFE, A.M., M.D., Ph.D.,
New York.

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THE HEALTH OF THE TROOPS.

While the health of the troops is committed to the care of the Surgeon General, there are many factors bearing upon their health which are outside of his control. The housing, the clothing, the supply of potable water, and the sewerage are all important factors in the health of the men in the camps and cantonments. In none of these has the Surgeon General any final authority. It is his province, however, to comment upon and make recommendations regarding these points in the welfare of the men. In a series of reports made by him to the Secretary of War between November 29th and December 17th, Surgeon General Gorgas has set forth clearly a number of unfavorable conditions which are responsible for an undue proportion of certain diseases among the troops.

Paradoxical as it may seem, the men who are in tents are suffering from overcrowding. The quartermaster's department has not furnished sufficient tentage for the National Guard commands, and as a consequence, the men are crowded together. The hospitals both at the cantonments and at the camps are incomplete, in some cases lacking in water supply, sewerage, and heat. The clothing has been inadequate in quantity and unsuitable in weight for the extremely cold weather which has been experienced even in the Southern camps and cantonments. Inadequate provision for quarters has made it impossible to segregate new levies until the men have undergone physical examination and as a consequence in one of the camps, that of the thirty-eighth guard division, 2,000 cases of measles developed. This might have been avoided by the segregation of the new arrivals until all danger of their carrying infection into the camps was passed. At Camp Funston twenty-two deaths have occurred from meningitis, and many carriers of the meningitis germ have been discovered. In this particular camp there were eighty-four deaths from all causes during the month, when there should not have been more than twelve. The prevalence of meningitis carriers in certain sections of the country makes it highly important that all new levies should be segregated and examined before admission to the camp as otherwise there is probability of the development of serious epidemics of this dangerous disease.

The publication of these reports by the Secretary of War will undoubtedly be followed by an investigation and by amelioration of the conditions complained of. It is most regrettable that such conditions should have been permitted to exist. It is no reflection upon the Medical Department that they have existed for that department has issued warnings in advance of the dangers incident to the mobilization of large masses of men, and the Surgeon General has been prompt and frank in his exposure of the conditions affecting the health of the troops. The Medical Department can do no more.

OCULAR ANAPHYLAXIS.

Operation or injuries to one eye have long been known to have a special morbidity because of the likelihood of extension of the inflammation in the other healthy eye, the production of the so called sympathetic ophthalmia. This fact somewhat explains, if it does not justify, the hesitancy of surgeons to perform necessary operations on the eye. Prognoses ventured in such conditions must always include the liability to sympathetic inflammations in the second eye, and when inflammations do supervene the removal of the offending eye to save the second eye is urgent.

Many explanations have been advanced. The mycotic theory that the inflammation in the innocent eye was metastatic is logical only in bacterial infections. It does not explain the noninfectious ophthalmias. The cytotoxic theory holds that the disintegrating cells of the exciting eye cause the formation of autocytotoxin, specific for uveal cells and carried thereto by the bloodstream where it sets up a uveitis. Indeed, serum prepared according to this hypothesis and injected into animals, has caused severe iridocyclitis.

The explanation now accepted by most observers is that the condition in the second eye is an anaphylactic uveitis. It is believed that the disintegrating uvea in the exciting eye is reabsorbed as antigen and leads to a hypersensitization of homologous tissue, the uvea of the second eye. Further absorption beyond this point of sensitization becomes intoxication and is manifested clinically by inflammation. The latent period between the lesion in the first eye and the inflammation in the other eye corresponds to the period of sensitization and usually lasts from two to six weeks.

While the entire organism can be sensitized by antigen obtained from the offending eye, it is assumed that the uvea or a constituent part of it can act as a foreign protein to homologous tissue in this anaphylactic sensitization, and especially to animals of the same species. The uvea acting as a foreign protein possesses a distinct organ specificity. Homologous uvea, then, when absorbed has the peculiar property of sensitizing animals of the same species and producing a definite ocular reaction on subsequently insisted profusion. Homologous uvea has this specific anaphylactic or chemical action whether from the same or foreign species.

The particular part of the uveal organ, composed as it is of smooth muscle, connective tissue, bloodvessels, and pigment epithelium, which is responsible for this antibody formation is the pigment epithelium. It is the only constituent peculiar to uveal tissue. The pigment acts as a specific antigen. As to this, further work and experimentation must be carried out before much more than mere theorizing can be indulged in.

UNDERWEIGHT IN INFANTS FROM EXCESSIVE FAT FEEDING.

The placing of infant feeding on a scientific basis has resulted not merely from feeding infants by mathematically accurate percentage methods but rather from a broad understanding of the milks necessary for the maintenance of the developmental progress of the child and of their responsibility for digestive disturbances. The ultimate results of the strict percentage modification of milk are not nearly so good as was thought and it has accordingly fallen more and more into disfavor. No human factor can be put under mathematically accurate control. Under the percentage method too much reliance was placed on the formula and too little on the skill of the physician.

Perhaps the ingredient of milk that causes the most trouble is fat. In mother's milk excessive fat is to be expected rather when the quantity is low than when it is ample, but analyses of the last milk will show a higher percentage of fat than those of the first milk, and this fact is important in making determinations. In adults the forcing of food, especially fat, has long been associated with methods for the increase of weight, but even there digestive disturbances were caused where the patient could least afford it. Beside causing marked digestive disturbances in infants when the same principle is pursued, the forcing of fat seems to be the most potent cause of loss of weight or the lack of the normal gain usually expected. Of course, no two infants can assimilate the same kind or quantity of food elements, and if fat is forced according to a certain percentage basis bad results must follow. Excessive fat in infant food causes fat dyspepsia with loss of weight, colic, marked constipation, and a rather characteristic stool which is colorless and contains soapy concretions. The fat and the calcium salts combine to produce these calcium soap concretions and the conversion of bile salts causes the colorless stools. While this combination of symptoms is extremely significant of excessive fat feeding, only an analysis of the milk can confirm the diagnosis. Indeed, in the intelligent treatment of young infants there must be periodical analyses of fair samples of mother's milk or definite knowledge of the ingredients of other foods used in feeding. The finding of what is considered a normal percentage of fat in combination with these symptoms should result in the reduction of the fats to the point of tolerance. In mother's milk low quantity and high fat will be rectified by methods tending to amplify the quantity of milk, such as diet, exercise, and fresh air. Where the quantity can under no circumstances be increased and the fat percentage remains unduly high it is better to wean than to attempt to supplement with a formula prepared from cow's milk where the fat percentage will be still further raised.

In the treatment of fat dyspepsia in artificially fed infants the main consideration is the entire removal of fat for a period. In these cases even whole milk—not top milk—has too much fat. Only skimmed milk is tolerated, and fat can be but very gradually reintroduced, and never beyond the degree of tolerance even if this degree is below the usual amounts credited to infants of that particular age. During the period of fat abstraction carbohydrates must be substituted, the best substitute being probably malt sugar if not pushed beyond the degree of tolerance. Although many of the proprietary infant foods are still condemned by pediatricians the fact still remains that they are largely used by physicians in the feeding of infants. Just condemnation is still accorded them when they are advised as the sole food, but when advocated as a modification they do much good. Whether a proprietary food with its ingredients disclosed or whether some cereal or malt food made under home conditions is used is of little moment as long as the indication is met. The use of artificial food of any kind when the infant is thriving on his natural food is unjustified but where there is difficulty assistance must be looked for wherever to be found, and in the correction of the results of excessive fat feeding some of these foods will be found helpful as adjuvants although not as entire substitutes.

CLINICAL ASPECTS OF HEMILESIONS OF THE CORD.

It would seem that the analysis of disturbances following a hemilesion of the cord, and they are frequently occurring now under war conditions, would be easier and more minute in man than in experimental work on animals as the phenomena offered by the former are purely objective. Although it is true that medullary hemisections, properly speaking, by sharp edged or pointed instruments are relatively rare, even in the present war, pathological hemilesions are rather frequent. Their causative factors are severe direct or indirect traumatisms, such as fracture of the vertebræ with bone splinters, dislocation of the spine with or without fracture, and incomplete dislocation.

Sudden inflexion of the spine from some violence or its forced rotation, falls upon the knees from a considerable height or on the feet or buttocks, or a heavy weight falling some distance and striking the spine may result in hemilesions of the cord. Periostitis; osteitis; arthritis; oxostoses; enchondromata; extrameningeal or intrameningeal hematic collections, whether the blood be coagulated or not; the myelitides and various meningitides; the late lesions of lues; the numerous types of benign and malignant neoplasms; hematomyelia; aortic aneurysm which has eroded the spine, and other lesions too numerous to mention may give rise to the syndrome of Brown-Séquard. Therefore cases abound. Undoubtedly, the symptomatology is not so distinct as that obtained experimentally, but it nevertheless is sufficiently evident, and all recorded cases are perfectly comparable to each other. A double symptom dominates the clinical expression of hemilesion of the cord, namely, a motor hemiparesis with hyperesthesia of the corresponding side and a superficial hemianesthesia with preservation of movement on the opposite side.

Considered from the viewpoint of extension of the sensorimotor disturbances, the data now known can be collected under four headings. In the first type, the motor paralysis is limited to the lower limb on the side of the hemisection. The sensory disturbances do not reach the root of the limb and this is what is met with when the cord is involved at levels of the vertebræ below the ninth. In the second type, the motor paralysis and sensory troubles extend above the roots of the lower limbs and involve a portion of the trunk. This is seen when the hemisection involves the cord over the area corresponding to the middle and upper dorsal vertebræ. The third type comprises cases in which the upper limbs and thorax participate in the sensorimotor disturbances. This occurs when the cord is involved at a level situated above the sixth cervical vertebra. In this case there are frequently, but not always, manifestations in relation to a paralysis of the great cervical sympathetic and pneumogastric nerves. In the fourth and last type are included cases in which the hemisection involves the cord at its upper portion, just above the occipital protuberance. Under these circumstances the motor and sensory troubles invade an entire half of the body, up to the face, the neck and throat included.

An important point is that in a case of traumatic hemisection of the cord in man, Brown-Séquard's syndrome may only develop after a certain lapse of time, while at the beginning of the trouble a motor paraplegia, or even tetraplegia, predominates. The evolution of these symptoms is most variable and generally speaking when the hemilesion does not involve the cord at its upper end, life is rarely endangered. In this case the functional disturbances have a tendency to improve progressively. The patient will retain traces of the primary symptoms, however, such as paresia of some muscles, trembling in many, and slight changes in the sensibility. Microscopically, regeneration of the nerve elements has never been detected and in man the return of the functions has occurred in cases in which certainly there was no regeneration. The return of the lost functions must be due to compensation on the part of the cord which has remained intact or by an intercrossing of the motor fibres throughout the entire extent of the cord.

The clinical aspects of medullary hemisection in man have a striking similarity with experimental results, viz.: Brown-Séquard's paralysis of variable extent according to the site of the lesion, and recovery of the motor functions, but clinically no solution to the explanation of the evolution of the injury has as yet been satisfactorily given.

ADMIRABLE CRICHTON, M. D.

Of all the professions, medicine probably demands the greatest degree of versatility. It is more far reaching, has more ramifications and offshoots. has produced from its stock more hybrid specializations than any other. The physician is expected to be not only a wizard, for to a certain type of lay intelligence magic and science are synonymous, but by mere virtue of his degree and position to be a veritable Admirable Crichton. He is fair game for all sorts of demands as a public character and it is taken for granted by an admiring clientele and by the community at large that he is prepared to rise to any occasion and to fulfill any mission that is wished upon him. This may express to some degree the situation as it presents itself to the doctor, but from an impersonal standpoint it is a correct and a justifiable expectation on the part of the public. The particular accomplishment with which the doctor is suspected of being congenitally endowed is oratory, or so it seems to the man inexperienced in public speaking. Who has not at some time in his career been approached by a committee from the local board of education, the board of health, the women's society, the society for the suppression of all sorts of nuisances and the propagation of as many public benefits, the mothers' club, the bothers' club, et cetera ad infinitum, with a request for a few of the gems of wisdom from the vast storehouse of experience and omniscience, in other words a public lecture before a lay audience?

This is an important duty, in a long list of important duties, that the physician owes the community and one which ought not to be shirked whenever it is at all possible to discharge it. The physician's training and experience have provided him with the material which he should willingly place at the disposal of the community and the only difficulties that he may encounter in such a situation are matters having to do with composition and possibly delivery. He may suddenly develop a sympathy for the famous cartoon character who figures in the series entitled: "When a fellow needs a friend." In the first difficulty the New York Medical Journal to a certain extent proposes to enact the rôle of "friend" by publishing from time to time paper by members of the profession who have successfully met this problem. These papers, in the estimation of the editors, might serve as models to readers. The inexperienced speaker will have to suffer the pangs of delivery on his own nerve. The publishing of these papers is not a new thing in the history of the New York Medical Journal, as many of our readers will realize. It is desired to direct attention, however, to such excellent papers written with this end in view and published from time to time for the special benefit of certain readers, as Dr. Wendell C. Phillips's article on The Care of the Ears in this issue.

Obituary

RAMON GUITERAS, M. D.,

New York.

Dr. Ramon Guiteras, one of the most widely known urologists in the United States, died of meningitis at the French Hospital in New York on Thursday, December 13th. Doctor Guiteras was born in Bristol, Rhode Island, where his father, a Cuban patriot, made his home after the failure of the Lopez expedition in 1862. He was educated in the public schools of Bristol, was graduated from Harvard University, both in arts and in medicine, and then went abroad, studying in Paris, Berlin, and Vienna. On his return he entered the United States Navy as assistant surgeon from which he resigned and became an intern at the City Hospital. After this service he became assistant professor of laryngology at Columbia, of neurology at the University of New York, and of dermatology at the New York Polyclinic School and Hospital. He acted as an inspector of contagious diseases for the Board of Health of the City of New York for three years and served as attending surgeon at the City, the French, the Manhattan, the State, the St. John's, the Post Graduate, the Columbia, the Port Chester, and the Sydenham hospitals. He also served as professor of surgery at the Post-Graduate Medical School. He was the author of the first book on urology published in the United States, a work of 1,400 pages. He served on several important commissions for the United States Government and visited the hospitals at the front in France during the first year of the war. He was for many years secretary of the Pan-American Medical Congress. Doctor Guiteras was one of the most charming and versatile of men; he was an athlete and an amateur pugilist, an excellent linguist, and a huntsman of big game in almost every section of the world, having a remarkable collection of trophies of the chase in his bachelor apartments at 80 Madison avenue.

DR. RAMON GUITERAS.

News Items.

Building Plans to Be Submitted to Health Officer in Montreal.—It is reported in the *Canada Lancet* that in future all plans for buildings to be erected in Montreal must be submitted to the health officer as well as to the city architect.

Women Patients at Connecticut State Hospital Engaged in War Relief Work.—One hundred women patients in the State Hospital for the Insane, at Middletown, Conn., are busily engaged in knitting sweaters, rolling bandages, and doing other war relief work.

Medical Society of South Carolina.—Dr. Robert S. Cathcart, of Charleston, was elected president of this society at its 128th annual meeting, held in Charleston on December 10th. Dr. John M. Green was elected vice-president; Dr. G. Frank Heidt, secretary; Dr. D. L. Maguire, treasurer, and Dr. F. G. Cain, librarian.

A Public Health Reserve Corps.—Surgeon General Rupert Blue, of the United States Public Health Service, has asked Congress to appropriate $300,000 for the purpose of establishing a Sanitary Reserve Corps, to combat outbreaks of disease in both times of war and times of peace. He also asked for appropriations to purchase quarantine stations at New York and Baltimore.

Investigation of New Method for Fixation of Fractures.—Major H. R. Allen, M. R. C., has submitted for the consideration of the army medical authorities a method for the fixation of fractures by the use of the army litter. A board of officers, consisting of Lieutenant Colonel Roger Brooke, Jr., and Major Mahlon Ashford, M. C., and Captain Peer P. Johnson, M. R. C., has been directed to meet at Fort Oglethorpe, Ga., for the purpose of examining into and reporting upon the matter of utilizing the method.

Pneumonia at Camp Mills.—On Monday, December 17th, there were ninety-nine men from Camp Mills in Greenpoint Hospital suffering from pneumonia, pleurisy, and other ailments due to exposure. This camp was originally intended solely for summer use, and the men have been living in canvas tents without proper protection from the cold. A congressional inquiry into sanitary conditions at Camp Mills has been requested. Reference is made editorially to the report on health conditions at this and other camps by Surgeon General Gorgas.

Physicians Recommended for Commissions in the Army Medical Corps.—The following physicians have been recommended by the surgeon general of the army for appointment as first lieutenants in the Army Medical Corps: Louis Martin Field, Clarence Edward Burt, John Andrews Rogers, Gilbert Octavus Crank, Harmon P. B. Jordon, William P. J. Ruddy, Harmon H. Ashley, Walter L. Richards, Newton W. Sentell, Stanley G. Odom, Ress S. Lloyd, Richard S. Boynan, William D. McLelland, James R. Hudnall, and Charles R. Lanahan.

England's First Woman Mayor Dies.—Dr. Elizabeth Garrett Anderson, the first woman to be elected mayor of a town in England, died at her home in Aldeburgh, Suffolk, on Monday, December 17th, aged eighty-one years. Refused admission to the examination of medical colleges in England, Doctor Anderson went to France, where she passed the medical examination of the University of Paris in 1878. From 1883 to 1903 she was dean of the London School of Medicine for Women. She was a member of the first school board for London, and in 1908 was elected mayor of Aldeburgh.

Examination for Assistant to Health Officer of the Port.—The State Civil Service Commission of New York announces an examination on January 26, 1918, for assistant medical officer, Department of the Health Officer of the Port of New York, open to men only, salary $1,500, together with quarters, subsistence, and laundry. This position is in the detention and hospital service of the quarantine station and may involve residence and service at either of the quarantine islands in lower New York Bay. A knowledge of quarantinable and venereal diseases is required. Application forms will not be sent out by mail after January 14th, and applications received at the office of the commission after January 16th will not be accepted. For the proper application forms and for further information regarding the examinations address the State Civil Service Commission, Albany, N. Y.

Legislative Hearing on Narcotics.—The hearings on narcotic addiction have been continued at the mayor's office by the joint legislative committee of the legislature of the State of New York, of which Senator Henry M. Whitney is the chairman. Two days were devoted to statement and hearing the evidence of addicts regarding their own experiences in various institutions. Statements were also presented by social workers and by others interested in the subject of drug addiction, including Justice Collins. At the hearings held on Thursday and Friday statements were made by a number of physicians who have been interested in the movement.

Meetings of Medical Societies to Be Held in New York During the Coming Week.—Monday, December 24th, Medical Society of the County of New York; Wednesday, December 26th, New York Academy of Medicine (Section in Laryngology and Rhinology), New York Society of Internal Medicine; Thursday, December 27th, Ex-Intern Society of Seney Hospital, Brooklyn, Hospital Graduates' Club, New York, New York Physicians' Association (annual); Friday, December 28th, Society of New York German Physicians, New York Clinical Society, Manhattan Medical Society, Brooklyn Society of Internal Medicine (annual), Italian Medical Society of New York.

Personal.—Dr. Chevalier Jackson, of Philadelphia, professor of laryngology in the Jefferson Medical College, delivered the Mütter lecture for 1917 on Friday evening, December 14th, in the College of Physicians of Philadelphia, his subject being Observations on the Pathology of Foreign Bodies in the Air and Food Passages, Based upon Observations in 628 Cases. The address was illustrated by specimens, lantern slides, radiographs, and colored drawings.

Dr. John Robbins Mohler, chief pathologist in the Bureau of Animal Industry, United States Department of Agriculture, has been appointed chief of the bureau, succeeding the late Dr. Alonzo D. Melvin, who died on December 7th.

Dr. John Young Brown, of St. Louis, has been directed to direct the work of the Advisory Medical Board in Missouri.

The Health of Troops in the United States.—The following summary of health conditions in the camps of the United States for the week ending December 14, 1917, has been issued by the Surgeon General:

National Guard: With the exception of the 34th, 35th, and 40th divisions, but few new cases of measles are reported from National Guard camps. In each of the divisions mentioned, with the exception of the 40th, the number of new cases is small as compared with the number reported for last week. In the 40th division the number of new cases is 330, as compared with 279 for the previous week. Pneumonia following measles is also rapidly decreasing in amount in all but three of the divisions in which measles has been epidemic. In the three divisions referred to, 30th, 34th, 39th, an increase in the number of cases is noted, although the total number of new cases reported in each division is not high. For meningitis the number of new cases has increased in but two camps of the National Guard. The 35th division reports six new cases, as compared with two for the previous week, and the 30th division reports six, as compared with one for the previous week. The number of new cases reported in the 36th division has decidedly decreased. The highest number of new cases reported in any other division of the National Guard is three.

National Army: In the National Army a marked increase has occurred in the number of new cases of measles in the 87th and 90th divisions, and a slight increase in the 89th division. In all other divisions the number of new cases of measles reported is insignificant. Pneumonia conditions in all divisions of the National Army have decidedly improved during the week, except in the 90th division, in which an increase of thirty-six new cases is reported over the report of last week. As regards meningitis, the 81st division reports a marked increase in the number of new cases over the report of last week. The outbreak of this disease in the 89th division continues to decline, but eight new cases having been reported during the week. The highest number of new cases reported in other divisions of the National Army is five. Seven divisions of the National Army report new cases of this disease during the week.

TREATMENT OF ACUTE MERCURY BICHLORIDE POISONING.

By Louis T. de M. Sajous, B. S., M. D.,
Philadelphia.

(*Continued from page 1147.*)

In regard to the immediate antidotal treatment of bichloride poisoning reference was made, in the preceding issue, to experimental work by Fantus, 1916, leading to the conclusion that egg albumen, while of value if given along with or immediately after the poison, is not likely to prove effective under the usual conditions of clinical practice, in which an interval of at least five minutes, and usually more, elapses between ingestion of the poison and the beginning of treatment. Turning to other chemical antidotes previously suggested by various observers, Fantus experimented with alkalies, especially sodium bicarbonate, which had been mentioned by J. M. Hirsch, 1914. Addition of the bicarbonate to a solution of mercury bichloride was observed to cause a brown precipitate of oxychlorides of mercury. Tested out in animals, sodium bicarbonate, given immediately after the poison, showed a slight but distinct antidotal effect, the average period of survival of the animals being prolonged to seventeen days. This antidotal action is ascribed, however, not to the precipitation of mercury as oxychlorides, but to an influence of the bicarbonate on the reaction between the poison and the proteins of the stomach wall. The bicarbonate had previously been shown greatly to accentuate, *in vitro,* the precipitation of serum albumin in solution by mercury bichloride. The alkali, by causing denser precipitation of the mercurial when it comes in contact with the tissues, is believed thus to render the poison noncorrosive and doubtless in this way reduce its absorption into the system. That the corrosive effect is actually hindered was clearly shown in the experiments, lesions in the stomach being slight or absent in all animals in which a sufficient amount of the bicarbonate—twenty-five to fifty times that of the poison—had been administered.

Another form of antidotal action studied experimentally by Fantus was that which consists in reducing, through a chemical reaction, the extent of ionic dissociation of the metallic poison in solution. Mercuric salts of very weak acids being much less dissociated in a solution, and hence less active chemically, than salts of strong acids such as the bichloride, the antidotal effect of sodium acetate was investigated, the purpose being to lessen the dissociability of the mercury by converting the salt from the bichloride to the acetate. Upon using, furthermore, a large excess of the sodium acetate, a brown precipitate similar to that caused by sodium carbonate, and ascribed to the alkalinity of the acetate, was observed. In the tests in animals, administration of sodium acetate in an amount sufficient to remove the mercuric ions from solution, viz., 100 times as great as that of the poison taken, showed a considerable antidotal power, one somewhat greater than that of either egg albumen or sodium bicarbonate. Even where the sodium acetate was only given after the poison, the animals survived, on an average, for 25.2 days. The relative absence of irritative lesions in the stomach at autopsy, moreover, plainly indicated that the acetate had hindered the action of the mercury on the gastric wall and presumably also the absorption of the poison into the system.

T. A. Carter, 1915, has reported a series of seventy-four cases of mercury bichloride poisoning treated with a mixture of sodium phosphite and sodium acetate in the ratio of three parts to two, with but four deaths. When ten parts of sodium phosphite are added to a solution of one part of mercuric chloride, nearly all the mercury is precipitated as mercurous chloride or calomel, the phosphite having acted as a reducing agent on the mercuric chloride. Curiously when Fantus tested the influence of sodium phosphite, alone or with a liberal excess of sodium acetate, in experimental corrosive sublimate poisoning, no antidotal effect was observed. When, however, the phosphite and acetate were used in the ratio prescribed by Carter, results better than in any previous experiments were obtained, the average period of survival upon giving the antidotes after the poison being lengthened to 42.4 days. In further experiments sodium hypophosphite, theoretically an even better reducing agent than sodium phosphite, was substituted for the latter; when combined with sodium acetate in Carter's ratio of three to two, it yielded an average survival period of 37.6 days. Testing the influence of various substances other than sodium acetate upon the antidotal efficacy of sodium hypophosphite, Fantus obtained the best results of all by combining five parts of hydrogen peroxide with it, the resulting antidote prolonging the average survival period to 43.4 days. Throughout the tests, animals still living after one hundred days were counted as having survived only for this period, even though permanent recovery followed. The manner in which the oxidizer, hydrogen peroxide, increases the antidotal efficacy of the reducer, sodium hypophosphite, is not apparent; Fantus suggests that it may act as a catalyzer.

It will have been noticed that the results from the last three procedures mentioned were approximately equivalent. For clinical purposes Fantus advocates the first procedure, viz., immediate use of Carter's antidote, a tablet containing sodium phosphite, 0.36 gram, and sodium acetate, 0.24 gram. If this were not available, he would give a mixture of five mils of hydrogen peroxide, solution with ten mils of water and one gram of sodium hypophosphite. The ratio of the amount of antidote used to that of the poison taken is of some importance. In the successful experiments with phosphite and acetate ten times as much phosphite and 6.6 times as much acetate as mercuric chloride were given. Where, clinically, the amount of poison is known, ten times as much hypophosphite should be given, according to Fantus, as poison. If the amount is large, so that the hypophosphite might possibly be itself harmful, immediate copious lavage with a very dilute solution of the antidote should follow. A safe dose of the antidote, to be retained, might then be given, and repeated every eight hours for several days.

In additional experiments with these agents, Fantus showed that distinct antidotal effects were obtainable even where an interval of ten or fifteen minutes elapsed between administration of the poison and of the antidote.

These experiments, coupled with Carter's clinical experiences leave little doubt that egg albumen, the classical mercury antidote, must yield to newer chemical agents. The Carter or allied antidotes should manifestly be kept ready for prompt use in hospitals and drug stores, and Carter tablets may well find a place in the practitioner's emergency armamentarium. Where they are not immediately available, and ordinary household chemicals are alone at hand for prompt treatment, the moderate antidotal power of sodium bicarbonate in amounts twenty-five to fifty times that of the poison, as shown in Fantus's experiments, is doubtless worth remembering.

(*To be continued.*)

Dissolving Senile Cataract in Its Early Stages.—W. B. Inglis Pollock (*Glasgow Medical Journal,* October, 1917), in carrying out the treatment, now commonly uses the following formula in the first week:

℞ Sodii acetatis }
Sodii citratis, } ....ana gr. xl;
Sodii chloridi }
Tincturæ cocci ....q. s.;
Aquæ rosæ ....q. s. ad ℥iv.—M.

The patient boils some water for ten minutes, allows to cool till tepid, then adds one teaspoonful of the lotion to three parts of the water and uses the resulting tepid solution in the eye cup three minutes for each eye on the first two or three days, then for five minutes. After a rest of two minutes a drop of a solution consisting of one minim of Trunacek's solution in water, enough to make one dram, is instilled in each eye. The treatment is carried out by the patient three times a day, viz., in the morning, before tea or late dinner, and before retiring. An interval of one hour at least should always elapse before the patient goes out. After a week the salines in the lotion are increased to sixty grains and the Trunacek's solution to two minims, after the second week, to eighty grains and three minims, and later progressively by twenty grain and one minim amounts, up to 300 grains and fourteen minims. Some cases show signs of irritation after 200 grains, and the drugs are now changed to potassium iodide and sodium iodide in the lotion and iodolysine injection in the drops, these to be begun in the same strength as the initial preparations of salines and Trunacek's solution, and similarly increased in concentration later. Thereafter, potassium iodide may be combined with sodium acetate, or sodium iodide with potassium citrate. Sodium chloride is always added in the lotion. The drops may also be changed to dionin. In difficult cases nux vomica—tincture—is given internally in doses successively increased up to four drams, and the acetates and citrates of potassium or sodium likewise internally in amounts up to six drams in eight ounces of solution. The treatment is persisted in for six months in most cases and in some for twelve or more months. Anxiety and worry having much to do with the onset of the condition, the word cataract is not mentioned to the patient for some time, or until the opacities have cleared. The results among one hundred private patients under treatment not less than three months were, great visual improvement in forty-five per cent., improvement in forty-one per cent., stationary cataract in seven per cent., and no effect in eight per cent. Recently promising results were obtained in some cases of congenital cataract.

Rectangular Flap Incision.—Willy Meyer (*Journal A. M. A.,* November 17, 1917) discusses several methods of incision for abdominal operations and favors the Perthes rectangular flap method for many operations in the upper abdomen. This consists in making an incision in or near the median line, beginning close to the xiphoid and running straight down nearly to the level of the umbilicus: here a turn is made and the incision is carried horizontally to the anterior axillary line. In the vertical part of the incision all of the tissues are divided down to the posterior sheath of the rectus, but not through it. The muscle fibres may be divided bluntly in this part of the incision to avoid cutting through the rectus sheath. At the lower end of the vertical incision the second and third fingers of the supinated left hand are passed beneath the rectus until the outer edge of its sheath is felt. Then two parallel rows of horizontal sutures are passed through the rectus and overlying fascia and are tied. Between them the muscle is cut and the horizontal incision completed; the corner of the flap being next raised with a sharp retractor while the operator separates the skin and muscle flap from the underlying aponeurotic layer in the direction of the costal arch. This is done with a gauze pad. When the two intercostal nerves with their associated vessels appear this part of the dissection is completed and the abdomen is opened by an incision through the aponeurosis and peritoneum parallel to the costal arch and close to it. When the wound is closed the drainage can be brought out of either or of both ends of the rectangular cut. The aponeurosis and peritoneum are sutured with continuous catgut. The upper part of the patient's trunk should then be elevated, two rubber tissue drains placed on the aponeurotic layer, the anterior rectus sheath sewed up, the transverse incision closed, and the skin sutured with a running stitch of fine gut or silk. Before this last step the skin flap should be brought into position with a few silkworm gut sutures. The incision has the advantages of giving free access to the upper abdomen, of preserving the innervation of all the tissues, of having the skin and peritoneal incisions at different points, and of permitting extension in either direction.

Use of Normal Blood Serum.—Timothy Leary (*Boston Medical and Surgical Journal,* November 1, 1917) says that normal serum may be accepted as a natural physiological solution, readily miscible with the tissue secretions, and bland in its action, apart from certain toxic and anaphylactic properties now regarded as useful under proper control. It possesses natural antibacterial properties; it is the storehouse of the specific antibodies; it contains ferments capable of digesting tissue detritus and exhibiting other useful activities; it is employed successfully in controlling hemorrhage other than that form requiring mechanical control; it is fitted to serve as a culture medium for tissue; it is able to excite the protective machinery in a nonspecific manner, useful in therapy; it provokes a desirable leucocytosis, valuable in the treatment of infections. The requirements of an antiseptic agent are that it should be able to kill or prevent the growth of bacteria; that it must not injure cells; that its action must not be harmful to the natural wound defenses, but rather must serve to increase their efficiency; and that the technic of its application must be simple and require little or no apparatus. The writer then goes on to show how serum satisfies these requirements, the source of supply, and the precautions to be used in its preparation. He concludes that when to the antiseptic properties which it possesses, or provokes by its presence, we add its power to control hemorrhage and its stimulating and nutritive qualities for the cells needed in repair, there can be little question of the desirability of the serum of slaughtered healthy animals in the treatment of wounds.

Normal (Beef) Serum in Treatment of Wounds.—Joseph H. Shortell, William F. Cotting and Timothy Leary (*Boston Medical and Surgical Journal,* November 1, 1917) give as the essential principles in the treatment of open process with serum that when the dressing, gauze soaked with serum, is applied, it should touch every part of the wound and should be packed into blind pockets with dressing forceps, and that the dressing should be kept moist. When a cavity is present serum may be poured into the dressing, which is then changed only twice a day. The cavity is irrigated with serum whenever the dressing is changed. Deep sinuses should be irrigated every three hours. In cases of diffuse cellulitis, with through and through openings, irrigation is practised by means of a syringe into the rubber tissue or tubings used in the dressing. In the treatment of burns dressings are moistened *in situ,* and changed only once a day. Fresh wounds are cleansed, irrigated with serum, and sutured where it is possible to approximate the skin edges, and a serum dressing applied externally, not to be disturbed for three or four days, unless evidences of sepsis appear. Where the edges of the wound cannot be approximated, a serum dressing is applied, kept moist with serum, and not disturbed for five days, when the wound surface will be found covered with clean granulations. In compound fractures the skin is cleansed in the usual manner with soap and water, followed by alcohol. If the bone projects it is cleansed with soap and water, followed by saline, and reduction practised. The wound is irrigated with serum and closed; the serum which remains in the cavity before suturing is not dislodged. Dressings with large surfaces may be covered with oiled paper to prevent evaporation. Serum has been injected into the deep tissues in a few cases of diffuse cellulitis. Sixty-nine cases in all are reported from which the following conclusions are drawn: 1. Serum will control a septic process wherever contact is made between the serum dressing and the infected tissue. 2. It is absolutely harmless to normal tissue. 3. As a prophylactic agent in fresh wounds it is of value. 4. Serum is a most marked stimulant of granulations, and it is suggested that grafting can and should be practised earlier following the use of serum than under any other agent. 5. Injections of unheated beef serum are followed by rises in temperature, usually slight, perhaps with chill, but the reactions are short and not severe. Used as a dressing to wounds, no matter how large the surfaces are, it gives rise to no anaphylactic response.

Treatment of Bronchospirochetosis.—Aldo Castellani (*Journal of Tropical Medicine and Hygiene,* September 15, 1917) recognizes three types of this disorder: the acute, with fever, cough, rheumatoid pains, and scanty mucopurulent expectoration; the chronic, often insidious and slow in onset, with cough, occasionally hemoptysis, a normal or hectic temperature, and a few râles or actual consolidation simulating tuberculosis; and the intermediate group of subacute cases. The disease is not rare in the Balkans, and has been observed by Galli Valerio in Switzerland. The diagnosis is based on microscopical examination of the sputum, the patient gargling with sterile water before the expectoration is collected. Fowler's solution or pills of arsenic trioxide were found effectual in the treatment by the author. For profuse expectoration, glycerophosphates and balsamics proved useful. Of late, Castellani has been using in certain cases tartar emetic or a combined arsenic tartar emetic treatment; he has had success with the following formulas:

I.

℞ Antimonii et potassii tartratis, ...gr. v;
Sodii bicarbonitis, ...ʒss;
Glycerini, ...
Aquæ chloroformi, } ....ana ℥i;
Aquæ. ....q. s. ad ℥iii.
M. Sig.: One dram three times.. a day, diluted in water.

II.

℞ Antimonii et potassii tartratis,
Codeinæ .... } ana gr. ⅙ to ¼;
Syrupi tolutani, ...ʒi;
Aquæ chloroformi, ...q. s. ad ℥i.
M. Sig.: One ounce three times a day, diluted in water.

III.

℞ Antimonii et potassii tartratis, ...gr. ⅙ to ¼;
Potassii iodidi, ...gr. v;
Sodii bicarbonitis, ...gr. x;
Glycerini, ...
Syrupi tolutani, } ....ana ʒi;
Aquæ chloroformi, ...q. s. ad ℥i.
M. Sig.: One ounce three times a day, diluted in water.

IV.

℞ Liquoris potassii arsenitis, ...♏ii to iii;
Antimonii et potassii tartratis, ...gr. ⅙ to ¼;
Glycerini,......
Syrupi tolutani, } ....ana ʒi;
Aquæ chloroformi, ...q. s. ad ℥i.
M. Sig.: One ounce three times a day, diluted in water.

Posttransfusion Reactions.—Henry E. Meleney, Wilbur W. Stearns, Stanley T. Fortune, and Ronald M. Ferry (*American Journal of the Medical Sciences,* November, 1917) review 280 transfusions performed in the wards of the Presbyterian Hospital, New York, and conclude that transfusion is of real value in cases of hemorrhage, in clean operative cases, in pernicious anemia, and in some secondary anemias, and that it is of little or no value in septic operative cases and in cases of bacteriemia or of acute leucemia. The sodium citrate method is simple and satisfactory. A dilution of citrate up to 0.5 per cent. in 1,000 c. c. of blood can be used without producing toxic symptoms in an adult, and this dilution prevents clotting better than one of 0.2 per cent. Blood grouping should always be carried out before a transfusion. Failure to determine the compatibility of the bloods may result in the sudden death of the patient. Posttransfusion reactions of varying degree occurred in 63.6 per cent. of their cases, all evidenced by a rise of temperature to 100° F. or more. A recipient in good general condition is more likely to have a reaction than one in poor condition. The method of transfusion, the blood relationship of donor and recipient, and the blood group of recipient seem to have nothing to do with its occurrence. A transfusion of less than 200 c. c. is less likely to be followed by a reaction than one of a larger amount. The more transfusions given a patient the more likely he is to have a reaction, especially if the same donor is used many times. The blood of some donors is more likely to cause a reaction than that of others. In some cases the reaction is accompanied by a marked polymorphonuclear leucocytosis.

Auricular Fibrillation.—Frederick W. Price (*Practitioner,* November, 1917) defines auricular fibrillation as a condition in which coordinate contraction of the auricle is replaced by incoordinate contraction. The individual fibres, instead of contracting in an orderly and simultaneous manner, do so rapidly and independently of each other, with the result that systole of the chamber as a whole never takes place. When this has once set in it persists for the rest of life in the majority of cases, though paroxysmal cases occur in which attacks occur at infrequent intervals. In the great majority of cases it is indicative of some myocardial disease. The degree of cardiac failure which results from it may be slight or very severe; this depends on the rate of the ventricular action and the degree of muscular defect. The onset of symptoms is gradual as a rule, but may be rapid. After discussing the effect of auricular fibrillation on the heart, the etiology of the condition and its symptomatology, the writer commends highly the use of digitalis. Whether there is mitral disease, aortic disease, or disease of the myocardium, if the ventricular rate is rapid, digitalis or one of its allies should be administered, the results in the majority of cases being very good and in some cases extraordinarily good. There is a rapid fall in the pulse rate and a concomitant improvement in the general symptoms. Two exceptions are some cases of well marked myocardial degeneration, and, cases in which there is accompanying pyrexia. He is accustomed to begin with a dram of the tincture a day or in urgent cases one and a half or two drams, to continue until there is nausea or vomiting, diarrhea, headache, an unduly slow pulse, or what is called coupling of the beats. The drug is then stopped until these symptoms have passed away, which is generally in a few days. A relapse usually follows and then the indication is to find out what dose suits him best, that is, the dose sufficient to control the action of the heart without giving rise to toxic symptoms; this may require weeks or months of careful observation. He generally begins with half of the original dose and increases or diminishes this as the rate of the heart is affected. Help may frequently be obtained from the patient who is often able to say what dose suits him best. The necessary dose varies widely; it may be as small as a dram of the tincture a week, or as large as forty-five minims or more a day. Having discovered this dose it will be necessary in the majority of cases for the patient to continue the use of the drug for the rest of his life, though variations in the dose may be found necessary in the course of time. Price thinks that the cumulative action of digitalis is apparently not nearly so important as has been believed, but at the same time he urges watching the pulse. Coupling of the beats is a danger signal, at which we should either stop the drug for a few days or diminish the dose. When auricular fibrillation is not accompanied by a rapid pulse, no decided result usually follows the administration of digitalis, and it is often difficult to say how far it aids the other measures adopted in securing improvement. In urgent cases of cardiac failure in which a more speedy result is desired than is possible from the administration of digitalis by mouth, he gives an intravenous injection of strophanthin, either one dose of 0.01 grain, or two or three doses of 0.004 grain every two hours, followed by the administration of tincture of digitalis by the mouth when advisable.

Preparation of Prostatics and Their Aftertreatment.—W. L. Champion (*Urologic and Cutaneous Review,* November, 1917) considers it of importance to have the patient drink water freely for forty-eight hours before operation, continuing up to the time of operation. The system should be under the influence of hexamethylenamine and the digestive tract should be clean, but not with a severe purgative the night before the operation. The operation should be performed quickly but with due regard to checking hemorrhage. He employs a catheter for drainage and finds the results much better. After operation a pint of warm water containing a dram of sodium bicarbonate is given per rectum. This should be repeated every five or six hours. If the patient is restless an injection of 0.25 grain morphine sulphate may be administered. As soon as water can be given by mouth it should be administered freely and thirty to forty grains of hexamethylenamine should be given every twenty-four hours. On the third day, if the stomach permits, two ounces of castor oil should be given. If there is discomfort on account of gas, order high enemas of olive oil and glycerin, two ounces each. The bladder should not be irrigated until all danger of hemorrhage is passed.

Results of Antityphoid Vaccination.—H. Vincent (*Presse médicale,* October 4, 1917) states that the French military typhoid vaccine laboratory has delivered for use among the troops no less than 5,513,073 doses of vaccine since the beginning of the war. As a result, the typhoid and paratyphoid morbidity progressively decreased from 7.24 per mille in December, 1914, to as low as 0.025 per mille in March, 1917. The mortality in August, 1917, was but 0.3 per 100,000 men. Supposing the incidence and mortality from November, 1914, to January, 1915, to have continued throughout the thirty-eight months of war, Vincent estimates that the cases of typhoid in the French army during this period would have exceeded 1,000,000 and the number of deaths 145,000. Comparing present conditions with those existing even in time of peace, viz., in the year 1911 he finds the incidence to be now seven times less and the mortality eight and one half times less.

Intramuscular Injections of Specific Serum in Cerebrospinal Meningitis.—Fanciulli Francesco (*Gazzetta degli ospedali e delle cliniche,* October, 4, 1917) from the results obtained by the intramuscular injection of specific serum in twelve cases of cerebrospinal meningitis concludes that this method is equally as efficacious as the intraspinal. It suffices to give ten c. c. every twenty-four hours, or in grave cases every twelve hours until thirty or forty c. c. have been administered. Its action is more satisfactory when given early in the disease, and when a case is seen late in its course it is preferable to do a lumbar puncture followed by an intraspinal injection to obtain a more rapid effect. The cases were treated at home without isolation and without any disinfection except of the bedclothing, and in no family did a second case arise.

New Dietetic Treatment of Diabetes.—P. J. Cammidge (*Lancet,* October 6, 1917) emphasizes the importance of dietetic regulation in the treatment of diabetes and lays special stress upon the need for the very accurate control of this treatment. The administration of carbohydrate should be controlled by the sugar in the urine, but more especially by the blood sugar, that of the protein by the nitrogen balance as determined from the urine, and of fat on the basis of the acidosis and the amount of carbohydrate which the patient can take. The last is of importance since it has been proved that fat is completely burned in a direct ratio to the amount of carbohydrate which is available for consumption and which is consumed. Each patient should be studied from all of these aspects and the diet painstakingly adjusted to his absolute needs. Periods of fasting are of value, as is the Allen treatment, but neither should be employed in a routine way. The giving of large amounts of fruits and vegetables is of great importance since they are the chief sources of alkalies for the body and go a long way in the maintenance of an alkali balance. It is often more harmful to allow a slight excess of protein or of fat than to permit an excess of carbohydrate to the extent of producing a slight glycosuria. The special diabetic foods should never be given without knowledge of their exact composition and allowance for their protein content.

Radium Therapy in Gynecology.—Carlos A. Castano (*Revista de la Asociation medica Argentina,* June, 1917) states that in his rather extensive experience radium should not be considered as a panacea, and that other treatment should always be used at the same time. However, radium should always be resorted to when other agents have failed. In epithelioma it is the treatment *par excellence,* although Castano believes that the cures of carcinoma so often reported following its employment are clinical and not anatomical.

Management of Decubitus.—William Browning (*Medical Record,* October 13, 1917) describes the treatment carried out at the Kings County Hospital and states that certain preliminaries are necessary for success, namely, a hospital personnel which can be absolutely depended upon, scrupulous cleanliness, frequent change in the patient's position, and the use of cushion rings and other substitute points of rest. A convenient way to meet the various indications is to cleanse the ulcer with plain boiled water as hot as can be handled and then finish with the application of a cold solution of formalin in one half per cent. strength. Finally a dressing is applied of bismuth subiodide which is changed at least two or three times daily.

Hysterical Deafness in Soldiers.—A. F. Hurst and E. A. Peters (*Lancet,* October 6, 1917) report the prompt cure of two cases of absolute deafness, associated with normal vestibular reactions, which they regard as being characteristic of true hysterical deafness. In both patients the condition had resisted all methods of encouragment and suggestion. Then the patients were assured that they could certainly be cured by an "operation." Under very light ether anesthesia a small skin incision was made behind the ear and at once an iron plate was hammered violently close to the ear. One of the patients jumped off the table at this point, and both were permanently cured.

Colloidal Sulphur.—A. Cawadias (*Bulletin de l'Académie de médicine,* September 25. 1917) administered intravenous and intramuscular injections of colloidal sulphur in subacute rheumatism, with prompt and complete results, pain ceasing, deformity showing retrogression, and joint functions being restored. The intramuscular injections, without causing the marked reactions which followed intravenous injections, yielded equal results. Subacute and chronic rheumatic cases subjected to chemical analyses showed elimination in the urine of a large amount of sulphur in the form of sulphates, phenylsulphates, and incompletely oxidized sulphur. In the twenty-four hours following administration of colloidal sulphur, the amount of sulphur in the urine decreased, and the reduction of sulphur elimination became constant as recovery set in. During convalescence, sulphur nutrition was improved and the amount of sulphur containing wastes gradually returned to normal. On the white blood cells it exerts an action comparable with that of metallic ferments. The leucocyte count falls immediately after the injection, but rises again some time later. The mononuclears increase. There is thus clearly a leucolytic action, noted likewise when colloidal sulphur is injected in leucemic cases.

Miscellany from Home and Foreign Journals

Antityphoid Vaccination.— Major E. Rist (*Journal of Laboratory and Clinical Medicine,* October, 1917), while in charge of the typhoid department of a French military hospital, studied the agglutination curves in all cases giving positive blood cultures to ascertain if a clue could be obtained for interpreting diagnostically the same curves in patients giving a repeatedly negative blood culture, but with clinical signs of typhoid, and in addition, he studied the agglutination in evidently nontyphoid patients previously vaccinated against Bacillus typhosus. The French army at that time was vaccinated with Bacillus typhosus only. The routine method of diagnosis was blood culture, and whatever the result of this was, the serum of all patients was tested for its agglutination power with every one of the three organisms: Bacillus typhosus, Bacillus paratyphosus A, and Bacillus paratyphosus B. The quantitative rates of agglutination were plotted. The microscopic method was used with a twenty-four hour old broth culture of a standard, not spontaneously agglutinating germ. In the study of 128 nontyphoid cases, previously vaccinated, ninety-four, or 76.5 per cent, gave a positive Widal test. It appears, from a table showing a wide range of conditions in which agglutination took place, that any disease, with the single exception of measles, is capable of temporarily increasing the agglutinative power in previously vaccinated persons, or of renewing it after it has disappeared. Rist states that the agglutination test in people previously vaccinated against Bacillus typhosus is of no value in determining whether a typhoid infection is present. His 166 previously vaccinated typhoid and paratyphoid cases showed the following interesting results: The agglutination test was negative or uninterpretable in eighteen cases, or 10.8 per cent.; it was altogether misleading in eighty-five cases, or 51.2 per cent.; it was first misleading and ultimately correct in twenty-five cases, or 15.1 per cent. and altogether correct in thirty-eight cases, or 22.8 per cent. Attention is called to the fact that the error always tends toward mistaking paratyphoid for typhoid, and never the reverse, so that a diagnosis of paratyphoid A or B may be assumed to be the correct one if the agglutination titre of one or the other clearly and constantly predominates during the course of the disease. This, however, is a rare finding, as in the majority of cases the agglutinating titre for Bacillus typhosus predominates. It has no diagnostic value, as the probability of mistaking paratyphoid for typhoid is 75.7 per cent. In the forty-two nonvaccinated cases of typhoid and paratyphoid, if the twelve negative or uninterpretable results are discarded, the test is altogether misleading in 16.6 per cent., of the cases; at first misleading, and ultimately correct in ten per cent., and altogether correct in 73.3 per cent., so that in nonvaccinated individuals the agglutination test is of practical value in diagnosing infection caused by the bacilli of the typhoid group. The only reliable method of finding out if typhoid in a vaccinated individual is due to Bacillus typhosus or a paratyphoid germ is blood culture.

Spirochetes in the Urine.—James L. Stoddard (*British Medical Journal,* September 29, 1917) calls attention to the fact that there is trustworthy evidence for the belief that spirochetes may be excreted in the urine in patients suffering from the spirochetal diseases. This fact has been made use of in the diagnosis of these diseases, but the author calls attention to a possible great source of error in the frequent occurrence of spirochetes of various types in the urine of both normal men and in those ill with diseases not of spirochetal origin. Thus in fifty surgical and medical cases not suffering from spirochetal disease the urine was found to contain spirochetes in fifty-six per cent. and in an equal number of healthy, normal men in twenty-two per cent. It was found that these spirochetes were largely contained in the urethra or about it and contaminated the urine during its passage. It was not possible, however, by washing the urethra by interrupted urination to be sure of avoiding such contamination. The spirochetes could not all be readily recognized and differentiated and until some differential staining method is elaborated the examination of the urine for the purpose of diagnosing spirochetal disease is fraught with the danger of giving a wholly erroneous result.

A Dysidrosiform Eruption from Manipulation of German Shell Powder.—G. Milian (*Paris médical,* October 13, 1917) reports concerning a condition witnessed as a result of the dropping of a a large German air service bomb in a shop at Epernay, France. The bomb had failed to explode, but had broken into pieces, scattering about five litres of yellow powder widely over the floor. Five men were occupied for two hours in clearing the premises of the powder and shell fragments, and their hands were at once colored yellow, the discoloration persisting undiminished for two weeks. No symptoms appeared till the thirteenth day, when sharp itching was noted, preventing sleep and followed by swelling and an eruption, in part vesicular and suggesting scabies. One patient, who had walked about over the powder in worn felt slippers, had enormously swollen feet. In this case, the eruption on the hands persisted twelve days, in the others, only four or five days. A striking feature of such an eruption, apart from its twelve day latent period, is the canary yellow color of the palmar surfaces of the hands and wrists, with the dorsa unaffected. In the severe cases the eruption went on to the formation of blebs and phlyctenulæ. It was preceded by some dyspnea, cough, and a slightly hemorrhagic sputum. The treatment consists in careful cleaning and prolonged immersion in weak antiseptics such as boric acid solution. Wet dressings relieved the itchings only when changed sufficiently often to keep them from becoming warm. Prophylaxis consists in avoiding all contact of the skin with the yellow shell powder, and upon contact, of washing the parts carefully several times a day with soap and hot water. The noxious substance responsible for the disorder is believed to have been trinitrotoluol.

Bacteriological Investigation of Feces and Bile of Cholera Cases and Carriers.—B. C. Crowell and J. A. Johnston (*Philippine Journal of Science*, March, 1917) note that while, during the year 1916, 1,340 cases of cholera and 513 cholera deaths occurred in Manila, there were also detected, among 243,974 persons examined, 1,643 cholera carriers, or 0.67 per cent. of the whole number. As in typhoid fever, the carrier state in cholera has been shown to be intimately related to gallbladder infection. Examining recently, the intestinal contents and bile of 212 cases of cholera, the authors found the vibrio in the bile in 65.2 per cent. of cases and in the bile alone in 5.7 per cent. Among thirty-two cholera carriers detected after death, the vibrio was found in the bile in seventy-five per cent. of cases and in the bile alone in 43.7 per cent. Thus, in cholera cases, the organism is occasionally recoverable from the bile where absent from the feces, and routine examination of both bile and feces is an important feature. A study of thirty strains of nonagglutinable vibrios, isolated from the feces and bile of cholera cases, cholera contacts, and others, was made. Upon growth in bile eight of these strains acquired the property of agglutinability by high titre cholera immune serum. In six cases that were clinically and anatomically cholera, the vibrio could not be isolated from either feces or bile.

Heart Disturbances the Result of New Asphyxiating Gases.—C. Fiessinger (*Bulletin de l'Académie de médecine*, September 25, 1917) points out that, besides the pulmonary, gastrointestinal, and nervous types of gas intoxication, there exists a more recent, as yet less common type in which manifestations similar to those witnessed during laboratory studies of nitrogen fixation and in the manufacture of nitric acid are observed. The intoxication in the soldier is, however, sudden and overwhelming instead of gradual. Dizziness is experienced; the lower limbs give way; there is burning from the throat to the epigastrium; dyspnea, vomiting, and salivation appear; the extremities become cold; and unconsciousness, which may last several hours, follows. Later the weakness of the limbs, pallor, burning and vomiting persist, and the pulse rate at times descends to thirty or even twenty-five a minute, with weak heart sounds and occasionally an auricular extrasystole. The blood pressure remains low and the urine may show traces of albumin. For a period of three to six months, syncope occurs whenever an attempt is made to rise from recumbency; later, the normal pulse rate and amplitude gradually return, but general weakness persists for a long time. In similar, though milder, conditions among laboratory workers, hydrocyanic acid was detected. Slow poisoning with syncope several times a day, and mild forms with mere slowing of the pulse, the latter especially through incomplete combustion of motor fuel, are also observed. The medullary functions relating to the heart and gastrointestinal tract seem to bear the brunt of the intoxication. The treatment comprises venesection, injections of ether and camphor, bismuth, theobromine, small doses of caffeine and strychnine, and rest in bed for months. Digitalis acts poorly and adrenalin is uncertain.

Renal Function in Gout.—C. W. McClure (*Archives of Internal Medicine*, November, 1917), applying various functional renal tests in five gouty patients with tophi as well as in two nongouty patients, noted that in all the gout cases there was definite depression of renal function as measured by some of the tests. A considerable increase in both the nonprotein and urea nitrogens in the blood was observed in all but one case, and the two hour renal test gave clear evidence of disturbed function in four cases, with suggestive evidence in another. Many of the findings heretofore considered due to disturbed nuclein metabolism in gout may be explained as results of renal inadequacy, e. g., the faulty elimination of exogenous uric acid and of other nitrogenous substances. The prevailing theories as to the etiology of gout remain hypotheses without satisfactory experimental bases. The study of exogenous uric acid elimination as an aid in the diagnosis of gout is, moreover, rendered questionable by the knowledge that renal inadequacy may be responsible for poor elimination.

Pneumococcic Infection Simulating Typhoid Fever.—S. I. de Jong and G. Magne (*Paris médical*, October 13, 1917) describe a symptom complex observed in a number of Algerian or Creole riflemen so resembling that of typhoid fever that all the patients were sent to a special hospital with that diagnosis. All showed prostration, a temperature frequently exceeding 40° C., a coated, dry tongue, a rapid pulse, never dicrotic, frequently a slightly enlarged liver and markedly enlarged spleen, rather severe abdominal pains of varying situation, nearly always marked constipation, and sometimes vomiting. A few disseminated râles were noticed, and exceptionally a few localized subcrepitant râles, which soon disappeared. Upon more careful inquiry, the condition was found to have arisen suddenly sometimes during a drill, with a pronounced chill, at times with vomiting, followed by a definite rise in temperature. Diarrhea and the rose spots were wanting, and the spleen was larger than in typhoid. In a few instances, early in the disease, there were noted slight neck rigidity, delirium, and a beginning Kernig sign which for a short period suggested a diagnosis of cerebrospinal meningitis. The final reduction in temperature was always rapid and sometimes sudden, and at times was preceded by temporary weakening of the pulse and restlessness, as before the typical pneumonia crisis. The essential feature is asserted to have been the absence of special involvement of any single organ. Death occurred in but one case, the autopsy showing acute hemorrhagic pericarditis, small disseminated foci of bronchopneumonia, greatly enlarged tracheobronchial lymph nodes, some with suppuration, the spleen riddled with pyemic abscesses, and the liver with incipient abscesses. Bacteriological study showed the case to have been one of pneumococcic septicopyemia. Of twelve cases examined six yielded a positive pneumococcus blood culture. Formerly, such cases would probably have been labelled gastrointestinal grippe. A similar featureless symptomatology has often led to confusion with either typhoid or grippe. Frequently, as in the cases reported, the condition giving rise to such symptoms turns out to be a pneumococcosis.

An Invisible Germ Antagonistic to the Dysentery Bacillus.—F. d'Hérelle (*Presse médicale*, September 20, 1917), in some patients convalescent from dysentery, noticed that disappearance of the dysentery organism was synchronous with the appearance of an invisible germ antagonistic to it. This germ is an obligate bacteriophage; it antagonizes but a single pathogenic organism at one time, but upon prolonged contact can antagonize one of a variety of other organisms. It is thus, in a sense, a factor in immunity. Similar, though less marked, antagonism to pathogenic organisms was observed in two cases of paratyphoid fever.

Eczema.—Dr. Bloch (*Correspondenz-Blatt für Schweizer Aerzte*, September 29, 1917) in order to prove that eczema may originate from an internal cause, induced a young physician whose skin reacted to formol with an eczematous eruption, to take 0.5 gram of urotropin three times a day. At the end of three days eczema appeared and increased in severity as long as the drug was continued, but gradually passed off after the drug was stopped. The eczema was ascribed to the formol set free in the tissues by the decomposition of the urotropin. This furnishes us the first proof obtained that eczema can be produced by an internal cause, through the introduction of a certain, chemically defined substance.

Lymphocytosis.—J. Marion Read (*Boston Medical and Surgical Journal*, November 15, 1917) says that lymphocytosis occurring in tuberculosis is more apt to be relative than absolute and is more marked in healed cases. A leucocytosis in syphilis is less frequent than in tuberculosis, but an absolute lymphocytosis, especially when accompanied by eosinophilia, is suggestive of luetic infection. Those cases of syphilis which show a lymphocytic increase are most apt to have a positive Wassermann reaction. An absolute increase in lymphocytes is often accompanied by an eosinophilia. Chronic mouth infections, especially when associated with diseased or hypertrophied tonsils, cause an increase in the mononuclear elements of the blood.

Traumatic Glycosuria.—F. Rathery (*Bulletin de l'Académie de médicine*, October 2, 1917) presents a study of glycosuria in 1,412 wound cases. The first urinary test was made two to four hours after injury and a second after one day's urine had been collected. Glycosuria was met with in sixty instances, or 4.17 per cent. of the entire series. It occurred in the presence of contusions as well as in open wound cases, and was over twice as frequent in subjects with two or more injuries than in those with a single injury. Severity of the wounds did not, however, govern the frequency of glycosuria, in which individual constitutional peculiarities are evidently an important factor. Wounds of the extremities were the most frequently followed by glycosuria, the head coming next. None of the cases of violent commotion, as by explosion of a torpedo nearby, examined showed glycosuria. The amount of glycosuria was usually from two to twenty grams a litre, occasionally thirty or thirty-five grams. As a rule the condition persisted only two or three days, though in one it lasted two weeks and in another several months.

Clinical Diagnosis of Lithiasis of Upper Urinary Tract.—Edward L. Young, Jr. (*Journal A. M. A.*, November 3, 1917) points out that symptoms in themselves are no more than suggestive at best and may be quite misleading. Various conditions may cause symptoms which closely simulate stone in the upper urinary tract, such as inflammation of the seminal vesicles. Uranalysis may afford some evidence of stone, but it also may be either negative or misleading. The most satisfactory means available is the use of the x ray, but this alone cannot always prove the presence of stone, does not always prove that a shadow which may be stone is really in the urinary tract, and fails to reveal some stones which are present. It may be aided by the injection of the ureter and pelvis with thorium or the passage of an opaque catheter. The use of the wax-tipped catheter may also prove the presence of a stone, or a stone may be present and not leave a mark on the catheter. From all of these facts it is evident that no single method of examination can be relied upon to yield a correct diagnosis in all cases and the conclusion is obvious that if we are to make the minimum of failures and errors in diagnosis we must employ all of the methods at our command.

Results of Treatment of Chest Wounds.—T. R. Elliott (*Lancet*, September 8, 1917) analyzes the results of treatment in 170 cases, excluding those which died in base hospitals and many others which could not be traced. The impression is gaining ground that these wounds have a high mortality, but it is a striking fact that if the victims survive the first month their wounds very rarely prove fatal subsequently or seriously disabling. Lung laceration, *per se*, is of little moment in prognosis as it heals rapidly and is seldom a source of sepsis or spreading local infection. Simple traumatic pneumothorax is wholly benign even without treatment. Sterile hemothorax, if aspirated to prevent large clots, is almost always promptly and completely recovered from, and secondary aspiration is seldom required because there is little tendency to repeated hemorrhage or extensive serous effusion. Small primary effusions do not require aspiration. Large, clotted, sterile hemothorax frequently fails to give a good result owing to interference with subsequent lung expansion. Where sepsis occurs in large clots recovery is likely to be rapid and complete under drainage on account of digestion of the clots and their prompt discharge. With early and efficient drainage the vast majority of men with septic hemothorax recover with little or no permanent disability if they survive the first two weeks. During the first two weeks, however, this is a very fatal form of chest injury, having a mortality of nearly fifty per cent. In aseptic chest wounds retention of the foreign body causes no harm. The conservative plan of surgical noninterference is justified only in cases free from sepsis. Surgical intervention is essential in all cases of the following types which survive the initial hemorrhage: 1. Cases with air suction and blood leakage through large open holes. 2. Cases with tangential wounds and severely comminuted ribs. 3. Those with large retained shell fragments.

Proceedings of National and Local Societies

THE AMERICAN LARYNGOLOGICAL ASSOCIATION.

Thirty-ninth Annual Meeting, Held at Atlantic City, N. J., May 28, 29, 30, 1917.

The President, Dr. JOSEPH L. GOODALE, in the Chair.

(*Continued from page 915.*)

Serial Frozen Sections of the Thorax from a Case of Aneurysm of the Aortic Arch.—Dr. GEORGE FETTEROLF and Dr. GEORGE W. NORRIS, of Philadelphia, made a report in which the main points of interest were as follows: 1. Photographs of the patient obtained at various periods during life showed successive steps in the growth of the protruding mass. Frozen sections were made of a case which had had careful clinical study, and as a result, conditions as they had existed *in vivo* could be accurately reproduced and deliberately studied after death. Search of the literature revealed the fact that this was the first opportunity of this kind which had arisen and been taken advantage of. The exact site of rupture and the cause and mode of death could be determined and depicted with a degree of accuracy, certainty, and detail which would be impossible of attainment in an ordinary autopsy. The hydrothorax, the pulmonary atelectasis, and the extreme dyspnea were explained in a manner which by any other method of study would have been much less satisfactory, if at all possible. The last statement was equally true of the anatomical relations. The altered position and general changes in the bronchial tree and other thoracic contents were depicted in such a graphic manner as to show to the laryngologist and internist alike what took place in the presence of such a lesion as this large aneurysm. It also suggested what might take place in some future clinical cases in the presence of other disturbers of the normal intrathoracic relations.

Dr. GREENFIELD SLUDER, of St. Louis, said that we were constantly dealing with disturbances that seemed trivial, which, if we bore in mind the relations within the chest, were frequently separated and put into a more serious category. Within the past three months he had, as it were, picked up two aneurysms of the aorta by virtue of dislocation of the windpipe, recognized in the laryngeal mirror, and a number of times he had outlined the same dislocations within the mediastinum, depressions of the windpipe, as a means of recognizing mediastinitis. Sometimes they were not of tuberculous origin; more frequently he believed it to be tuberculous. In one case that proved exceedingly desperate, the infection was a primary tracheitis going on for a length of time with mediastinitis and depression of the windpipe.

Stereoscopic Röntgenograms of the Head.—Dr. J. M. INGERSOLL, of Cleveland, stated that stereoröntgenograms gave definite information in regard to the nose and the nasal accessory sinuses, the brain and many of its bloodvessels, the ear, and the mastoid, which could not be obtained in any other way. If the surgeon carefully studied the stereoscopic pictures before operating, compared his interpretation of the picture with the condition which he found at operation, and then studied the picture again after the operation, he would soon acquire great skill in interpreting the stereoscopic plates. Stereoscopic plates should be examined from both sides. First, put the plates in the stereoscope with the film sides toward the mirrors. This would show the structures as in the operation, with the external parts in the foreground and the deeper structures in the background. Then by reversing the plates in the stereoscope, turning the smooth sides of the plates toward the mirrors, the structures would be seen from the inside of the skull. The technic for making stereoscopic anteroposterior radiographs through the frontal sinuses was described, as also the technic for making stereoröntgenograms of both mastoids on a single pair of plates.

Normal and Diseased Sinuses of Children.—Dr. LEWIS A. COFFIN, of New York, showed a double series of slides from x ray plates of children's heads from one to fifteen years of age, one series showing normal and the other diseased sinuses. He said that one of the interesting points connected with the getting of the plates was the fact that nearly all the plates showing disease had been obtained from x raying the heads of children from an eye ward of the Manhattan Eye, Ear and Throat Hospital without selection, and that practically any case in that ward showed sinus disease. He believed that this was strong presumptive evidence of the dependence of many eye conditions on the diseased accessory sinuses. He called attention to the frequent involvement of the antrum, and stated that in this condition he saw the frequent cause of atrophic rhinitis and practically the universal cause of true ozena.

Dr. ROBERT C. MYLES, of New York, said he had never heard of a case which occurred after puberty. Sinus disease seemed to be essentially a disease of child life. How much of it was retarded development and how much atrophic was another question. The best operative procedure in children could be developed in the future. In older patients his experience had been that at any age the best results, with regard to odor and continuance of discharge were obtained by opening the antrum.

Dr. J. M. INGERSOLL, of Cleveland, asked Doctor Coffin whether these patients were operated upon endonasally or through the canine fossa, and what results were obtained. It seemed that we should not consider here the question of atrophic rhinitis. If this was to be a discussion on the origin of atrophic rhinitis, how did the orbital fissure from the anterior half atrophy also in the process? There was no sinus opening into that region.

Dr. HENRY L. SWAIN, of New Haven, said that Doctor Coffin's assertions were astounding. He stated that he had further evidence of the origin of atrophic rhinitis in children; that he thought he could cure odor by opening up the antrum, and he presupposed that these diseased antra began in childhood, produced atrophic rhinitis, and continued through years of life; and that he cured atrophic rhinitis of at least the odor by opening up the antra. Doctor Swain said he thought those statements rather bold and he would like to hear them commented upon. Personally he had examined his statements and believed he was right.

Dr. Hanau W. Loeb, of St. Louis, stated that so called purulent rhinitis was exceedingly common, and from the fact that the nasal mucosa was affected, it was easy to understand that any of the sinuses more directly connected with the nose in childhood than in adult life should be similarly affected. If the mucosa of the antra was thickened in an existing case of suppurative rhinitis, it was very natural that it should show on the screen. That explained, to his mind, why in so many of these cases Doctor Coffin was able to find evidence of obscuring of the antral fistula. However, this was an exceedingly common condition, and as atrophic rhinitis was fairly uncommon, Doctor Coffin should explain why so many got well without the production of atrophic rhinitis.

Dr. Norval Pierce, of Chicago, believed that some of these pictures were misleading. Last winter he had two cases, in children from four to six years of age, where the röntgenological picture showed anterior disease, in one case bilateral and in the other case unilateral. He washed out three of these antra and found them quite dry. We must check up these cases of supposed disease of the sinuses by other means than the x ray.

Dr. Robert C. Lynch, of New Orleans, said that down south he saw a number of cases of atrophic rhinitis. He wondered, in the case of two children two and one half years old, twins in the same family with well developed atrophic rhinitis, whether they had lived long enough to go through the period of inflammatory changes to give them atrophy. He did not believe they were due to simple sinus disease.

Dr. J. M. Ingersoll, of Cleveland, said that the stereoscopic pictures gave new ideas in regard to anatomical relations. Unless a man used stereoscopic radiograms long enough to become familiar with them, and developed some skill in interpreting them, he was liable to stop using the method. Shadows over the accessory cavities in the x ray, whether stereoscopic or other plates, made one suspicious of involvement of the sinuses of the nose. He regarded them simply as confirmatory evidence. A sinus which had a thickened mucous membrane cast a darker shadow than one with a normal mucous membrane. The variations of the bone structures themselves, or part of the other bones beyond coming into the field, made one sinus appear darker than another. The bones varied and a dark sinus alone, as seen in the plate, should make one only suspicious of that cavity.

Doctor Coffin, closing the discussion, said that since every case of atrophic rhinitis generally brought out something like adenoids and tonsils he would convince Doctor Loeb at least that it was so common that almost all the children in a hospital ward showed disease of this kind. In answer to the question as to whether these all went on to atrophic rhinitis, he thought not. Some got well; but all the cases shown were chronic cases. There were changes in the lining membranes of sinuses that the microscope and pathologists could tell us. There were latent sinusitis cases in which the x ray did not show much. He had operated in one case and found no free pus and no pockets of pus, but every bit of tissue taken away the pathologist would tell you was covered with disease. The antrum frequently showed dark under the x ray; you could not even get water through, and yet there was no pus. He did not know what the degeneration of that membrance was, but it was full of polyps. In regard to opening up the antrum and getting rid of the odor, because it was just as easy to do this in atrophic cases, go home and try it. He had one case in which the odor was as bad as you could think, and the patient had never been treated for ozena; nothing had been done but the antrum opened. In some of the cases he purposely left the ethmoids to pustulate and scab, in order to see the scabs without the odor, but the antrum was clear.

Intranasal Drainage of the Frontal Sinus.—Dr. E. Fletcher Ingals, of Chicago, believed that in a large majority of cases of chronic frontal sinus disease, free drainage was all that was necessary, and that vigorous curettage was a bad practice, although gentle removal of polypi or granulation tissue with a curette, if present, would undoubtedly hasten the cure. The furor for extensive mutilating operation on the frontal sinus had had its day. The writer's attention was first called to the benefit obtained from intranasal treatment in 1893, when he succeeded in curing two cases by intranasal treatment, as neither of the patients would consent to an external operation. As drainage into the nose was a prerequisite for treatment, he devised a burr with a safety guide to be run into the nasofrontal duct so that the duct could be enlarged permanently. This burr made a canal six millimetres in diameter, which, however, had a tendency to contract. To prevent this, a metal tube was inserted into the canal. This metal tube was superseded by the spring gold selfretaining tube now in use. This might be worn for a number of years and permitted free irrigation by the patient. He believes that the operation could readily be performed by a properly equipped laryngologist, and placed the percentage of recovery of suitable cases as high as ninety-five per cent. The instruments used were described, as also a detailed account of the manner of operating.

Intranasal Treatment of Accessory Sinus Diseases.—Dr. Robert Cunningham Myles, of New York, stated that on account of the failure to secure uniformly good results, in antral suppuration, he made use of the malar ridge and canine fossa route; and after due consideration it was noted that favorable conditions nearly always followed when the window through the inferior nasomeatal wall was not less than fifteen millimetres in diameter and never contracted to less than about ten millimetres. The writer continued to prefer a nasal route to the antral one for operation on the sphenoidal cells, and strongly advocated making large openings in the anterior walls. Partial success in an attempted submucous and subperiosteal operation on the anterior wall previous to removal of the bony wall, and the utilization of the membranes for covering the lower sections of severed bone, encouraged the belief that this procedure would aid materially in preventing the too frequent closure of the sphenoidal openings. In ethmoidal cases the classical operations of removal of the middle turbinal, the floors and the median walls of the cells were carried out. Progress in the intranasal treatment of frontal sinus diseases centered around the methods for making permanent large openings from the nose into the sinuses. After removal of the anterior end of the middle turbinal and the anterior ethmoidal cells, the writer used improved designs of his outward cutting chisels for removing as much as possible of the part of the floor of the sinus formed by the nasal process of the superior maxillary bone. Several of the most useful models were presented.

Dr. Joseph H. Bryan, of Washington, D. C., said that he was not always able to open up the frontal sinus and had found many irregularities in the accessory sinuses, particularly in regard to the frontal in relation to the ethmoid. He was sure that no such method as Doctor Ingals recommended could cure such cases as he had had. He had had considerable experience in acute catarrhal or an acute suppurative inflammation of the frontal sinus and had never operated. In chronic cases there was nearly always caries of the frontal region, and it was not possible to cut the bone out or cure the condition by simple drainage, which this method was directed to, as he understood it.

In Doctor Ingals's hands, undoubtedly, the entering of the frontal sinus was practically an easy method, but was it a safe or easy method for the average rhinologist?

Dr. Henry L. Swain, of New Haven, said that there was a vast field for the procedures of Doctor Ingals in the medium cases, and in the severe cases he believed, in Doctor Bryan's method. Like Doctor Bryan he was afraid to use the internal method in severe cases, from his knowledge of it from Doctor Ingals's description alone, even though it was profusely illustrated. Three cases with spontaneous external perforations into the orbital cavity and one where the disease went through the front plate of the frontal sinus on to the forehead, got well simply by ordinary curettement of the frontal nasal duct and opening the abscess in the orbit. The bone of the external plate was not touched in any way at all. He had simply had good luck, but it showed that sometimes cases seemed severe and yet did not require severe measures.

Dr. George E. Shambaugh, of Chicago, said that he was convinced that intranasal surgery was the proper treatment for the vast majority of the cases of chronic accessory sinus infection. In maxillary sinus he found that by working through the nasal fontanelle in the middle meatus one could in a few seconds' time, with suitable instruments, secure an opening one half by three quarter inch long and one half inch broad, which is ample for the purpose. This could be done with local anesthesia with much less shock than an opening in the inferior meatus. The old idea that an opening in the inferior meatus had an advantage because of its location near the floor of the sinus, did not hold true, thus securing ventilation of the sinus. No irrigation afterward was required. In the frontal sinus a sufficiently large intranasal opening to permit free ventilation was often difficult to secure and for this reason it was less often possible to cure chronic frontal sinusitis by intranasal surgery. It was most exceptional, however, to find a frontal sinus infection where anything more than intranasal surgery was justified. He had long been of the opinion that the external operation for the frontal sinus should be a tabooed operation except in the rare cases where, in spite of painstaking, careful intracranial surgery, severe symptoms persisted, indicating retention and pressure and threatening intracranial complications.

Dr. Greenfield Sluder, of St. Louis, believed that simple drainage would not cure cases with a ramification of the frontal sinus under the roof of the orbit out into the external cochlear process of the frontal bone, running back to the lesser wings of the sphenoid and extending, more or less swollen, beyond with granulation tissue. The value of a satisfactory drain for all of these could not be exaggerated, but cases still remained that required Doctor Bryan's procedure. It is difficult to tell how far it really could go. In 1890 Doctor Sluder had an antrum that had been suppurating four to five years and the old Cowper operation was done through the alveolar. He kept it open with a plug and washed it, and in some six months it stopped suppurating. It was always reinfected by coryza and healed with a few washings. The old gentleman died a few years ago. After Doctor Sluder learned the intranasal procedure he offered the patient that and explained that it was a better procedure and would relieve him of his trouble and his plug, but he declined to accept it.

Dr. E. Fletcher Ingals, of Chicago, stated that when he had difficulty in passing a probe into the frontal sinus, in about ten per cent. of cases, he ran a burr up about three eighths of an inch, after which the probe passed easily into the sinus and the operation was completed. In possibly five per cent. of the cases an external operation might be desirable later on. Whether drainage was sufficient to cure these cases or not would have to be determined by experience. It was sufficient in most cases, even if there were granulations. Scraping out all of the mucous membrane in the sinus was absolutely bad practice.

General Streptococcic Infection Through the Accessory Sinuses and the Tonsil.—Dr. T. H. Halsted, of Syracuse, said that chronic suppurations in the sinuses were by no means local diseases in the sense that their effects were confined to these organs. The chronic infections, the staphylococcic, pneumococcic and streptococci, were perhaps of greatest importance, because of the insidious and slow degeneration which their absorption produced in the whole system. Of equal and perhaps greater importance than local infections of the nose and their annexa, though only in degree, were infections of the teeth and tonsils. A mixed infection of the tubercle bacillus and the streptococcus was frequent. Just as tuberculosis was conveyed from one individual to another through the inhaled sputum, and was mildly contagious, so probably was rheumatism, i. e., infectious streptococcic rheumatism. With enlarged and diseased tonsils, not regarded as tuberculous, enlarged cervical glands, thought to be tuberculous, were often associated.

The removal of such tonsils is usually followed by a reduction in the size of the enlarged glands. Endocarditis and arthritis often supervened or follow an attack of acute tonsillitis. Chorea was now known to be a rheumatic or streptococcic infection of the nervous system. Improvement resulted from the removal of the primary focus of infection, the tonsil and the adenoid. Many affections now regarded and treated as separate entities would soon be classified under the general heading of streptococcic disease. Complete enucleation was the rational procedure in the treatment of streptococcic infected tonsils.

After the tonsils were removed the patient might still show evidence of remote or general streptococcic infection. This meant simply that there still remained a focus somewhere, possibly in the adenoids. Possibly the tonsils were not completely removed, even though the operator was most careful, and if such is the case, this fact should be recognized and dealt with by a second operation, the sooner the better. Again, an apical tooth abscess may have been overlooked or the difficulty may lie in a secondary focus in the gall bladder, the appendix, some joint, the endocardium, pleura or other localized area.

(*To be continued.*)

Letters to the Editors.

CHRISTIAN SCIENCE AND WAR SERVICE.

52 Vanderbilt Avenue, New York, N. Y.,

To the Editors: *December 7, 1917.*

In your issue of December 1st, in an editorial entitled A Significant Omission, after stating that no nation at war has enrolled with its medical corps a Christian Science healer, chiropractor, or spondylotherapeutist, it is admitted with fine condescension, that Christian Science does serve an end amid "the indolent, overfed, too anxious multitudes in time of peace," even though it is asserted that for real ailments it offers scant support.

While it is true that no nation has seen fit to organize a corps of Christian Science practitioners for service at the front, the efficacy of Christian Science to heal wounds even of the severer type has been proved many times during the war, and of these healings there is fully authenticated evidence. Moreover, Christian Scientists are taking their places in all the activities of the war on land and sea as officers and in the ranks, as nurses and chaplains, in short, wherever opportunity offers and duty calls, to carry forward the cause of human freedom, minister to the needy, and alleviate suffering. Might it not be said that the omission referred to is because as yet a single school of medicine dominates the warring nations even to the extent of excluding other healing methods which have been proved both efficacious and practical? It should be noted, however, that already many governments, both state and national, have recognized Christian Science as a healing agent in divers ways, by executive order, statute, and court decision, even though hospitals have not been put in their charge.

No Christian Scientist would attempt to convince a soldier that his wounds were not very real to his physical sense, although the effort might logically be made to point out to him that the real man, the man of God's making, the image and likeness of infinite Spirit, is incapable of being wounded or destroyed; for it is upon this fundamental truth that all Christian Science healing is accomplished. That Christian Science offers "scant support for real ailments" is quite contrary to the experience of all those—a vast number—who have been healed of various types of disease, some of which medical practitioners label dangerous, incurable, and even fatal.

For the modicum of good will shown in the article every Christian Scientist will be profoundly grateful; for all look forward to that day when the practitioners of materia medica and of Christian Science may be allowed to pursue their respective paths with amity, doing good in the way that seems to each best and most effective. In the meantime, if there be disagreement, let it be in good will, saying, as did Abraham of old, "Let there be no strife, I pray thee, between me and thee, and between my herdmen and thy herdmen; for we be brethren."

Very truly yours,

Albert F. Gilmore.

Book Reviews.

[*We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.*]

Medical Diagnosis for the Student and Practitioner. By Charles Lyman Greene, M. D., Lecturer in Applied Anatomy, University of Minnesota, 1892-4; Professor of Applied Anatomy and Instructor in Clinical Medicine, 1894-7; Professor of Clinical Medicine and Physical Diagnosis, 1897-1903, etc. With fourteen Colored Plates and 348 Other Illustrations. Philadelphia: P. Blakiston's Son & Co., 1917. Pp. xix-1302. (Price $10.)

To have been able to expand a pocket manual to a live textbook is no mean accomplishment, yet Doctor Greene has done this in the excellent work which has just appeared. There is here presented a crisp and abbreviated handling of the chief facts of present day medical diagnostic theory and practice in its 1300 closely printed and well illustrated pages. In one sense the work lacks coherency. The dynamic concept of the human body as a mechanism that captures, transmutes, and distributes energy—a concept which should be a commonplace in present day medicine, is noticeably absent—hence it may be understood why there is so little comprehension of what makes the machine go. Numerous mechanistic theoretical conceptions which would be back numbers the moment this selfevident concept is utilized would have been eliminated. Above all, the chief stumbling block of medical diagnosis, namely, the reasons that underlie the naming of things, has received little or no consideration. The consideration that diagnosis is a purely pragmatic concept does not seem to be stressed anywhere, hence at times a meaningless retention of conflicting terminology. We confidently look forward to the time when the student's mind will be focussed on processes and not on diagnostic labels exclusively. That the latter are needed no one doubts, but that they should be secondary to the former is equally evident. This very excellent work could have stood as a forerunner in such a scheme of dynamic medicine. As it is, it is a most valuable descriptive and static presentation of the subject of medical diagnosis.

Vagotonia. A Clinical Study in Vegetative Neurology. By Dr. Hans Eppinger and Dr. Lee Hess, of Vienna. Authorized Translation by Walter Max Kraus, A. M., M. D., and Smith Ely Jelliffe, M. D., Ph. D. Nervous and Mental Disease Monograph, Series No. 20. Second, revised and corrected edition. New York: The Nervous and Mental Disease Publishing Company, 1917. Pp. 93. (Price $1.)

The rapid exhaustion of the first edition of this little brochure speaks of the neurological niche it fills so admirably. Just as, even with our electric locomotives, our radium, and our aeroplanes, the present day and date still finds some parts of the earth's surface untrodden by the foot of man, so there are some aspects of human economy of which the average physician is either ignorant or has only a nebulous conception. Such is the nervous system, and more especially the vegetative nervous system. Not indeed until the appearance of Jelliffe and White's *Diseases of the Nervous System* a few years ago was there an adequate approach to the subject from the physician's standpoint. Eppinger and Hess's volume deals with that derangement of the autonomic nervous system characterized by increased irritability, a functionally increased vagus tonus, and increased sensitiveness to pilocarpin. That there is such a disease syndrome will undoubtedly surprise many a practitioner who will find, among those cases he has been in the habit of labeling "neurosis" or "nervousness," not a few instances of vagotonia. That is, he will progress from vagueness to vagotonia. After a brief discussion of the action of drugs on the vegetative nervous system and a definition of the term vagotonia, this book goes on to discuss the clinical features of the disease and its combination with other diseases. The great value of atropine in the therapeusis of vagotonia is indicated; indeed, it is the only therapeutic agent we know of yet, with the slight exception of adrenalin. The author closes with a plea for more work on the physiology and pathology of the visceral nervous system. The book is bound in heavy brown paper and has been carefully revised since its first appearance.

Alcohol. Its Relation to Human Efficiency and Longevity. By EUGENE LYMAN FISK, Medical Director, Life Extension Institute. Authorized by the Life Extension Institute. Reviewed and criticised by members of the Hygiene Reference Board and Approved by a Majority. New York and London: Funk & Wagnalls Company, 1917. Pp. xx-216. (Price $1.)

It is pretty generally understood that King Alcohol has been deposed. A new generation is growing up unfamiliar with the corner saloon, the bubbling bucket homeward bound, the reeling figure in the midnight streets. It is a far cry now back to the Pickwickian days when a chop and a pint of sherry constituted a meal. Naturally the popular medical literature of the day is replete with attacks against the quondam monarch. Of such is the present volume. Doctor Fisk has collected in a handy little book most of the leading arguments against alcohol and has presented them clearly and in a readable manner. He is to be felicitated in that his style is free from the turgid epithets that mar so much of this sort of literature. We recall a recent book in which such phrases as "beer the brutalizer," "the demon rum," "the Emperor of Drugs," and others appeared. Doctor Fisk goes straight to the point with facts based on life insurance statistics and the experiments of Kraeplin *et al.*, and puts the case so that he who runs may read. It is a book for the sociologist, the educator, and the employer, although scarcely for the physician.

The Physician's Visiting List (Lindsay and Blakiston's) for 1918. Sixty-seventh year of its publication. Philadelphia: P. Blakiston's Son & Co. (Price $1.25 to $2.50.)

The Medical Record Visiting List or Physicians' Diary for 1918. Revised. New York: William Wood & Co. (Price $1.50 to $2.25.)

A notice of a book that on first glance seems full of blank pages is our notion of nothing to do. On closer inspection, however, we find that a great deal might be said about these excellent little mental first aids for the physician on his rounds. As a matter of fact, it is quite difficult to avoid the advertising man's hectic verbiage. To say that such a perfectly arranged, thoroughly practical, and apparently all inclusive visiting list and professional record as either one of the two excellent ones listed in the heading is absolutely essential smacks of the obvious, but we shudder to think what a physician would do without one, with his usual good hearted habit of giving his patient the benefit of the doubt when his memory on financial matters plays him false. To say, also, that such a record book is well worth the price may seem a strong statement in these days of high cost of living, but we mean it and for the very reason of real economy. The doctor will find these little books well equipped with memoranda and notes to refresh his memory, if he has a memory, like so many of us, that keeps union hours and seems to lie down after so many hours of hard work; to say nothing of information that no one can carry around in his head, such as a very complete dose table, a table for estimating duration of pregnancy, etc. There are blank pages set and ruled for special memoranda, consultation practice, obstetric engagements, record of obstetrical practice, record of vaccinations, register of births and deaths, nurses' addresses, addresses of patients and others, and cash account. We can heartily recommend either one of these visiting lists to our readers. There is a small matter in the Medical Record Visiting List that caught our eye and gave us pause. We wondered why, in the dose table, the drugs "included in the United States Pharmacopœia," according to the footnote, are all starred when there does not seem to be possibly more than one per cent. of drugs in the list that are not in the Pharmacopœia. Perhaps it was to tease the typesetter, but why not have starred the latter drugs with an appropriate footnote?

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Births, Marriages, and Deaths.

Married.

McCOLLUM-DUFFY.—In Phoenix, Ariz., on Wednesday, November 28th, Dr. Earl G. McCollum, of New York, N. Y., and Miss Marguerite Duffy, of Olean, N. Y.

SMITH-WIGGINS.—In Westfield, Mass., on Wednesday, December 5th, Dr. Ernest E. Smith, of Webster, Mass., and Miss Ethel F. Wiggins.

Died.

ANNABEL.—In Waverly, N. Y., on Thursday, December 6th, Dr. Charles E. Annabel, aged sixty-six years.

AYERS.—In Franklin, N. J., on Monday, December 3d, Dr. Edward A. Ayers, of Branchville, N. J., aged sixty-two years.

BEMUS.—In Jamestown, N. Y., on Friday, December 7th, Dr. Morris N. Bemus, aged fifty-five years.

COTTRELL.—In Newport, R. I., on Monday, December 3d, Dr. Samuel P. Cottrell, of Boston, Mass., aged fifty-six years.

DUNN.—In Brooklyn, N. Y., on Thursday, December 13th, Dr. Henry A. Dunn, Medical Inspector, United States Navy, aged forty-three years.

GREENAWALT.—In Fort Wayne, Ind., on Thursday, December 6th, Dr. George L. Greenawalt, aged sixty-six years.

GUITERAS.—In New York, on Thursday, December 13th, Dr. Ramon Guiteras, of New York, N. Y., aged fifty-seven years.

HOUSE.—In Clayton, Ind., on Sunday, December 2nd, Dr. George F. House, of Indianapolis, Ind., aged seventy years.

HOWARD.—In Oswego, N. Y., on Monday, December 3rd, Dr. James S. Howard, aged eighty years.

HOXSEY.—In Spokane, Wash., on Thursday, November 29th, Dr. John H. Hoxsey, aged fifty-eight years.

KINCAID.—In South Portland, Me., on Thursday, December 6th, Dr. David A. Kincaid, aged sixty-three years.

LOGAN.—In Kansas City, Mo., on Tuesday, December 4th, Dr. John P. Logan, aged sixty-four years.

McCOOEY.—In Worcester, Mass., on Saturday, December 1st, Dr. John F. McCooey, of Woonsocket, R. I., aged thirty-seven years.

McKINNEY.—In Barry, Ill., on Sunday, December 2nd, Dr. John G. McKinney, aged eighty-two years.

MEISENHELDER.—In York, Pa., on Saturday, December 1st, Dr. Edmund W. Meisenhelder, aged seventy-five years.

MONTGOMERY.—In Hazlehurst, Ga., on Sunday, December 2nd, Dr. R. M. Montgomery, aged fifty-two years.

NOLAND.—In Cleveland, Ohio, on Sunday, December 2nd, Dr. Ira N. Noland, aged seventy-two years.

NORTH.—In Dannemora, N. Y., on Wednesday, December 12th, Dr. Charles H. North, aged forty-nine years.

RIEMAN.—In Paterson, N. J., on Saturday, December 1st, Dr. Frank D. Rieman, aged thirty-four years.

STEVENSON.—In Youngstown, Ohio, on Sunday, December 2nd, Dr. Gilmore Robert Stevenson, of Hubbard, Ohio, aged seventy-nine years.

TERRILL.—In Big Rapids, Mich., on Tuesday, December 4th, Dr. Franklin C. Terrill, aged sixty-eight years.

WATT.—In Colorado Springs, Colo., on Saturday, December 1st, Dr. Henry C. Watt, aged forty-five years.

WOODBURN.—In Boise, Idaho, on Wednesday, November 28th, Dr. John M. Woodburn, aged fifty-eight years.

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Original Communications

THE REMOVAL OF STEEL PARTICLES FROM THE INTERIOR OF THE EYE BY THE MAGNET.*

By FRANK ALLPORT, M. D.,
Chicago.

While it can be justly said that the magnet has been the means of losing an eye by sympathetic ophthalmia, owing largely to unjustifiable efforts to save an eye that should have been enucleated, yet its enormous contribution toward ocular and visual salvation far outweighs disadvantages in isolated cases.

A large majority of such cases are caused by hammering or cutting steel by hammer and chisel, the flying particle coming from the object being cut, the hammer, or the chisel. Tools in good condition and not mushroomed or chipped on the ends are less liable to produce injury than tools in bad condition. Bad tools are sometimes the fault of the shop and sometimes the fault of the workman. It is important to find and preserve the flying particle, as it may have an important bearing on subsequent litigation. It is strange that shop workmen plying trades inimical to eyes are so reluctant to wear goggles which will protect eyes from flying particles and should always be used in such dangerous work. Unless quite apparent, few workmen believe there is anything in the eye after sustaining the injury, but such opinions are usually worthless and should be ignored. In all cases where there is even a suspicion of a foreign body being inside the eyeball, x ray pictures should be taken immediately, although it must be admitted the x ray pictures are not infallible. I have been guided wrong. This is imperative, however, for the benefit of the patient, the employer, and the surgeon. Beside this, in case of litigation, the defendant and the surgeon should be able to say that x ray pictures have been taken, or they will probably regret deeply the omission. Two clear pictures should be taken, a front and a side view. In case a particle is seen, these two pictures will indicate with reasonable exactness its location. They will indicate whether the particle is in the upper, lower, or median plane, in which quadrant it is, and whether it is in the anterior, posterior, or middle portion of the eye. Most particles are in the vitreous chamber. The size, shape, and long axis of the particle can also be seen. Sometimes, however, the particle is so far back that it is difficult or impossible by the x ray alone to tell whether it is inside the globe or sticking in the retina, choroid, and sclera, or entirely behind the globe in the connective tissue of the socket or posterior scleral coverings. If it is inside the globe, the magnet will probably remove it. If it is sticking in the walls, it may be impossible to dislodge it, and if so, will perhaps best be left alone. While floating particles are intensely dangerous, imbedded and stationary particles sometimes are comparatively harmless and are certainly less injurious than ill advised, forcible attempts at extraction by intraocular operative procedures with forceps, probes, scissors, magnets, etc. In making this statement I am not unaware of the fact that eyes have been saved by Jackson's scissors operation, Conner's strabismus hook procedure, the intraocular introduction of magnet points, etc., but I am still firmly convinced that if a steel particle cannot be withdrawn by the contact of a very powerful magnet in the lips of an ocular wound, it had better be left alone, for the particle under these circumstances must either be behind the eye, stuck fast in its coverings, encysted, or tied down by adhesive bands, under which conditions it is safer to leave it than to attempt heroically to extract it, which will probably be crowned with failure.

Steel particles are sometimes sterile when they enter the eye, rendered so by the heating which accompanies their forcible splitting from the main mass of the metal. Such particles may become encysted and apparently harmless for a time and then "flare up" and destroy one eye, and perhaps both. Steel particles will sometimes go completely through the eyeball and be lodged in the fatty tissue of the socket or entangled in the posterior connective tissue of the sclera. Such particles are best left alone, but it may be extremely difficult to judge of their position by x ray pictures unless they are quite far back in the socket. Of course, anteroposterior measurements of average eyes can be compared with the eye in question, but even then the point may be so fine as to be hard to settle. Under these and other difficult conditions it is best to resort to Sweet's localization procedure or other similar devices. I believe it would be best if this

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*Read before the American Academy of Railway Surgeons, at Chicago, October 17, 1917.

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method was always used as we certainly cannot know too much about these widely differing cases. It is their very diversity that makes them so interesting, for hardly any two cases are exactly alike. Nevertheless it may be said that well taken x ray pictures will, as a rule, give us sufficient information for operative intervention. It is unwise to use the magnet for diagnostic purposes, as it creates much intraocular disturbance if steel is there, and the diagnosis can be made by gentler and surer methods. Besides this, the approach of the magnet does not always elicit pain or movement of the particle, even when steel is in the eye.

Much information can, of course, be obtained by carefully studying the eye, inside and out, by magnifying lenses, direct and indirect illumination, a small Wurdemann transilluminator, and the ophthalmoscope. The situation, character, and size of the wound should be observed. As in detective work, all the evidence should be carefully scrutinized. The surface of the cornea and sclera should be examined for the wound or scar, if the wound is healed; the iris should be scrutinized for a tear, the lens for a cataract and also for the wound or track of the steel particle. The interior of the eye should be carefully inspected, through a widely dilated pupil by the ophthalmoscope, for the steel, for the trail of the invader through the vitreous, and for a wound in the walls of the eyeball. All possible information should be obtained, and the operator should be master of the situation before operative procedures are begun. With this information well in hand, he may then lay out his plan of attack.

It must be remembered that even though an eye shows a corneal, iris, or lens wound, there may be nothing in the eye, for it is possible that the eye may have been wounded by a long, slender spicule of steel that has penetrated clear through into the vitreous chamber and then been removed by winking, by the injured man, or by someone else. So we must make sure there is something in the eye, even though this seems almost certain by the physicial appearance of the eye itself. It is strange how impervious to attack the lens is at times. I have seen a few cases where an extremely small piece of steel had gone completely through the lens, as shown by the track of the particle, dropped into the vitreous chamber, had been extracted by the magnet, and recovered with a clear lens and good vision. These cases are very rare, but they do occur. It is also noteworthy that the refractive media of the eye will somethimes give an erroneous idea of the size of a foreign body when seen by the ophthalmoscope. I remember one case where I saw what seemed to be an enormous, glistening mass in the vitreous chamber, which proved, when extracted, to be a minute particle of steel. The question in my mind is: How can this happen once or twice and not be a constant condition?

After deciding definitely that there is a piece of steel in the eye and locating its position, the next question to be determined is: What shall be done about it? There are some cases where the steel is so large or the injury is so extensive, that all hope of saving vision or even a presentable eye, might as well be abandoned from the start. Of course, under these circumstances, a prompt enucleation is undoubtedly the sanest course to be pursued. An eye is only good for two purposes, for vision and for appearances. When both of these functions are manifestly lost, and the eye, in addition, is certain to become a menace to the other eye, it had best be removed. Unfortunately, the patient, his wife, and his friends have something to say about the matter, and it frequently happens that the surgeon is compelled to give way to their ignorant and panic-stricken opinions. It must never be forgotten that subsequent litigation is always on the horizon in these cases and it is best not to force such situations. If, therefore, enucleation is advised and refused, this refusal must become a part of the case record and must be properly witnessed, and the patient and his misguided and protesting friends must be made to realize that they will be compelled to assume the responsibility. If these procedures are made solemn and emphatic enough, very few patients will refuse the surgeon's advice. If, however, they persist in refusing enucleation, nothing remains but to remove the steel and await results. These are hard cases to handle, because after the steel is removed, panophthalmitis may not immediately ensue; the eye may for a time look fairly well, then soften and atrophy, remain red, irritable, and painful, and thus drag along precariously and tediously, and finally terminate in enucleation or sympathetic ophthalmia or both. The longer the patient retains the eye, the more attached he becomes to it, and the more he resents advice for enucleation. Meanwhile he is an expense to himself and to his corporation, he loses time, becomes demoralized, and is a trial to everybody who has anything to do with him. He should have had his worthless and dangerous eye removed at the start, gone back to work in about two weeks, and learned to become accustomed to his new conditions.

Magnet operations cannot be discussed without considering the question of magnets. Magnets of all kinds are to be had—large and small, strong and weak, stationary and portable. Of course, the giant magnet of Haab is the best large magnet on the market, but it is very expensive, and hard to get at the present time; there are not many of them in this country. The Victor Company makes a very good substitute, and it is sufficiently strong for almost all cases. There is quite a variety of small and portable magnets to be had, devised by Hirschberg, Johnson, Sweet, Lippincott, and others. Of these I believe Sweet's to be the strongest and the best, and I think that if a surgeon is equipped with a Victor magnet and a Sweet magnet he will have all that he really needs. Some surgeons seem to think that the extraction of steel from the eye by a magnet is merely a pulling contest, or a question of pure magnetic force. This is not true. Force is, of course, necessary, but it should be properly directed, as an operation of this kind may be one of the most delicate and difficult in the whole range of ophthalmic surgery. The steel must be removed with as little damage to the eye as possible, and to do this often requires the acumen of the detective, the tact of the diplomat, and the skill of the true surgeon. It is for this reason that a large and a hand magnet are necessary. The less the magnet power used, the less is the danger of sudden and forceful intraocular excursions of the steel fragment. The more gently the steel is removed, the better for the eye. Besides this, it is selfevident that a hand magnet can be much more dexterously used than the large Haab or Victor magnet. I believe it is best, therefore, usually to begin procedures with the patient use of the hand magnet; failing to get the steel, however, in this way, the large magnet must, of course, be employed. Large, unimbedded, and unattached steel fragments will be about as readily extracted with a Sweet magnet as with a Victor or Haab magnet, but small or imbedded or attached pieces are better removed with the more powerful magnets. It does no harm, howevery, first to try the hand magnet.

While willing to grant that eyes have been saved by intraocular operative magnet procedures, I am convinced that such interference is, on the whole, unwise and that if steel cannot be removed by contact of the magnetic point to the lips of the wound, it had better be left alone for reasons already stated. To feel satisfied, therefore, the surgeon must have a magnet of strength and reliability, and during the operation he should frequently test the magnet to be sure that the current is on. The hand magnet of Hirschberg is not very valuable, as it is too weak and does not attract steel appreciably unless it is brought into direct contact with it. This necessitates introducing the point inside the eyeball, which I believe should not be done, especially as there are hand magnets sufficiently strong to attract steel without intraocular introduction. A long, steady pull of the magnet is sometimes insufficient to attract the steel, especially if held back in any way, and then switching the current frequently on and off, will sometimes produce the desired result; the current should be held on at the last, however, until it is ascertained whether the fragment is on the point of the magnet, for if the current was left off at the last, a small piece might be rubbed off, drop on the floor, and be lost. It should not be forgotten that the longer and thinner the magnet point is, the weaker is its power. Whatever method of removal is decided upon, let it not be forgotten that the more quickly the steel is removed, the better are the patient's chances. Therefore, operate at the very earliest possible moment.

A most important question is the route of removal. Shall the steel be removed by the anterior route through the cornea or by the posterior route through the sclera? Haab insists upon the corneal route almost invariably and he has numerous strong supporters. Some years ago when I advocated the scleral route in most cases, before the Chicago Ophthalmological Society, my views were vigorously opposed. I am glad to say, however, that these views are receiving more and more endorsement. Of course, I lay no claim to being the originator of the idea. Haab states that the anterior route is much safer than the posterior route and that the particle can be drawn down to the anterior floor of the vitreous chamber through the zonula of Zinn, up into the pupil, and down into the anterior chamber. From here it can be extracted through a corneal opening without injuring lens or iris. Now I am not saying that this cannot be done. I have seen Haab and others do it. I have done it myself. I have seen it beautifully drawn in pictures. I know it can be done, but I say emphatically that it is not easy to do and that conditions must be exactly right for its successful accomplishment. A large particle cannot be delivered in this way, without damaging the lens and other tissues, and a small piece with sharp points will be apt to become lodged and do damage in its passage forward. Of course, fairly large pieces can come through the lens and pupil, and as the lens is usually damaged anyway, it really does not make so very much difference, except that it increases the danger of secondary glaucoma, iritis, etc., by increasing the swollen condition of the lens, trauma, etc. Taking the most favorable view of the anterior route, it must be admitted that this method of removing steel particles from the interior of the globe, necessitates the rapid and expulsive tearing by a rough and sharp pointed object through and over the most sensitive portion of the entire eyeball, and personally, I believe it is the most dangerous method of operating, especially in the hands of those who are not experts at this delicate kind of surgery. Haab evidently regards the vitreous chamber with sacred awe, but speaks quite reassuringly of the ciliary processes, the lens, the iris, and the cornea. I would venture to reverse this idea, for I confess I stand in deadly fear of the anterior anatomy of the eye. I am not oblivious of the fact that scleral incisions and posterior deliveries may mean retinal detachment, infection, etc., but I do not think that these dangers are nearly as great as those involved in anterior deliveries. It should be said, however, that if the surgeon is determined to operate through the cornea, he must use the strongest available magnet he can obtain, for only the strongest magnets are capable of drawing small particles of steel from the vitreous chamber into the anterior chamber. I do not know how my method of procedure will please others, but such as it is, I will give it, pointing out that these cases are all different, and that they must be studied individually and that all rules are liable to be broken at any time if conditions favor variations.

1. If the steel particle is in the lens or anterior to the lens, I extract it through the cornea. I make a peripheral incision, unless the corneal wound is still open. I do an iridectomy if the iris protrudes and I squeeze, massage, and wash out all the lens matter I can without inflicting too much interference. The original corneal wound, if still open, must be enlarged by sharp scissors, and if a peripheral incision is made it must be considerably larger than the foreign body. The corneal incision should be upward if possible.

2. If the steel particle is posterior to the lens, I extract it through the sclera, especially if the original wound is still open; the wound must, of course, be somewhat enlarged, as a particle always requires a larger avenue of egress than it made in entering. Besides this, steel particles usually enter an eye by their long, narrow axis. I locate the steel by the x ray and possibly by the localizer, and make my incision as near it as possible. The speculum should, of course, be demagnetized. A

triangular conjunctival flap is made with scissors, with its apex toward the cornea, and the sclera is exposed. The incision in the sclera is made with a Graefe knife, between two of the recti, keeping away from the ciliary region. The incision follows the direction of the muscles, as it does not gape so much as it would if it was made in the other direction, and, therefore, heals much more readily. This also applies to the choroid and retina. Besides this, fewer bloodvessels are injured, and the hemorrhage is consequently less. The incision should be ample, as nothing is gained and frequently much lost by endeavoring to haul a large piece of steel through a small opening. It not infrequently happens that even after a generous opening has been made, it will have to be enlarged by sharp scissors. The x ray pictures should have been carefully studied and the direction of the long axis of the particle kept well in mind, for the magnet should be aimed in this direction, as the particle will be most energetically attracted to the magnet, if its long axis and the aim of the magnet coincide. Besides this, the particle will be more easily delivered through a small opening if it comes out lengthwise. This is a matter of great importance and should never be neglected. I have made trial after trial to extract a piece of steel. I have shifted my position from one angle to another. I have almost given up in despair, only to be rejoiced at the last position, by pulling the steel out easily, with the particle and magnet touching each other end to end. The last axis was the right one, all the others were wrong. It must be remembered, also, that the oftener a foreign body is knocked against the retina and choroid, the more injury is inflicted and the more the vitreous is disturbed. Therefore, each case should be carefully studied in every way and an effort made to extract the steel at the first attempt with as little damage as possible and as gently as is consistent with efficiency.

I have already spoken of the necessity sometimes of switching the current on and off to pull a particle loose and this procedure is not infrequently very efficient. I have also urged that instruments be not inserted inside of the eyeball, and I have devised two very small, sharp hooks, demagnetized, that an assistant can insert in each side of the flap to pull open the wound. The blunt point of the magnet can then be inserted within the opened wound and it will then have better access to the foreign body. I only do this, however, after everything else has failed. It must be remembered that while the magnet strongly attracts steel, iron, nickel, and cobalt, manganese steel is practically unmagnetizable, and will not spring to the magnet. After the steel has been removed, or the attempt abandoned, the conjunctiva should be closed by a single suture. It is not necessary to suture the sclera, and it is dangerous, on account of the force necessary, to pass sutures through the tough membrane, which always causes some vitreous to escape. Besides this, the stitch inside the eyeball might produce infection. In spite of every precaution, however, and a highly satisfactory operation, the eye may eventually and perhaps quickly be lost.

7 West Madison Street.

CARE OF THE EYES.*

By A. Edward Davis, M. D.,
New York,
Senior Attending Ophthalmic Surgeon, New York Post-Graduate Hospital.

In discussing the subject of the care of the eyes I shall speak only of one or two of the commoner diseases of the eye, especially those of a preventable nature; of the necessary precautions and measures to take in conserving the eyesight and maintaining it in a high state of efficiency; and of the general hygiene and care of the eyes.

Ophthalmia neonatorum is a disease of infancy, manifested the first few days after birth by a severe inflammation of the conjunctiva, the lining membrane of the eyelids and eyeball, with a free discharge of contagious pus from the eyes. This disease, if not recognized very early and given prompt and energetic treatment, often results in great impairment of the vision, and not infrequently in the total loss of sight. In fact, about ten per cent. of all cases of blindness in this country today, that is, one in every ten of the blind, are due to this one preventable disease. The infection is conveyed to the eyes of the infant in the secretions from the mother at the time of the birth of the child, or shortly afterward, by means of infected towels or sponges with which the child's face and eyes are washed. The infecting germ in this disease in seventy to seventy-five per cent. of cases is usually the gonococcus, the same germ that causes gonorrhea; milder types of the disease may be due to other germs.

The important factors in the prevention of this filthy and destructive disease are: 1, where we know beforehand that the mother is infected with gonorrhea, to have her treated before the birth of the child; 2, immediately after the birth of every child the face and eyes should be carefully washed with a warm boric acid solution and then a drop or two of a one per cent. solution of argyrol should be dropped into each eye, of course on the doctor's order. In a case of a midwife attending, she also should have such drugs on hand. All this is for prevention. In case of infection the child should at once be placed under the care of a competent oculist. We might add, as a third point, from a moral as well as a practical point of view in the prevention of this dreaded disease, that the male population lead more moral lives in order to prevent the infection of a wife, who in turn infects the eyes of the child.

Trachoma or granulated eyelids is another dangerous, filthy, and contagious disease, and is so classified by the health authorities of the United States government, and alien persons known to be suffering from this disease are prevented from landing in the United States. So far we are not positive as to the exact germ that causes this disease, but we know that it is contagious and especially prone to spread among children who are crowded together in schools, in institutions, and in tenements and insanitary quarters. The disease is spread by direct contact; in schools, by children using the same books and toys and by playing together; in institutions, by the children using the same wash basins and towels; and in families, especially in the country districts, by the whole family using a common wash basin and often the same roller towel. Where there is running water in an apartment, or tenement for that matter, though there is but one wash basin, the danger of infection is much lessened if the water is not retained in the basin, but the faucet left running and the face and hands washed in the running water. Individual towels should be used, if at all possible to be had. Certainly, if any member of the family has red or inflamed eyes, he, at least, should have a separate towel. Prevention of infection should be the great care here, for once acquired it is difficult to get rid of trachoma.

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* An address delivered to the city employees at the Municipal Building of the City of New York, November 1, 1916, under the auspices of the Committee on Education of the Welfare Committee of the Borough of Manhattan, Leonhard Felix Fuld, Ph. D., chairman.

In dealing with the second phase of the subject, the measures and precautions necessary in conserving the eyesight, it will be of interest to you to learn that in those States where a more or less systematic examination of the eyes of school children has been instituted, from fifteen to twenty-five per cent. of the children have defective vision, or a general average of about twenty per cent.; that is, one child out of every five has defective vision. If in addition to this large percentage of school children with defective eyes, we take into account all those children who have farsight, or hyperopia, and astigmatism, but who have perfect vision unless the hyperopia or astigmatism is of high degree, who nevertheless have a severe strain put upon their eyes, especially for near work, often resulting in headaches, pains in the eyes, redness of the eyelids, styes, and reflex nervous symptoms, we shall have a very large percentage of school children whose eyes need attention. Should we add all cases of squint or crosseye associated with farsight or hyperopia, and those afflicted with nearsight, or myopia, the list of cases requiring attention would be still further increased. In fact about one third of all children of school age need to have their eyes cared for; that is, to have the eyelids and eyes treated, or to have the correct glasses prescribed.

All children, whether they complain of their eyes or not, before being placed in school should have their eyes examined, not only for the individual's benefit, but for the protection of others. For example, those having contagious diseases could be excluded from school until they were not a menace to the other children and at the same time themselves be cured: those having errors of refraction, that is, hyperopia, or farsight, myopia, or nearsight, and astigmatism, could, where the error is of sufficient amount to cause trouble, as headaches, pains in the eyes, red eyelids, nervousness, lack of concentration, etc., be fitted with the correct glasses. Glasses in such instances not only give relief to the eye trouble, but often convert a seemingly dull pupil into a good student, simply by making it possible for the child to pursue his studies with comfort. Furthermore, eyeglasses retard and prevent the progress of myopia, which if allowed to go uncorrected results in great impairment of vision and not infrequently in loss of sight.

There is another affection of the eyes of young children that I wish especially to call to your attention, and that is crosseye, or squint. Not only is it an unsightly deformity, but it makes the child timid, and in a sensitive child makes him shun his playmates, because of the fun they make of him; so that this deformity of the eyes actually has an influence on the character of the individual. Even in after life it militates against the success of the individual. But of graver consequence still is the fact that a squinting eye, in the great majority of cases, loses most of its vision; it becomes amblyopic, that is, weaksighted. Parents are unaware of this, and until comparatively recent years doctors themselves paid but little attention to it, often giving advice to the parents to do nothing, that the child would outgrow the squint. Unfortunately the sight as a rule is greatly damaged by this neglect, though occasionally the eye becomes straight. Simply because such an eye looks well from the outside the parents think little about it, though the sight in many instances is almost completely lost. When the child's eye is injured and the sight reduced, these parents are greatly distressed.

In recent years we have taught the people to bring their children to the doctor at once on discovering a squint or a crosseye in their children, even in very young children. They are fitted with glasses, and this alone often gives relief with preservation of vision; and where glasses fail then the eyes are operated upon when the child is young, not waiting for him to outgrow it and at the same time lose most of the sight of the eye.

I have so far discussed the care of the eyes in infants and children, but you will agree with me that if the eyes are well taken care of in infancy and childhood, not so much care of them will be needed in later years. This care should not be neglected, however, in adult life. What can I best say on the care of your own eyes in your daily struggle in modern life, where the eyes are so much used and often in artificial light, and that light not the best? Ordinarily the care of the eyes, where there is no disease, means in the first place, when using them that you have the proper light; good daylight is the best. Unfortunately, offices, factories, workshops, sewing rooms, and even school houses cannot utilize daylight, or for only a part of the working day, especially in winter when the working days are so short. Where daylight cannot be utilized, artificial illumination must be employed, and of all artificial illuminants the electric light is the one most commonly employed and more nearly simulates daylight than any other. The tungsten lamp is the best, and when furnished with white porcelain enameled reflectors gives an excellent light. White or cream colored walls add much to the efficiency of the illumination. It is unnecessary, I suppose, to add that keeping the lamps and windows clean also improves the illumination. Where possible the illumination should come from behind and the left.

For the library and home use, an oil lamp, or student's lamp, is often preferable, even to an electric light, as it gives a softer and less glaring light and has less of the actinic or chemic rays in it, these latter rays being especially irritating to some eyes. Where the eyes are extremely sensitive to light often a lightly tinted glass of amber, smoke glasses, or some of the newer composite tinted glasses should be worn. Furthermore, it is a mistake to have too bright illumination, and on this account indirect illumination, where a whole room is to be lighted, is to be recommended, although it is somewhat expensive. The light is reflected from the ceiling and is soft and diffused and easy for the eyes. The importance of good lighting is emphasized in shopwork and those engaged in hazardous callings, e. g., those who work at the emery wheel, lathes, or near revolving wheels, belts, saws, etc., as it has been estimated, according to Doctor Allport, that twenty-five per cent. of shop accidents are due to poor illumination. Doctor Allport states (1), which is pertinent to the subject, that the Pullman Company has estimated that thirty-five per cent. of all shop injuries are eye injuries. Of course, these shop workers should wear protective goggles. It is not easy, however, to get men to wear goggles, even when they are furnished to them without cost. Such is the perversity of human nature. "Some men think it is cowardly to wear them, others do not want to be bothered, others think they interfere with their work, and others do not wear them from dense ignorance and sheer doggedness." After the question of lighting, the next important factor in the care of the eyes, especially for students and those of you who work at books, is to have a dull finished paper. Glazed paper is very trying to the eyes because of the light reflection from it, and in school books such paper should not be used. Even commercial paper should not be glazed. Of course good type which shall not be too small is very essential if we expect to use the eyes with comfort.

As to individual habits of work, before closing my remarks I should like to add a few words of warning as to what to do and what not to do in order to conserve your eyesight and to use your eyes with ease and to the best advantage. First and foremost, I would say to you as I have said about school children, before entering upon your life work, if you have not already had the eyes examined, do so. It will prove a paying investment, even from an economic point of view, to say nothing of the comfort and satisfaction of knowing that the eyes are sound and can be used without injury. One would not think of running an engine or an automobile without having it adjusted, and so I say to you, have your eyes examined by a competent oculist, in private if you can, at a dispensary if necessary. Do not trust your eyes and health to an optician any more than you would consult a druggist to treat your sick child. Both are incompetent as doctors, and at times dangerous. On more than one occasion I have seen a patient's sight lost from disease of the eye, when the optician had given glasses and thought that was all that was necessary for the failing vision; and on one occasion the patient lost his life through neglect, the eyesight being affected by acute Bright's disease, which the optician never recognized. In no branch of medicine is a correct diagnosis of more importance than in diseases of the eye. Not only is this statement true as regards errors of refraction and local diseases affecting the eyes, but indirectly as bearing upon many grave general diseases, as Bright's disease, arteriosclerosis or hardening of the arteries, diabetes, etc., which are often first manifested by some disorder within the eyes. In such cases a correct and early diagnosis of the conditions in the eye and a recognition of their significance as an index of some grave disease, together with the institution of prompt and energetic treatment, are of paramount importance if we wish to save the sight of the eyes and prolong the life of the patient.

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1. ALLPORT: *Ophthalmology*, October, 1916, p. 60.

50 West Thirty-seventh Street.

EXOPHTHALMIC GOITRE,*

By Charles Scott Miller, M. D.,
Philadelphia,
Chief, Division of Vital Statistics, Bureau of Health; Instructor in Surgical Pathology, Temple University, etc.

Statistically considered, diseases of the thyroid body are classified as exophthalmic goitre, No. 51 of the International Classification of the Causes of Death; tuberculosis, No. 34, classified as tuberculosis of other organs; cancer, No. 45, as cancer of other organs; and No. 88, or diseases of the thyroid body. Some conception of the relation of exophthalmic goitre to the other classifications may be gained by comparing the mortality registered for Philadelphia, 1906 to 1915, inclusive.

Deaths from Diseases of Thyroid Gland, Philadelphia, 1906-1916, Inclusive.

Years	*Exophthalmic Goitre (51)*	*Other Diseases of Thyroid (88)*
1906	14	2
1907	8	1
1908	11	7
1909	11	2
1910	19	3
1911	11	6
1912	24	6
1913	31	12
1914	17	12
1915	23	5
Totals	169	56

Of all diseases of the thyroid gland from 1906 to 1915, inclusive, the proportion of exophthalmic goitre to other diseases of the thyroid is three to one. Inasmuch as the first class occupies a ratio of three to one to the other classifications, we may take it as an index of the relative mortality due to affections of this gland. Diseases of the thyroid are on the increase as evidenced by a study of Table I, which gives the rate per 100,000 of population.

TABLE I.

Comparative Rates per 100,000 of Population.

	Philadelphia		*Registration area of U. S.*		*England and Wales*	
Years	*Total*	*Rate*	*Total*	*Rate*	*Total*	*Rate*
1903	..	....	235	0.7	..	..
1904	..	....	247	0.7	..	..
1905	..	....	256	0.8	..	..
1906	14	.965	349	0.9	..	..
1907	8	.542	389	0.9	..	..
1908	11	.732	500	1.1	..	..
1909	11	.720	636	1.3	..	..
1910	19	1.222	687	1.3	..	..
1911	11	.696	787	1.3	411	1.1
1912	24	1.494	908	1.5	420	1.1
1913	31	1.900	966	1.5	410	1.1
1914	17	1.025	...	...	472	1.2
1915	23	1.366	...	...	...	...

To obtain the total mortality from diseases of the thyroid body, approximation may be made by adding one third again as many deaths to exophthalmic goitre. The prevalence of thyroid disease in certain parts of the country is alarming. Doctor Hrdilicka, of the United States National Museum, has shown in his study (1) that in certain portions of Indian tribes, goitre exists at the rate of three per 1,000, while in portions of the Blackfeet tribe, it exists at the rate of sixty-one per 1,000. Cretinism seems to have no relation to the goitre in this tribe, while the white people living in the same community are not affected. As the Indians farther away from the Missouri River are studied, the prevalence of the disease steadily decreases. All tribes chiefly afflicted are great meat eaters.

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*Read before the Logan Medical Society, January 19, 1917.

Herewith is submitted a study of 5,230 deaths from exophthalmic goitre. The data covers three groups of statistics and varies somewhat in period of time because of lack of facilities for making a more extensive summary. The Philadelphia statistics cover a period of ten years, 1906 to 1915 inclusive; those for the registration area in the United States cover four years, 1910 to 1913, inclusive; and the English figures extend over the years 1911 to 1914 inclusive. The figures have been obtained from the annual reports of the Registrar General of England and Wales, the United States Mortality Statistics and the reports of the Bureau of Health of Philadelphia.

Inasmuch as the definite cause of exophthalmic goitre is not known, we should consider the factors which might tend to throw some light on the condition.

Age.—Sir William Osler states that goitre is prone to develop from the ages of twenty to thirty years. However this may be, a glance at the following table will show that the greatest number of deaths occur between the ages of forty and forty-nine years. During this decade, practically twenty-four per cent. of the total deaths occurred.

TABLE II.

Mortality from Exophthalmic Goitre—U. S. Registration Area, England and Wales, and Philadelphia.

Ages	*Total*	*Per Cent.*
—15 years	49	0.94
15-29 years	1047	20.02
30-39 years	1080	20.65
40-49 years	1257	24.03
50-59 years	1030	19.69
60-69 years	547	10.46
70+ years	220	4.21
All Ages	5230	100.00

The mortality at this period of life may be due to the natural sequence of goitre's clinical manifestation. On the other hand, it seems reasonable to believe that the effect of mental and physical strain incident to active adult life or to pregnancies has a direct relationship to the development of clinical signs and symptoms. In other words, if the disease exhibits a direct influence on the sympathetic nervous system and, in turn, on the heart and blood-vessels, why should it not cause death during the decade of thirty to thirty-nine? Let us assume the theory of nervous enervation as a cause of goitre. Greatest nervous stress develops during the ages between thirty and fifty years. If this is so, then the highest mortality should occur during this period. Referring to Table II, we find such to be the case. The mortality curve of the two sexes also retains its same relationship at any given age period.

Sex.—Out of the whole series, ninety per cent. or 4,699, are females; while 521, or ten per cent. are males. Therefore, we may say that the female sex is predisposed to this condition.

Race.—The number of deaths considered is too small to draw conclusions. However, out of the total 169 for this city, approximately seventy-four per cent. were native born. German born persons come next with 8.3 per cent. and Irish with 6.5 per cent.

TABLE III.

Deaths from Exophthalmic Goitre in Philadelphia (1906-1915, Inclusive) by Nativity.

Nativity	*Total*	*1906*	*1907*	*1908*	*1909*	*1910*	*1911*	*1912*	*1913*	*1914*	*1915*
United States,											
white	120	11	2	7	7	15	8	16	25	12	17
negro	5	..	..	1	..	..	..	..	2	1	1
Ireland	11	..	2	1	2	2	1	1	1	..	1
Germany	14	1	2	1	1	1	..	1	1	3	3
Russia	9	1	1	..	1	1	..	3	1	..	1
Italy	2	..	..	..	..	..	1	1	..	..	..
England and Wales	3	..	..	1	..	..	..	1	1	..	..
Canada	...	..	..	..	..	..	..	..	..	..	..
Austria-Hungary	2	..	..	..	..	..	..	1	..	1	..
Poland	1	..	..	..	..	..	1	..	..	..	..
Scotland	2	1	1	..	..	..	..	..	..	..	..
Totals	169	14	8	11	11	19	11	24	31	17	23
Rate per 100,000 population	...	.965	.542	.732	.720	1.222	.696	1.494	1.900	1.025	1.366

Color.—In taking up this phase of the subject, we have followed the rates as quoted from the mortality statistics of the United States Census Bureau, which cover certain States.

TABLE IV.

Area	*Period*	*Average Annual Rate of Colored Cities*	*Colored Rural*	*White Cities*	*White Rural*	*Total Average Annual Rate Colored*	*White*
Maryland	5 years	0.7	0.4	1.3	0.6	1.1	1.8
North Carolina	5 years	0.3	0.7	1.4	0.4	1.0	1.8
Kentucky	4 years	0.4	0.4	1.2	0.4	0.8	1.6
Virginia	2 years	0.7	0.6	1.3	0.5	1.3	1.8

While the total rate per 100,000 of population is higher for the white race, it will be noted that the colored race is disproportionately low in the rural communities. This may be due to the sedentary life led by the colored population of these districts with the consequent lack of nervous strain.

Mode of life.—Taking twenty-five of the registration States and classing all towns of over 1,000 population as cities, while less than 1,000 as rural, we obtain the following table:

TABLE V.

Death Rates from Exophthalmic Goitre (1910-1914, Inclusive) per 100,000 Population in Cities and Rural Districts.

	1910		*1911*		*1912*		*1913*		*1914*		*Five-year Average*	
	Cities	*Rural*	*Cities*	*Rural*	*Cities*	*Rural*	*Cities*	*Rural*	*Cities*	*Rural*	*Cities*	*Rural*
California	1.3	.9	1.7	.8	1.5	.9	1.6	1.2	1.2	1.1	1.5	1.0
Colorado	1.7	.4	.6	1.0	.3	.4	2.7	.9	1.5	.4	1.4	.5
Connecticut	.9	.3	.9	.3	1.4	.8	1.2	.8	1.1	1.3	1.1	.7
Indiana	2.4	1.9	2.3	2.2	4.1	2.1	1.7	1.9	3.2	2.3	2.7	2.1
Kansas	...	...	...	...	...	...	...	...	2.	1.2	2.	1.2
Kentucky	...	...	1.0	.4	.7	.2	1.4	.6	1.2	.3	1.1	.3
Maine	1.8	1.0	1.2	.7	1.2	1.0	.6	.7	2.3	.3	1.4	.7
Maryland	1.2	.1	.8	.4	.8	.7	2.1	.9	1.2	.9	1.2	.6
Massachusetts	.9	.7	1.0	1.8	1.1	1.2	1.2	.8	.7	1.0	1.0	1.1
Michigan	2.6	2.4	2.3	1.6	2.6	2.5	3.8	2.6	2.1	1.8	2.7	2.1
Minnesota	1.2	1.2	1.0	1.6	2.	1.9	2.8	[illegible].5	2.6	1.6	1.9	1.8
Missouri	...	...	2.1	.7	2.1	1.	2.2	1.4	2.	1.3	2.1	.9
Montana	4.0	1.1	2.	.7	1.	.7	1.9	.3	2.8	1.2	2.3	.8
New Hampshire	1.1	...	2.3	1.2	.6	.4	1.1	.8	.5	2.	1.1	.9
New Jersey	1.3	.2	.8	.3	.9	.8	1.	.6	1.	.5	1.	.5
New York	1.2	1.6	1.2	1.5	1.3	1.2	1.3	1.6	1.5	2.2	1.3	1.6
North Carolina	1.3	.5	.6	.5	1.9	...	.6	.9	...	.7	.9	.5
Ohio	1.4	1.2	2.3	2.3	2.5	2.4	2.5	2.4	3.1	2.7	2.4	2.2
Pennsylvania	1.3	.9	.9	.9	1.6	.9	1.7	1.	1.3	.6	1.4	.9
Rhode Island	.7	...	.2	.9	.9	1.8	.4	.9	.8	...	.6	.7
Utah	3.4	.4	2.4	.8	2.3	.4	3.	1.1	.7	1.8	2.4	.9
Vermont	...	1.9	2.2	2.6	4.3	1.9	...	1.6	4.2	1.9	2.1	2.
Virginia	...	...	...	...	...	...	.7	.3	1.4	.7	1.1	.5
Washington	1.7	.6	1.1	.5	2.8	1.0	1.7	.3	3.	1.4	2.1	.8
Wisconsin	1.5	1.3	2.3	2.0	2.1	2.1	2.3	1.7	3.	2.3	2.2	1.9

Now if we strike a five year average, it will be noted that with three exceptions—Massachusetts, New York, and Rhode Island—the rate is higher for cities than for the rural districts. This also may be attributed to the excessive nervous strain that accompanies city life. The exceptions show so slight a variation that I do not believe they need be considered.

Geographical and geological effects.—When the various States are plotted according to the rates studied, it is seen that Vermont, Ohio, Indiana, Michigan, and Wisconsin lead with rates of from 2.0 to 2.4 per 100,000 of population. In rates for rural districts the first four named occupy high place, while Wisconsin, Minnesota, and New York are the only other States falling into the second classification; that is, with rates of from 1.5 to 1.9. It will be noted that all these States are grouped around the Great Lakes.

In studying the rates for cities, Michigan and Indiana rank first with the highest of all rates, over 2.5 per 100,000. Again, Vermont, Ohio, and Wisconsin, with five widely scattered other States, fall into the second group. As far as Pennsylvania is concerned, we find an average five years death rate of 1.4 per 100,000 for the cities and 0.9 for the rural districts. On the other hand, the Philadelphia rates during the last ten years have varied from 0.5 per 100,000 to 1.89. These facts are in keeping with the nervous hypothesis as a cause for the disease. Some idea may be gained of the morbidity in Philadelphia when we find that during one year there applied to twelve of our large hospitals 276 patients for treatment. Some of these were dispensary cases and some house cases. Unfortunately, there is no uniformity of hospital statistics so that a detailed comparison is not possible. Of this number, however, approximately 104 underwent operations.

Foss recently stated that certain valleys in the western part of Pennsylvania were goitre districts; notably in Westmoreland and Cambria counties and the Susquehanna and Cunningham valleys extending north into the southwestern part of New York. Hale in charting the goitre belts of Northwestern United States shows that one side of the Columbia River abounds with cases, seventeen to twenty-two per cent., while the opposite side shows fewer or no cases. He found out of 2,700 boys, 19.5 per cent. suffering from recognizable thyroid diseases and out of 1,700 noted about one third affected. For intensive study the city of Philadelphia has been taken, with its forty-eight ward divisions. The total reported deaths in forty wards and the number for the various years will be seen by Table VI. A spot map of the total number of deaths for the ten years period has been made and further factors studied are:

Water supply.—There always has been some who contended that infected water or water rich in certain minerals was the direct cause of goitre. This has not been proved either statistically or experimentally. The same applies to foods. Hirschfeld and Klenger in Switzerland caused goitre in white rats when placed in a goitre district and fed on distilled water. On the other hand, rats in close association with strumous animals in a nongoitre district and using nests of the latter animals have remained healthy. L. MacAuliffe (2) during his school inspection of villages of the Vosges Mountains examined 2,311 children. Of this number fourteen out of every hundred suffered from some affection of the thyroid body, or a total of 306 goitre, five cretins, four myxedema, ten cretinoids. The water used was chiefly derived from melted snow and rain. It was low in minerals. The people ate no meat except pork. Along the same line Forbes, of the Ohio Agricultural Experiment Station (3), has shown that out of some 900 samples of food tested, iodine is rare and may be regarded as accidental. He believes there is no direct evidence that the iodine content has a bearing on the cause of thyroid disease. It is interesting to note that the following foodstuffs do contain small percentages. In order of increasing amounts they are: nuts, spices, condiments, fruits, cereals, garden vegetables, legumes, animal foods, and manufactured foodstuffs. So our water supply coming through the five filtration plants and various privately owned concerns is derived from the two rivers. The area supplied by one shows no preponderance of deaths over the other.

TABLE VI.

Deaths from Exophthalmic Goitre in Philadelphia
By Wards

Wards	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Totals	1	2	0	2	0	0	4	5	2	6	0	2	1	2	4	2	3	1	3	6
Years																				
1906	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1
1907	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..
1908	..	..	..	..	..	..	1	2	..	..	..	..	..	..	..	..	..	..	..	..
1909	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	1	..	..	1
1910	..	..	..	..	..	..	..	1	1	2	..	1	..	..	..	..	2	..	..	1
1911	..	1	..	..	..	..	..	..	1	..	..	1	..	..	1	..	..	..	..	..
1912	..	..	..	..	..	..	1	..	..	..	..	..	..	..	2	..	..	..	2	..
1913	..	1	..	..	..	..	..	2	..	..	..	..	1	..	1	..	..	..	1	1
1914	..	..	..	1	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	2
1915	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	2	..	1	..	..

Wards	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Totals	5	12	2	8	2	3	8	5	6	3	5	13	2	5	1	4	1	3	5	5
Years																				
1906	..	2	..	1	..	..	1	1	1	..	..	1	1	2	..	..	..	..	..	..
1907	2	..	..	1	..	..	..	1	..	1	..	..	..	..	..	..	..	..	1	..
1908	1	..	..	..	..	..	..	..	2	..	..	1	..	..	..	1	..	..	..	1
1909	1	..	1	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1
1910	..	1	1	2	..	..	1	..	..	..	..	1	..	..	..	1	1	1	..	..
1911	..	1	..	1	..	..	..	..	..	1	1	2	..	..	..	1	..	..	..	..
1912	..	1	..	..	..	2	1	1	2	..	2	..	..	1	1	1	..	1	1	1
1913	1	2	..	..	1	1	3	1	1	1	..	3	1	..	..	..	..	1	1	1
1914	..	2	..	1	..	..	1	1	..	..	1	1	..	..	..	..	..	..	1	..
1915	..	3	..	2	..	..	1	..	..	..	1	3	..	2	..	..	..	..	1	1

Density of population.—Based on the last return of the census the density per acre for each ward has been transferred to a transparency. Applying this to the spot map we find some of the most thickly populated wards free of a single death for the decade, while the sparsely settled outlying wards have a greater number proportionately. Thus the Third Ward with 210 per acre, the Fifth Ward with eighty-five, and the Sixth Ward with thirty-one have no deaths. On the other hand, the Twenty-second Ward with ten per acre has twelve deaths and the Thirty-second Ward with seventy-two persons per acre has a total of thirteen deaths. We may conclude that density of population has no relation to the appearance of goitre.

Geological formation.—Philadelphia overlies territory which may be divided chiefly into five geological divisions: sand and gravel, arkose sand and gravel, quartz feldspar mica rock, tidal flats, and land of mixed formation. It was recently stated by two German authors that a survey in Germany showed that the geological formation had no bearing on goitre. We find, likewise, that irrespective of the drainage, elevation, or underlying strata, the condition does arise and does cause death.

SUMMARY.

From the foregoing study it may be deduced that:

Diseases of the thyroid are on the increase for all areas considered.

The age period of forty to forty-nine years gives the greatest mortality.

The female sex is predisposed.

Colored persons are not as susceptible as the white race.

The rate for residents of cities is almost uniformly higher than for rural districts.

Geographical location has no bearing in goitre prevalence.

The water borne theory of infection has not been satisfactorily demonstrated experimentally or statistically. The same applies to foodstuffs.

Judging from the mortality rates, the density of population has little or no effect on the prevalence of goitre.

Geological formation does not affect the prevalence.

CONCLUSION.

We may conclude, therefore, that the present indications are that goitre is noninfectious and is not caused by a foreign toxin introduced into the body, either by food, drink or other means. Inasmuch as it develops in persons subject to nervous strain, possibly due to their environmental influences and at a period of life when this strain is most acute; and from the indications of overactivity of this gland as presented normally in certain states of health, as pregnancy and menstruation, it is reasonable to infer that all causes point to the development of some poison within the body due to faulty metabolism. In turn, this faulty metabolism of the body chemistry is influenced by the habits and life of the individual. Therefore, the theory of nervous enervation or nervous control, as being directly responsible for the development of goitre in its various forms, and the nervous symptoms manifested in a well developed case are in turn secondary to the reflex effect of the goitre, which constitutes a vicious circle.

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1218 Wyoming Avenue.

Method for Isolation of Cholera Vibrio and Other Organisms.—Aldo Castellani (*British Medical Journal*, October 13, 1917) describes a method by which the cholera vibrio, the Bacillus typhosus, or other organisms can readily be isolated from mixed material such as the human stools. The method depends upon the fact that the addition of serum, or serums, containing large amounts of agglutinins for the undesired organisms, and few or none for the one to be isolated, to a fluid culture medium will result in the agglutination of all but the desired organism. This leads to a marked inhibition of the growth of the contaminating organisms, leaving the supernatant culture medium almost exclusively occupied by the organisms to be isolated. The precise technic is described in detail.

CHILDBIRTH AND ITS ANCIENT CUSTOMS.

By Joseph H. Marcus, M. D.,
Atlantic City, N. J.,
Attending Physician to the Jewish Seaside Home.

Since the days of Abraham, to possess a child was always considered as the greatest blessing God could bestow, and to be without children was regarded as the greatest curse. The rabbis regarded the childless man as dead, while the cabalist in the Middle Ages thought of him who died without posterity as of one who had failed in his mission in this world, so that he would have to appear again on the planet to fulfill this duty. As the imagination always occupies itself with the unknown, the embryonic or the preliminary stage of child life became the subject of fanciful legend and myth.

The soul before birth is warned that it will be held responsible for its actions through life; and takes an oath to lead a holy life. Two guardian angels teach the soul the Torah—the five books of Moses, Genesis, Exodus, Leviticus, Numbers, and Deuteronomy—every morning and display the glories of the just in Paradise. In the evening Hell is shown. As the memory of this would interfere with free will, the child forgets all it has seen and heard in this stage. The depression in the middle of the upper lip represents the stroke by which this knowledge and wisdom are made to disappear. For this reason, too, children cry when they are born. One of the oldest ceremonies connected with the birth of a child was that of tree planting. In the case of a boy a cedar was planted; in that of a girl, a pine. *Halakah,* the custom of cutting the boy's hair for the first time, took place after his fourth birthday, when care was taken to avoid the "corners." In Palestine this occurred on the second day of Passover, and it was considered a religious privilege for each of the friends and relatives to cut a few hairs. In earlier times it was also customary to weigh the child and to present the weight in coin to the poor. The various diseases to which the child was subject were included under "the difficulties in bringing up children." If the child died it was said to be because of the sins of the parents. God himself supervised the education of the prematurely deceased children.

The following are some of the Biblical details touching the birth of children: A child might be brought into the world with or without a midwife. The expression in Genesis 30:3, "She shall bear upon my knees," and similar phrases are to be taken literally; "twixt wife and midwife the child of the poor woman perishes." Immediately after birth the child was bathed, rubbed with salt, and wrapped in swaddling clothes. The child was usually suckled by his mother, but sometimes by a wet nurse. Thirty-three days after the birth of a male child, and sixty-six after that of a female child, the mother offered up a sacrifice of purification. The weaning, often long deferred, was accompanied by sacrifices and festivities. The cradle is said to have been first used in Isaac's time; it occurs in similes, as in Homer. On it were hung bells, which generally were employed with amulets in order to guard children against demons. A woman during confinement is recommended to particular attention; and her death is ascribed to negligence of the duties specially prescribed for Jewish women. Newborn children, according to the Bible as well as the Talmud, were sprinkled with salt; those that made no sound were rubbed with the afterbirth. Air was breathed into those born apparently inanimate; and a beaker filled with hot coals was held near the mouth of one that refused the breast, to stimulate the action of the facial muscles.

Operations to assist birth were then known. It was considered a heathen custom to fasten a piece of iron on the bed for the protection of the woman, as well as, on the night before circumcision, to place on the table viands which should not be touched. The use of a Torah scroll as a charm for easing birth and for the protection of the child seems to be of early date; and the origin of the ceremony of lighting candles on the "watch night," the night before circumcision, is to be ascribed to the Talmud. In Rumania as soon as the labor pains of the woman begin all the female inmates of the house loosen their hair. In Poland, for the purpose of easing birth, all knots in the woman's clothing are untied; and she wraps herself in a *mappah* or wimple, that is, the band that is wound around the Torah. In the Caucasus the woman is held in the strictest seclusion. For seven weeks prior to her expected accouchement, no one, except the midwife and the female relatives, is allowed to see her. On the night of birth the door of the lying in room is locked; one light burns near to the *mezuzah* and another next to the hearth. The *mezuzah,* literally "doorpost," is the name given to a rectangular piece of parchment inscribed with the passages, Deuteronomy 6:4-9 and 11:3-21, written in twenty-two lines. The parchment is rolled up and inserted in a wooden or metal case or tube. This is affixed in a slanting position to the upper part of the right hand doorpost, so that the upper part is inward, and the lower part outward, and about a handbreadth from the outer edge of the doorpost. Despite the repeated prohibition of their rabbis, the Caucasian Jews practise the superstitious custom of mixing in a glass of water some earth from the grave of one deceased within the last forty days, and giving it to the parturient woman to drink. If it is not effective the dose is repeated with earth obtained at a greater depth. In Poland and Galicia, the custom still remains that once prevailed in Germany, of making a chalk mark around the lying in chamber or of describing black circles on the wall. It is also the practice in many places to hang psalm verses over the woman's bed. Sometimes the verse, Psalm 20:2, is inscribed on the door, and the following invocation is recited: "May He who harkened to thy mother, harken to thee also!" In Hesse a circle is drawn with chalk on the floor, and the verse, "My help cometh from the Lord," etc., is written on it. In Kurdistan, and elsewhere in the Orient, sweet smelling herbs are burnt in a censer, with which first the synagogue, and then the lying in room are perfumed.

In Poland the book of Raziel is laid under the head of the woman, and white cloths are hung at the windows and around the bed. In older Jewish recipe books, the following directions are given: Whisper into the ear of a woman in travail: "And Moses spake unto the people, Get thee out and all the people that follow thee; and after that I will go out. And he went out." Or write on a *Räuftel* (head) of cheese to be given her to eat, *"Satur arepo tenet opera rutas"*—made up of *"Sator (are) poten (ter) et opera (re) r(ati)o t(u)a s(it)."* Or whisper in her right ear: "He went upon Mount Sinai and heard a calling and a crying. And he spoke unto the Lord, What meaneth this calling and this crying that I hear? The Lord answered him, It is the voice of a woman in labor! Now go out and say unto her, Get thee out! The earth demands thee! And all these thy servants shall come down unto Me and bow down themselves unto Me, saying, Get thee out and all the people that follow," etc. Or mix the fat or milk of a bitch with water and give it to the woman to drink. Or stand at the door next to the *mezuzah* and read the Haftarah Shofetim (Isaiah 1:1); then say Genesis 21:1, and pronounce the Lord's name thus, "Get thee out!" Or strew ground black pepper under the woman in labor; or place a ram's horn in her hand; or the skin of a snake on her heart; or the eyes and bladder of a salt herring; or let another woman put her hand on her and say with her Psalms 19:6; in addition to these customs many others are mentioned as well. If the child dies in the womb, the gall of an ox should be mixed with water and given to the woman.

It is further stated that in the same recipe books that "Sannui, Sansannui, and Samangaluf are known as the great and noble angels whom men call upon to protect women in labor against Lilith and whose names written in any locality, even if on the wall, serve to exorcise Lilith's brood therefrom. Therefore it is effective to write these names in the four cardinal points near the woman, especially at an opening, as at a door or window." This prescription against the beautiful Lilith, Adam's first wife—compare second part of Goethe's *Faust*—was zealously observed. The text continues: "In the name of the Lord God of Isreal, who reigns over the cherubim, whose name is mighty and fearful, Elijah the Prophet—may he be mentioned for good! —once went upon his way and met Lilith with all her kith and kin. And he said unto Lilith the fiend: 'Thou unrivaled in impurity, and ye, ye goodly crew, whither are ye going?' She answered: 'My master, Elijah, I am going where I may find a woman in travail. I will cause a deep sleep to come upon her, and I will rob her of her newborn child. I will drink its blood, and suck its marrow, and devour its flesh.' And Elijah—may he be mentioned for good!—spake angrily: 'May God, blessed be he! banish you hence! May you become stiff and stark as stone!' Lilith replied: 'For God's sake, spare me and I will get me hence. I swear to you by the name of the Lord God of Israel I will desist from my intent upon the woman and her child; and whenever I hear my name called, I will go away. Now I will tell unto you my names; and whenever they are spoken neither I nor those that are mine will have the power to do harm, or go to the house of a woman in labor, or to do her any evil. These are my names"—fourteen are mentioned.

Amulets having inscribed on them *Magen David,* the signs of the Zodiac and Psalms 6:7 are still in use and may be obtained at any Jewish book store. *Magen David,* "David's shield," is the hexagram formed by two equilateral triangles, used as the symbol of Judaism. It is placed upon synagogues, sacred vessels, and the like. When travail is difficult a Torah roll is brought into the room. Old representations show the employment of delivery chairs. In Rumania the child stays in bed with its mother as long as she remains there, and a *sefer* —any holy book—is placed under its pillow. Into its first bath are put pieces of bread and sugar. In Poland the rocking of an empty cradle is avoided. If anyone comes with a basket into a house in which there is a newborn child, a piece is cut from the basket and laid in the cradle, in order that the infant may not be robbed of sleep and rest. For the same reason care is taken not to remove from such a house utensils of any kind, especially such as hold burning coals. If the child is born with a caul, the latter is taken as a sign of good luck and is preserved for a talisman. A boy is welcomed into the world with the words: "A boy is born to the world; a blessing has come into the world," but at a girl's birth, the walls weep. It is a belief in Rumania that until the completion of the first year of its life, the child speaks with God and the angels. The latter show it golden fruit in its sleep; if it can grasp the fruit it laughs; if it cannot, it weeps. Elsewhere a child's laughing in its sleep is said to betoken that it is playing with the angel of death; therefore it is recommended that the child be lightly tapped on the mouth. A child should not be kissed on the feet, since this is the custom at the *Mehillah* prayer; that is, on asking the dead for forgiveness. *Mehillah*—"trespass in regard to a holy thing"—deals chiefly with the reparation which most be made by one who has used and enjoyed a consecrated thing. A child must not be held before a mirror, else a second child will be born within a year. If the hair is cut, the child will get an elflock. Scurf gives promise of beautiful hair. The woman who has been delivered must not be left alone. Under her pillow or under her mattress is laid a knife, without which she may never leave her bed, or a dagger is stuck in the ground near her head; and daily for thirty days it is carried three times around her couch. In northern Germany this serves to guard against the werwolf, or according to Grimm, against the wicked fairies. While making the circuit with the dagger about the bed the following verses are sung:

Ich mache einen Kreis
Den Gott wohl weiss . . .
Also mancher Ziegel ist auf diesem Dach
Also mancher Engel bei uns wach!
(I make a circle
Which God well knows:
As many tiles as are on this roof,
So many angels keep watch o'er us!)

At a hard labor three of four women pray:

Auf meinem rechten Fuss tret' ich,
Gott, den Herrn, bitt' ich
Dass er entbind.
(I press upon my right foot,
God, the Lord, entreating,
That He may deliver!)

During the same thirty days in which the dagger is carried about the bed, the school children recite the evening prayers in the lying in chamber in order to keep off the *Benemmerin,* or pixies.

In Hamburg, for the protection of mother and child, a skein of red silk is bound around the child's wrists. Here may be mentioned the custom existing in Breslau of scattering almonds and raisins on the first *Simhat Torah* after birth. The night before circumcision, watch night or wheat night, and in Palestine every night between birth and circumcision, for the protection of the child, the people in the house "study." At Salonica a ballad is sung on the watch night. In Palestine on the night before the circumcision an oil lamp with many wicks is brought into the house, and there is general rejoicing. In Upper Silesia the knife for circumcision must be in the house the night before the ceremony. The Friday evening before circumcision —*Zakar*—a feast is spread to which every one is welcomed. In Hamburg, peas with pepper, whiskey, and cake are provided; among the Portuguese, nasturtium seeds; in Poland, *fristtlech,* a thin pastry mixed with oil, round peas, and mead. Most of these customs and superstitions are not of Jewish origin, but a review of Grimm's *Mythologie,* and Wuttke's work, shows they have been borrowed from neighboring peoples.

For parturient women the regulations are the same as for the *Niddah,* or menstruating woman. A treatise in the *Mishnah, Tosefta,* and both Talmuds, books that treat of traditional law, the Pentateuchal code ordains that a menstruating woman shall be unclean for seven days from the beginning of the period, whether it lasts only one day or all seven. In either case she is unclean for seven days only, but during this time her defilement is communicated to every object with which she comes in contact. These laws, however, have been extended in many ways and made more onerous, both by rabbinical traditions and interpretations and by customs which have been adopted by Jewish women themselves. According to these more rigid requirements the woman must reckon seven days after the termination of the period. If, then, this lasts seven days, she cannot become pure until the fifteenth day. Purification, furthermore, can be gained only by a ritual bath, or *Mikweh;* and until the woman has taken this she remains unclean according to the interpretation of the rabbis generally. In addition to all this, a woman who does not menstruate regularly, is unclean for a certain time, before she becomes aware that the period has begun, and objects which she touches are defiled, since there is danger that the menses may have begun a short time before, and that she may not have perceived the fact.

The treatise *Niddah* is devoted chiefly to a more accurate determination of these regulations and to the rules concerning a woman in childbirth (Leviticus 12.). Chapter I concerns women whose uncleanliness is reckoned only from the time of the first appearance of the menses, and the period of retroaction in ritual impurity of this beginning in the case of other women. Chapter II deals with the examination to determine whether the period has begun, and the different colors of the discharge which are considered unclean. Chapter III concerns a woman in childbirth. The Pentateuchal code contains different regulations according to whether the woman bears a male child or a female child. In this chapter rules are given for various cases in which the sex of the child can not be determined as in the birth of a hermaphrodite or in miscarriages and premature deliveries generally; the view of the ancients is also given regarding the time at which the sex of the embryo can be distinguished. Chapter IV contains rules concerning the daughters of the Cutheans, the Sadducees, and the Gentiles in regard to menstrual uncleanliness, and further details regarding a woman in childbirth. Chapter V concerns a child delivered by Cæsarean section; the several periods of life, and the regulations which govern them; the signs of puberty in both sexes, and the time of their appearance. Chapter VI gives further details on the signs of puberty in the female; in the discussion of this subject a sentence of which the converse is not true, suggests a number of other statements on the most diverse topics which are not true conversely, such as "He who can be a judge can be a witness; but many a man who has been accepted as a witness is not empowered to be a judge." Chapter VII contains regulations concerning the impurity of menstrual blood and other impurities, matters in which the Cutheans believed. Chapters VIII to X deal with spots of blood, and the method of determining whether spots are caused by blood or by other coloring matter; the symptoms of the appearance of the menses; and the corpse of a menstruating woman.

The *Tosefta* to this treatise, which is divided into nine chapters, contains much which serves to explain the *Mishnah,* as well as many other important and interesting passages. Especially noteworthy are the sections which treat of the formation of the embryo, and those which discuss changes in manners and customs. The Babylonian Talmud discusses and explains the individual sentences of the *Mishnah,* and contains legends, aphorisms, and maxims, such as the following: "An angel appointed for the purpose takes the germ from which a human being is to be born, presents it to God, and asks: 'Lord of the world, what manner of man shall be born of this germ, strong or weak, wise or foolish, rich or poor?' but he does not ask whether he shall be righteous or unrighteous, for that depends wholly on the will of the man." "The happiest time for man is while he is in the womb, for he is instructed, in the entire Torah; but when he is about to go forth into the world, the angel smites him on the mouth and causes him to forget all he has learned. He is then adjured; 'Be thou holy in thy life and not unholy; for know that God is pure, His ministers are pure, and the soul which is breathed into thee is pure. If thou keepest it in purity, it is well; but otherwise it shall be taken from thee.' " At the birth of a male the bath, *Mikweh,* may not be taken before the expiration of eight days; at the birth of a female, not before fifteen days, provided clean white linen has been put on and the seven days of purification have taken place within that time. Where it is the custom for the women to visit the *Mikweh* at the end of forty days after bearing a male, and fifty after bearing a female, the regulations are made accordingly.

521 PACIFIC AVENUE.

LATERAL SINUS THROMBOSIS*

With Reports of Five Cases Occurring Without Symptoms.

By A. SPENCER KAUFMAN, M.D.,
Philadelphia.

The choice of this subject was prompted by the fact that during the past two years I have had under my care five cases of sinus thrombosis that occurred without presenting the classical or usual diagnostic symptoms, and were discovered only at operation. The lateral sinus is exposed to infection through numerous avenues, and it is truly remarkable that we are not confronted with this condition more frequently, particularly when we consider the amount of procrastination that is practised in mastoid surgery under the guise of conservatism. Most authorities teach that the etiology of sigmoid sinus phlebitis is usually a chronic otorrhea or mastoiditis, but it is interesting to note that in four of the five cases here reported the condition has been acute. It is practically impossible to say in what proportion of mastoid cases this complication occurs, as it varies greatly in the experience of different otologists, depending, of course, on the conservatism of the individual and upon the length of time that the general practitioner will treat suppurative ear conditions before calling in a consultant.

Considering the routes of infection in anatomical sequence, there is, first, the direct infection of the jugular bulb. This condition may complicate an acute suppurative otitis media without a true septic involvement of the mastoid process; it occurs mostly in children, due to the fact that the floor of the tympanum may be wanting or is in the process of ossification. Next, we have the involvement of the veins emptying into the sinus, principally the emissary vein, which become blocked with thrombi, and the infection extends to the sinus, and there, in turn, forms another thrombus, first mural and later complete. Third, and most common, comes the direct phlebitis following a necrosis of the bony structure of the mastoid. Last, we have the involvement of the sinus from an acute suppurative otitis media in the atypical mastoid, i. e., the mastoid which is devoid of cells and is composed only of the cortex, and directly contains the sigmoid portion of the lateral sinus.

There is nothing more easy to diagnose than a typical case of septic sinus thrombosis. We have the history of a suppurative otitis media, acute or chronic; the patient notices a dull, heavy sensation, although not a true headache, on the affected side of the head for a few days; then he is suddenly taken with a severe chill lasting sometimes twenty to thirty minutes, and with it a sharp rise of temperature, pulse and respiration increasing in proportion, then a profuse sweat and a descent of the temperature to normal. There is then a period of from a few hours to several days without symptoms, and there is a repetition of the demonstration of sepsis. If the condition goes untreated, these symptoms become more frequent until there is a persistently high temperature and all of the other indications of severe general toxemia.

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It seems almost unnecessary, and yet it is well to consider the pathology of this symptomatology. As the clot becomes infected, a small piece separates from the main portion and enters the bloodstream, producing the evidence of septic infection, which is shortly overcome by the phagocytic action of the blood. This is then repeated until the infection in the bloodstream is overwhelming, or until a severe septic process is established in one or more viscera. On the other hand, the upper part of the clot may break down, and the lower part, particularly that in the jugular, remains firm for a while; here, then, we have a condition which is liable to do just as much damage, but with a great deal less warning. In this latter condition, no definite symptoms can be mentioned that would enable us to make a diagnosis, and most of such cases are discovered only during the performance of a mastoid operation done for the usual reasons. The following should, however, make us suspicious, and at least urge an early operation and an examination of the sinus: dull, heavy sensation in the head, particularly if on the affected side; persistent high, or moderately high temperature; fullness of the retinal vessels, and added to this the bleeding bone found in the mastoid, of which I shall speak later. To this might be added also a positive blood culture, but it is not present in this class of case often enough to be of service.

I cannot speak of the treatment of the actual condition without a word in regard to the prophylaxis. It is now generally recognized that an early and free incision of the membrana tympani is the proper procedure to follow in trying to prevent an empyema or a necrosis of the mastoid, and is successful in the vast majority of cases; but we are still in the educational period regarding early operation in mastoiditis.

Great difference exists in the teaching of various authorities as to the time that an ear, free from urgent symptoms, should be allowed to discharge, and, as conditions vary, we probably never will be able to fix the limit in days or weeks, but must be guided by signs and symptoms. There is no question about the treatment of a mastoid which gives evidence of a necrosis of the cortex, allowing pus to escape under the soft parts, nor of a mastoid from which a pusy discharge flows from the middle ear and in which there is drooping and redness of the posterior superior part of the external auditory canal, with or without mastoid tenderness and rise of temperature. The difficulty in deciding when to operate arises in the cases in which an otorrhea is apparently the only sign of trouble. This paper permits of no lengthy discussion of this phase of the subject, although it is a most essential part. Briefly, when a membrane in an acute purulent otitis media ruptures or is incised, the discharge is serous or serosanguineous, which later turns to pus. This continues for a few days to a couple of weeks and then becomes mucoid, followed by gradual lessening until it gradually disappears, and with its disappearance a regeneration of the membrane takes place. If the discharge continues mucoid in character with the perforation low down and anterior, it will probably yield eventually to topical treatment; but, on the other hand, when a discharge continues pusy with the opening in the membrana tympani posterior and there is indication of the membrane becoming further destroyed, mastoid exenteration is called for in order to save the patient's hearing, and to prevent complications such as the one under discussion.

As a rule, in sigmoid sinusitis the vein will be found actually exposed or covered with necrotic bone which demands removal, but I do not believe that it is necessary to uncover the sinus for inspection in every mastoid operation if, for instance, the bony wall is healthy and shows a normal blue color under it, or if the patient has given no suspicious symptoms. However, this step should be performed in every case in which there has been a persistent moderately high temperature before operation with no other conditions demonstrable as a probable cause together with a distention of the retinal vessels, and in every case in which there is unusually free and uncontrollable bleeding from the bone. Of course, the hemorrhagic type of mastoiditis may be somewhat difficult to distinguish from the bleeding due to the thrombosis of the sinus and the resulting engorgement of the bone. It may be of assistance, however, to remember that in the hemorrhagic mastoid the discharge from the ear is usually sanguineous, but in sinus thrombosis the bleeding occurs only after the operative work is begun on the bone.

There is no harm whatever in exposing a healthy sinus if it is done carefully, while, if a diseased condition is revealed, it will serve to prevent a subsequent operation and possibly save the patient's life. There is no question about what should be done relative to a thrombosed or infected sinus, as far as the sinus itself is concerned, but there is a difference of opinion regarding the treatment of the jugular vein. A rule that is accepted by many operators is that when the sinus is opened and free bleeding is obtained from the bulb, as well as the torcular, no ligation of the jugular is necessary. I am inclined to take my stand with those who believe in ligation in every case, unless there is some strong contraindication to prolonging the operation, for the following reasons: 1. The course of the blood is downward, and while it follows the route of least resistance when the sinus is opened and the clot removed, there is always the possibility of a small piece of infected embolus being carried into the general circulation, causing further complications. 2. The thrombus may extend down the jugular and after the clot is removed from the sinus and bulb, free bleeding may come from the inferior petrosal sinus, giving the appearance of a clear sinus and vein, but later the venous clot breaks down and the infected débris is carried into the circulation by the blood coming from the facial vein and other veins below it. I do not believe it makes very much difference whether the vein is ligated, severed, or extirpated. I prefer the last, but I believe that the neck should be opened and the flow through the internal jugular interrupted before the sinus is opened and the clot removed.

CASE I.—H. S., male, about thirty years of age, after suffering from discharge from the left ear for two weeks and severe headaches for several days, called his family physician to obtain relief from the latter condition. Temperature at that time was about 100° F., and the only symptoms were the very slight otorrhea and the persistent headache. The temperature continued to rise for five or six days, when it reached 106° F., and tenderness over the left mastoid and along the sternomastoid muscle developed; the patient then became comatose. I saw the patient in consultation at this time, February 10, 1914, and advised removal to the hospital and immediate operation. There was slight discharge from the ear, but the membrana timpani and superior and posterior walls of the canal were reddened. I asked Dr. S. MacCuen Smith to see the patient with me at the hospital, and he agreed that operation was urgently indicated. The operation, performed by Doctor Smith and myself, disclosed a mastoid entirely devoid of cells, and the lateral sinus filling up the space usually occupied by them, a condition identical with that described by Dr. S. J. Kopetsky a few years ago. The sinus was filled by a broken down clot. The jugular vein was exposed and ligated and the sinus treated in the usual way. The patient died, apparently from toxemia, as we were closing the wound. Autopsy was refused.

Case II.—This case was of unusual interest on account of the age of the patient. Baby A. B., fifteen months old, was sent to my office on October 1, 1915, with the following history: The child had been normal and healthy until two weeks before examination, when the parents noticed a discharge from the right ear, which had come on without apparent pain. This continued for twelve days, when it was noticed that the region about the ear was tender and fever set in. The family physician was called and tried abortive treatment for two days without result. Examination at this time revealed tenderness, redness, and swelling over the right mastoid; the canal was filled with pus, and the superior posterior wall was bulging. Axillary temperature was 104° F., and the child was distinctly toxic. Immediate operation was advised and performed the same day. There was about a dram of flocculent watery fluid under the soft parts, which had escaped through a small opening in the cortex. The entire mastoid was necrotic, but the bony covering of the sinus was apparently healthy. In view of the child's symptoms, however, I did not feel safe in sending her from the operating table without inspecting the sinus. When the sinus was uncovered it was found collapsed and surrounded by the same peculiar fluid which had escaped through the cortex. Because of the child's very poor condition at this time, I was content with opening the vein and securing bleeding from both ends, leaving the jugular alone. The temperature continued around 103° and 104° F. for three days, and then became septic in type, with wide fluctuations. The wound became covered with a dirty gray exudate, and there was no attempt at healing. On the twelfth day the administration of stock vaccine of mixed streptococci and staphylococci was begun. The child began to improve and the temperature reached normal on the eighteenth day and remained so. The patient was discharged on the twenty-eighth day after operation, entirely well.

Case III.—Mrs. M. S., twenty-three years of age, felt pain in the right ear, followed by spontaneous rupture of the membrana tympani the next day. Her family physician incised the drum membrane four days later and again three weeks after the onset to secure better drainage. She was brought to my office five days after the second incision, or about four weeks after the initial pain, at which time she complained of severe pain in the head which was worse at night. The mastoid was tender, profuse discharge came from the middle ear, and there was marked bulging of the superior and posterior parts of the canal; temperature was 100° F. Operation was advised, and she was admitted to the hospital and operated upon on the following day, December 10, 1915. The mastoid cells were completely broken down and the sinus was firm, but the wall was necrotic. In enlarging the exposure of the sinus, the clot was accidentally dislodged through the necrotic wall of the vein, and there was profuse bleeding from both ends. Because of this, the jugular was not disturbed. The patient made an uneventful recovery.

Case IV.—Miss C. P., thirty-three years of age, teacher, was seen in consultation on February 7, 1916, having had pain and discharge from the left ear for one week following influenza. Examination showed tenderness and swelling over the mastoid, and so much swelling of the external auditory canal that the membrana tympani could not be seen. Headache was complained of, but she had no rise of temperature. The patient was sent to the hospital the following day and operated upon. The mastoid process was filled with pus and necrotic débris and the sinus was partially collapsed. The jugular vein was ligated before the sinus was opened. Upon opening the sinus, a disintegrated thrombus was found. The case ran an uneventful course for eight days, when complete paralysis of the left arm and leg developed. The paralysis continued for several days and then began to clear up, leaving entirely in twelve days. One month after operation, the patient complained of stiffness and tenderness of the right side of her neck, and the following day had a chill and rise of temperature. The neck became very much swollen and showed fluctuation, but she refused to have it opened for several days. Finally, when she at last gave her consent, a large abscess was evacuated under the deep fascia. Convalescence continued and she was discharged cured seven weeks after admission. I am indebted to Dr. S. MacCuen Smith for the privilege of admitting and caring for this patient in his service at the Jefferson Hospital.

Case V.—D. M., fifteen years, applied at hospital for treatment for a long standing discharge from both ears. Both membranes were entirely destroyed, and there was no evidence of ossicles. The discharge was foul smelling and brownish yellow. A radical mastoid operation was advised for each side, but was refused, and the patient did not return for a year. At this time he stated that he wished the operation, as he had been suffering from headaches and pain back of the ears. Temperature was 101° F. on admission. At operation, the typical chronic mastoid was found. The sinus, which was far forward, was solid, and after ligating the jugular an infected clot was turned out of the sinus. His recovery was uneventful.

CONCLUSIONS.

1. Procrastination in treating otorrheas that do not yield within a reasonable time to nonsurgical measures or show signs of continued mastoid involvement is dangerous to the patient.

2. There is no harm in uncovering a sinus for inspection, and it should be done when the patient has had a moderately high continuous temperature, where there is fullness of the retinal vessels, persistent headache, or where, at operation, there is more than the usual amount of hemorrhage from the bone.

3. It is safer to ligate the jugular vein prior to turning out the clot in the sinus in all cases, the only contraindication being some urgent condition which demands shortening the time of operation and the avoidance of shock as much as possible.

4. Where there are distinct symptoms of sinus thrombosis, the time for operation is after the first chill. With early operation the prognosis in all cases of thrombosis is very favorable.

254 South Sixteenth Street.

Nitrous Oxide.—R. G. McGahey (*Medical Record,* November 3, 1917) is of the opinion that nitrous oxide is the anesthetic of choice. No patient should be allowed to become even slightly cyanotic as this produces acidosis with consequent vomiting and the finding of acetone or diacetic acid in the urine and tissues. Postoperative necessity for catheterization is rare when nitrous oxide is used; patients with high blood pressure can safely take this anesthetic, as under it the pulse is slowed; and there is a temporary engorgement of blood in the capillaries lessening the strain on the heart. Further, the strain attendant upon struggling and excitement is avoided.

REPORT OF EXPERIMENTAL WORK IN THE PRODUCTION OF AN ANTITUBERCULOUS SERUM.

Its Effects on Induced Tuberculous Lesions in Animals, with a Preliminary Report of Results in Pulmonary and Surgical Tuberculosis in Human Beings.

By Max Staller, M. D.,
Philadelphia,
Medical Director, Jewish Consumptive Institute, Philadelphia; Visiting Surgeon, Mt. Sinai Hospital.

(*Concluded from page 1171.*)

In view of the results obtained with the immune serum on guineapigs as a partial protection against the development of tuberculosis I felt justified in testing it out on human beings. Much precaution was necessary. I have therefore undertaken a group of cases, both pulmonary and surgical, more with the intention of finding out the dose than a cure, fearing the possibility of anaphylaxis. I therefore started with minute doses, 0.1 c. c., and increased gradually and watched closely for general, local, and focal reactions. In all, twenty patients, ten pulmonary and ten surgical, were put under treatment at the dispensary of the Jewish Consumptive Institute, under my supervision, with the assistance of Doctor Rivkees. Four of these twenty left the dispensary after receiving one or two injections of the serum. Sixteen, however, stayed and underwent the treatment. Eight of these were pulmonary and eight were surgical cases. Of the pulmonary cases there were three moderately advanced cases, showing the presence of tubercle bacilli in the sputum; four incipient cases having a family history of tuberculosis, with positive skin reaction; and one far advanced with healed up cavitation, the patient having just come home from a sanatorium, where he was under tuberculin treatment. He coughed a good deal, but had no rise of temperature. He lost weight; the sputum was negative. In the surgical cases, I had one patient with large tuberculous glands of the neck, involving the superficial and deep glands under the sternocleidomastoid muscle, forming a large mass on the right side; one case of enlarged tuberculous glands above the sternum, operated on twice unsuccessfully; one patient had a sinus following the removal of a tuberculous testicle; three chronic hip joint cases had been operated on several times leaving large unhealed sinuses; one tuberculous hip, humerus, and glands; the last two had received tuberculin treatment. In the surgical cases six of the eight were completely cured after a lapse of from eight to fifteen months, and two surgical cases were improved but not cured on account of the administration of large doses of tuberculin prior to entering the dispensary. In one of my pulmonary patients who had received large doses of tuberculin, the serum also proved a failure. Two patients improved but went to a sanatorium on account of their economic conditions. That left five pulmonary cases which were cured. Three of these five had positive sputum and were not discharged until the complement fixation tests, with Miller's tuberculous antigen, were negative. Two of the incipient cases were cured very rapidly. Therefore, out of sixteen cases, six surgical cases were cured and five pulmonary cases. Two pulmonary patients improved and would probably have been cured if they had not left for a sanatorium. Therefore in the pulmonary cases I report only one failure; in the surgical, two failures. In all three tuberculin had been used before my serum and that seems to have destroyed the possibility of any reaction to my serum.

In all the pulmonary cases a temperature of from 99.5 to 102° F. had been running. The serum was injected intramuscularly, either in the gluteal, deltoid, or subscapular region. The largest amount of serum used on one patient for the entire treatment was twenty-four c. c., and the least was seven c. c. in the pulmonary cases and two c. c. in the surgical. Increase in weight was the first sign of improvement, followed by amelioration of cough, loss of chilly sensation, drop in temperature, a sense of wellbeing with an improvement of appetite, restful nights, and absence of night sweats. The reactions to the serum were very mild. Only a slight rise in temperature followed six hours after the injections, with malaise, chilly sensation, and slight headache lasting twenty-four hours or less. No local reaction, abscess, or any induration at site of injection occurred, but when the serum was used subcutaneously a lymphangitis occurred with a large swelling of the entire upper arm or buttock, but no redness or heat was noticeable. The swelling disappeared without any treatment in twenty-four to thirty-six hours. In the pulmonary cases focal reaction expressed itself in increased cough and expectoration, the sputum becoming white. There were no pains. In the surgical cases with open sinuses the area became red and swollen and a line of demarcation was almost formed. There was increase of pain and within forty-eight hours a large amount of white pus began to discharge, and the pain, redness, and swelling disappeared rapidly as well as the fever. The condition remained the same until another injection was made. The above symptoms reappeared until the final healing of the sinus, and the injection of serum gave no more focal effect.

At the beginning of the treatment very minute doses of the serum were administered, and therefore the period of treatment was prolonged. Case 1685 was under treatment for eleven months, while later an incipient case was arrested within two months, giving only three or four injections of two c. c. each. Some tuberculous sinuses yielded to a single injection of two c. c. of serum. The administration of the serum was decided by the subjective symptoms of the patient. No injections were given oftener than every seven days, and sometimes fourteen to twenty-one days. As a rule the patient told the story as follows: "The first two days I did not feel as well, but since then I feel fine." This patient was not given serum until he began to feel bad again; at the next visit we decided that he felt well for ten days only, and therefore he received his injections every ten days. On the other hand a patient felt well for two days and began to feel badly on the sixth day; he received weekly treatment until his subjective symptoms changed. Another patient who felt bad all the time, had his injections increased and received them every week. The site chosen for injection was the gluteal region or the deltoid. We usually begin our patients now with two c. c. of serum and continue with one or two c. c. according to the clinical improvement the patient shows. I have no doubt that a larger dose might be more beneficial, but as all my cases were ambulatory and not under complete observation we thought it more advisable to be conservative. The following table with the report of cases will speak for itself.

Cases.		Clinical tests.						Injections			Reactions			Results			
Number	Kind	Temperature	Pulse	Respiration	Pirquet	Sputum	X ray	First	Last	Total amount c. c.	General	Local	Focal	Discharged, arrested, or cured	Improved	No improvement	Left or discharged.
1685	P	100	112	30	+	+	..	October 20, 1915...	September 16, 1916..	24	++	—	+	+	..	..	D.
1668	P	100	88	28	+	+	+	October 16, 1915...	July 22, 1916.......	17	+	—	—	+	..	..	D.
1070	P	100	96	..	+	+	..	October 9, 1915...	August 8, 1916......	10	+	+	+	+	..	..	D.
1877	P	99½	82	..	+	—	..	January 3, 1916....	January 24, 1916....	7	—	—	+	+	..	..	D.
1680	P	90	99	28	+	—	..	October 30, 1915...	February 26, 1916...	6	+	—	—	+	..	..	D.
1946	P	87	99½	..	+	—	..	September 2, 1916..	September 30, 1916..	9	+	—	—	..	+	..	Went to sanatorium.
1171	P	..	..	..	+	—	..	June 10, 1916......	July 22, 1916.......	9	—	—	—	..	..	+	Referred to dispensary.
1814	P	99½	72	..	+	—	..	April 1, 1916......	April 8, 1916.......	5	+	—	—	..	+	..	Left for country.
1876	S	99⅖	88	..	+	—	..	August 27, 1916....	November 18, 1916..	24	+	+	Dec. in size.	+	..	..	D.
1217	S	101	120	30	+	—	..	September 22, 1915.	December 16, 1915..	2	+	—	—	+	..	..	D.
1827	S	103	100	28	+	—	..	April 29, 1916.....	September 23, 1916..	11	+++	—	+	+	..	..	D.
1957	S	100	82	..	+	—	..	August 27, 1916...	August 27, 1916....	2	+	—	+	+	..	..	D.
1775	S	..	..	..	+	—	..	February 5, 1916...	April 30, 1916......	8	+	—	+	+	..	..	D.
1960	S	..	..	..	+	—	..	September 2, 1916..	....	3	+	—	—	+	..	..	D.
1225	S	..	..	..	+	—	..	October 12, 1916...	November 18, 1916..	15½	+	—	+	..	+	..	Left improved.
1594	S	101	100	..	+	—	..	August 13, 1916....	December 9, 1916...	16	+	—	+	..	..	+	Sent to hospital.
1163	S	..	..	..	+	—	..	June 22, 1916......	October 20, 1916....	5	—	—	—	+	..	..	......

NOTE.—P, pulmonary; S, surgical; +, positive; —, negative; +, mild reaction; ++, strong; +++, very strong; D, discharged.

CASE I.—1685. S. C., female, twenty years old, waist maker by occupation, with a negative family and personal history. Her present illness was of five months' duration, but for the last six weeks has had pain of the substernal region with a profuse greenish expectoration, cough, and night sweats; weighed 108 pounds. Weighed a year ago 127 pounds. Temperature 100° F.; pulse rate 112; respiration 26. Physical examination showed a consolidation of the right upper and middle lobe and a very active process; sputum was positive. Her first injection of serum was given October 20, 1915, and her last September 16, 1916. Sputum was negative, all symptoms having disappeared; patient weighs 152 pounds. Discharged as cured.

CASE II.—1668. B. P., aged thirty-three years, housewife, and had five children. This woman came to the dispensary September 22, 1915, with a history of sickness lasting two years, with cough, expectoration, and no night sweat. Physical examination showed consolidation of the right upper lung and a congestion of the lower lobe, with crepitant râles, and sputum positive; x ray shows a mottling of the lungs, with a chronic fibroid phthisis. First injection October 9th, last injection August 22, 1916. She weighed 170 pounds when she came, and was discharged weighing 190 pounds, with a negative sputum.

CASE III.—1070. N. G. B., aged forty-two years; housewife; had four children, one of whom was tuberculous. Came to the dispensary March 25, 1914, complaining of having been sick for six years, suffering from a cough and headache. She had a hemorrhage two years ago from the lungs, and has been coughing since with increased expectoration and often with blood streaked sputum. Temperature 100° F.; respiration 26; weight 110 pounds; sputum positive; consolidation of the right upper lung and also the left apex. First injection July 8, 1916, last one October 5. Cough disappeared; sputum negative; weight 116 pounds; discharged as disease arrested.

CASE IV.—1877. N. V., sixteen years old; mother and brother tuberculous. Temperature 99.5° F.; sputum negative; von Pirquet positive. Impaired resonance of entire right lung posteriorly and distant breathing. First injection June 3d, the last June 24th, receiving in all three injections of seven c. c. of serum. Patient discharged as an arrested case.

CASE V.—1680. L. R., female, twenty-seven years old, mother of three children. Her husband died of tuberculosis; her sickness dated back four months, with pain in left side of chest and cough. Physical examination showed infiltration of the right lung, from apex down to the second rib; sputum negative; von Pirquet positive. First injection October 30, 1915, last February 26, 1916. Patient felt well; cough and pain were gone; temperature was normal; weighed 127 pounds; weighed 118 pounds when she came. Discharged as disease arrested.

CASE VI.—1946. A. U., female, twenty-six years old. She had congestion of both apices and impaired resonance of the left base with subcrepitant râles. First injection was given September 2d, last injection October 18th. Sputum was negative; patient weighed 106 pounds. She improved rapidly, gained in weight to 113 pounds, and she left for sanatorium improved.

CASE VII.—1171. J. F., aged thirty-five years, married; wife and one child tuberculous. He gave a history of sickness of four years; was in a sanatorium for ten months, and received tuberculin treatment. Examination showed activity involving right upper lobe and infiltration of middle lobe, left lung small cavity and infiltration of lower lobe, and also infiltration of the upper lobe; temperature normal; cough severe; profuse expectoration; loss of appetite; great weakness; diarrhea; sputum negative. First injection of two c.c. of immune serum June 10, 1916; he received in all nine c.c. of this serum, the last one on July 22, 1916: There was no reaction, no improvement, or amelioration of symptoms. Patient was sent back to the original clinic. This case was a complete failure, probably due to his receiving large doses of tuberculin.

CASE VIII.—1814. C. D., boy, fifteen years old. He started to cough fifteen months ago, and was losing weight. There was depression over right apex and pulsation at epigastrium; the right apex was impaired anteriorly and posteriorly, and the left apex was impaired anteriorly; there was bronchial breathing, with dry râles posteriorly on the left side; sputum negative; von Pirquet positive. First injection was given April 8, 1916, last injection April 21, 1916. Patient's symptoms improved; temperature came down from 100 to 99° F. in the evening; he increased in weight from 96 to 100 pounds. I saw him last May 2d, when he left to go to the country, improved.

CASE IX.—1876. M. K., aged twenty-eight years, housewife, has three children, and has a negative family and personal history. Came to the clinic May 27, 1916, with the following complaint: About thirteen months ago she noticed a swelling on the right side of the neck; the mass grew larger and larger and caused her a great deal of pain. Physical examination revealed large cervical glands, both superficial and deep behind and in front of the sternocleidomastoid muscle; there was no redness, but the area was tender to the touch. General condition was fair; von Pirquet positive; temperature 99° F.; weight 100 pounds. First injection was given May 27, 1916, into the gland substance; last injection November 18, 1916. Swelling entirely disappeared and patient was pronounced cured. I last saw her August 1, 1917, and there was no recurrence.

Case X.—1217. H. S., schoolboy, aged five and one half years; father was tuberculous. Two years ago night cries and tenderness in the left kneejoint developed. There were no objective signs in that joint, and three months later he was sent to a hospital, where he was operated on for tuberculous hip joint. He was treated later for a sinus on the anterior aspect of the thigh, discharging a cheesy pus, which closed, but reopened. He came to our clinic September 22, 1915, and was referred to my clinic on December 6, 1915. He received the immune serum and the fistula closed up. He was discharged January 22, 1916, as cured.

Case XI.—1827. A. R., aged nine years, schoolboy, had a negative family history. He came to the dispensary April 29, 1916, with the following history: Two years ago he fell, injuring his right hip; night cries developed, and the patient was confined to bed. Six months later he was operated on at the hospital for a tuberculous hip joint; he had a large sinus extending from the hip down to the upper third of the femur. He came to our clinic with a large infiltrated mass over the hip; temperature 103° F.; pulse rate 140; weight forty-nine pounds. He used crutches on account of shortening and pain. First injection was given April 29, 1916, and the last injection September 30, 1916. The large mass had disappeared and the sinus had closed completely. Crutches were discarded. Result, cured. Up till August, 1917, there had been no recurrence.

Case XII.—1057. L. H., thirty-three years old, presser by occupation. Patient had suffered from pulmonary tuberculosis for several years; was in a sanatorium, and came back with disease reported as arrested. May 27, 1916, he reported to the clinic with the following history: Eight months ago he was operated on for a tuberculous testicle; a fistula remained, which kept on discharging cheesy matter. One injection of three c.c. of serum was given, which resulted in closing up the fistula and the cure of the patient.

Case XIII.—1775. N. G. This patient suffered from tuberculous glands above the sternum, and was operated on for the removal of the glands. A fistula, however, remained, which would not close. Von Pirquet was positive. He received his first injection of serum February 5, 1916, and several injections thereafter, which resulted in complete closure of the fistula.

Case XIV.—1960. W. S. This patient was operated on for the removal of a tuberculous knee joint, which left him with unhealed sinuses. He received three c. c. of serum on September 2, 1915, which resulted in closing up the fistula.

Case XV.—1225. R. A., aged fourteen years. Schoolgirl, with a negative family history. Thre years ago she was injured and many abscesses constantly discharging pus broke out and would not heal. She was operated on several times with fair results, but several fistulas refused to heal. The first injection of serum was given October 12, 1915, and thereafter at irregular intervals. One fistula in the axilla refused to heal. This patient received large doses of tuberculin, and it seems that this retarded the cure. Results were not favorable

Case XVI.—1304. A. R., schoolboy, aged fourteen years, came to the clinic December 18, 1915, suffering from a fistula anteriorly of the left thigh; the hip joint was also immovable. He fell later and injured his hip. He was operated on, but the fistula refused to heal; von Pirquet positive; weight 77.5 pounds. His first treatment started May 13, 1916, and his last injection was given December 9, 1916. He gained in weight up to ninety pounds. This patient also received tuberculin. He was operated on later; serum had no effect.

The number of cases is not large enough to draw positive conclusions, but if combined with the evidence of the animal experimentation and the results on the sixteen cases receiving the serum, the outlook seems hopeful. I could also report three private cases and two cases in the practice of two other physicians which were cured, but officially I report only the sixteen cases treated, with the assistance of Dr. A. Rivkees, at the Jewish Consumptive Institute, of which the Institute has complete records. I never gave the serum intravenously, although I am sure that the action and results might have been better and quicker, but as all these cases were dispensary cases, I did not feel justified. For the same reason I never gave to any one patient a larger dose than three c. c. and this only on two occasions. In my next series of cases I shall try out larger doses; this is my preliminary report.

CONCLUSIONS.

1. This immune serum is absolutely harmless. This, of course, is a negative virtue, but in the treatment of tuberculosis, especially on account of the past experience with tuberculin, it is significant.

2. The reactions are very mild, and therefore do not lower the resistance of the patient.

3. If this serum gave the guineapig some protection for four months and more, it certainly can give protection to man, reasoning by analogy.

4. All patients improved, with one single exception, the pulmonary case with cavitation, which had been treated with tuberculin, and those who persevered in the treatment were ultimately cured.

5. All surgical and pulmonary patients, except two children, are following their prior occupation, working nine hours daily for the last eight to ten months, and no recurrences have occurred. The two children are going to school now and are perfectly healthy.

6. The resistance to the invading parasite may be accomplished in two ways, by the ability to destroy the invading parasite itself and by the neutralization of the toxins without destruction of the parasite's ability to multiply. My animal experimentation, as well as my observations on patients, leads me to believe that this immune serum acts by neutralizing the toxins and by inhibiting or delaying the process of multiplication, which could easily be accomplished, first by disorganizing or decentralizing the highly multiple toxoalbumin formed by the tuberculous toxins plus the proteins in the blood, thus avoiding a newly formed toxin, and, second, by preventing the formation of these toxins, thus robbing the tubercle bacillus of food and stimuli or irritant which causes its rapid growth and multiplication, and therefore causing it to remain in a more or less latent state. I observed in some of my patients that although there was no more fever, no cough, and the patient gained in weight rapidly and felt well, there were still tubercle bacilli in the sputum.

In conclusion I wish to thank Dr. A. I. Rubenstone, the pathologist of the Mt. Sinai Hospital, for all the laboratory work he did for me. I am convinced that without his aid I would never have been able to carry out these experiments.

1310 South Fifth Street.

Colon Bacillus Pyelitis in Boys.—Gaylord W. Graves (*American Journal of the Medical Sciences*, November, 1917) says that the best routine treatment for pyelitis in children is the administration of sufficient alkali to render the urine alkaline and to maintain this reaction. If hexamethylenamine is ployed the formaldehyde excretion should be watched and the urine shoud be examined frequently, with a view to forestalling injurious effects upon the kidney parenchyma. In all obstinate cases autogenous vaccine should receive a thorough trial.

PHYSICAL TRAINING AND HYGIENE FOR BUSY PEOPLE.

By LEONHARD FELIX FULD, LL. M., PH. D.,
New York,
Assistant Chief Examiner, Municipal Civil Service Commission, New York; Member, American Academy Physical Education; Chairman, Committee on Education, Borough of Manhattan, New York.

PART III.

THE FEET.

Standing position.—While walking or standing the foot should be held in such a position with reference to the leg that the line of weight passes through the centre of the knee, the centre of the ankle joint and the second toe. This means that the feet should be held parallel to each other and not with the toes turned out. The out toeing position is an indication of weakness or of fatigue. For many years the out toeing position was taught as the correct position to children in school and in gymnasium, but modern scientific research has shown conclusively that this position is a dangerous one, since it tends to throw the weight of the body upon the inner side of each foot, which is the weaker side. This out toeing position is almost certain to lead to the breaking down of the arch of the foot, a condition common among men and women. To stand correctly the knees should be stiff and unbent, the feet a few inches apart and either parallel to each other or slightly toeing inward; the toes and particularly the great toe should make a distinct grasping effort so that the muscles of the toes are contracted. This position enables a person to get the full benefit from the use of the strong great toe. When the foot is tired there is a tendency to turn it outward and to let the arch on the inside of the foot drop. This tendency is opposed by the muscles of the foot and especially by the grasping muscles of the great toe, which tend to turn the foot inward and throw the weight of the body on the outer edge of the foot, which is stronger and better able to bear it.

Bow legged position.— To strengthen the muscles of the foot and the toes, stand with the feet slightly toeing inward and the knees slightly bent forward and outward as in the case of bow legs. The toes should be in a grasping position to strengthen the muscles of the toes. This exercise aids in restoring to the feet that springy elastic condition which the feet of savages possess and which civilized men and women lack to such a large extent. It should be practised for a minute or two, ten to twenty times a day whenever a moment for relaxation presents itself. It is needless to add that this exercise can be properly performed only in shoes which are rational and well made from a hygienic standpoint.

Weak feet.—It is said that of the thousands of young men in the prime of life who present themselves annually for examination for appointment to American police forces, more men are rejected for flat feet than for any other physical defect. If this is true of young men in the prime of life how much more true must it be that weak or flat feet are an exceedingly common ailment among women, whose weaker constitution, whose greater physical strain when standing, and whose improper shoes from a physician's point of view make them peculiarly subject to this condition of the feet. The symptoms of foot strain caused by weak or flat feet are numerous. A feeling of weakness on the inside of the foot and at the ankle, a slight pain in the back of the leg between the knee and the ankle, or a severe pain at the knee or the hips is generally the first symptom. The feet seem to have lost their elasticity, the heels are sensitive and painful and the muscles stiff. The pain beginning in the feet frequently extends up the calf to the knee and some times even to the hips and the back. Upon examination it will be found that the line of weight which should pass through the centre of the knee and the centre of the ankle and the second toe now passes from the centre of the knee to the inside of the foot. The foot is toeing out and the weight of the body, falling upon the weak inner arch of the foot, breaks it down. Sometimes there is even a dropping of the flesh of the foot to the ground beside the broken down arch on the inner side of the foot. The toes are cramped and the great toe has completely lost its grasping power.

Exercises.—For the correction of foot strain due to weak or flat feet, proper shoes and physical exercise may be prescribed. The shoes of a person suffering from flat foot should give the toes plenty of room so that their strength may be increased and so that they may be able to spread as the weight of the body falls upon the foot. When the weight of the body is raised the toes should be contracted and by their grasping of the sole of the shoe give strength and elasticity to the step. The toes will in this way lift the weight of the body from the weak inner arch and gradually assist in its upbuilding. The heel of the shoe should be low, broad, and flat, because a high heel places a strain upon the forward part of the foot and interferes with the proper exercise of the toe muscles.

Balancing exercises.—To correct flat foot or a tendency to flat foot a person should practise exercises which will overcome the out toeing position and establish the in toeing position. Cross one leg in front of the other and with the feet parallel to each other and about three inches apart divide the weight equally between the feet. Reverse the feet and repeat the exercise. This balancing exercise throws the weight of the body upon the outer side of each foot. As the outer sides of the two feet adjoin each other while this exercise is being performed, it is particulary valuable in establishing the in toeing position in the case of persons accustomed to the out toeing position. A second valuable balancing exercise which is useful in establishing the correct in toeing position may be performed by standing on one foot in the correct position, so that the weight of the body strikes the second toe and lifting the other leg and curling the foot of the elevated leg around the ankle of the standing leg.

Club foot walk.—A third valuable exercise for the correction of the out toeing position is the club foot walk in which a person walks slowly with each foot toeing inward in an exaggerated manner. This is the most heroic exercise for this condition. It forces the weight upon the outer side of the foot and relieves the weakened inner arch. Each of these three exercises may be performed upon arising in the morning in the bare feet or in the stocking feet and they may be performed during the day whenever a moment presents itself for relaxation, provided the person is wearing rational shoes. To secure the best results each of these exercises should be performed for a minute or two many times a day.

Foot strain.—A person may suffer from foot strain or a painful condition of the feet even though he is not suffering from flat feet. Indeed most persons who suffer from painful feet have high arches. Our feet vary as much in shape as do our faces. Some people have feet that are naturally flat, the feet of others are moderately high arched, and some have very high arches. Flat feet need no treatment unless they are painful and painful feet require attention whether they are flat or high arched. The painful condition of the feet may be due to a shortness of the calf muscle. If when you lie on your face you cannot raise your leg by bending your knee until your calf makes a right angle with your thigh this is probably the cause of your trouble. Try heel raising exercises to develop the calf muscles. The painful condition of your feet may be caused by weak ankles which cause your feet to tip in. This may be corrected by asking your cobbler to make the inside of your heel about three eighths of an inch thicker than the outside of the heel and in this way shifting the weight to the outside of the foot.

Tenderness.—Those who duties require them to stand or walk much also frequently suffer from aching feet due to the tenderness of their feet. This tenderness may result from infrequency of bathing, from the formation of callous spots, from blisters, from excessive perspiration, or from ingrowing nails. A person who suffers from tender feet should take a cold foot spray every morning and every evening, by standing in a bathtub for a moment or two and receiving the tonic effect of the full pressure of the cold water from the faucet. After the spray the feet should be thoroughly dried with a Turkish towel, special attention being paid to the spaces between the toes. Conclude the operation by rubbing the feet with alcohol and boric acid and powdering them. Callous spots on toes or feet should be removed by rubbing with pumice stone and then softening the skin with vaselin or cold cream. This will be found safer and more effectual than the cutting of corns. Excessive perspiration is caused generally by lack of personal hygiene and should be overcome not by the use of lotions, but rather by careful attention to the cleanliness of the feet and of the footwear. When excessive perspiration causes blisters these should be treated with spirit of camphor administered by means of pieces of cheese cloth adjusted at the seat of the trouble. These applications will cause smarting at first, but will effectively heal all inflammations of the feet and the toes not amounting to genuine blisters.

Ingrowing nails.—Genuine blisters should be painted with collodion, which will protect them from the air and from the friction of the hosiery. Ingrowing nails may be cured in the early stages by cutting a deep V shaped notch at the centre of the top of the nail. As the V closes in the course of the nail's growth, the nail will be drawn away from the ingrowing corners. In the later stages of ingrowing nails, where the toe is badly inflamed there is danger of blood poisoning and gangrene and no attempt should be made to cure this condition without the assistance of a physician. Lack of attention to hosiery and shoes is frequently the cause of foot trouble. Both hose and shoes should be changed daily and if for any reason this is found to be impracticable two pairs of hose and two pairs of shoes should be worn alternately so that neither the same hose nor the same shoes may be worn on successive days. If the feet are slightly swollen in the morning slip the shoes on as soon as possible without lacing them and remove them for a minute or two before you begin to lace them.

Circulation.—The shoes should not be so tight as to cause callous spots, so loose as to cause blisters, nor with a heel which causes discomfort to the wearer because it is too high or too low The proper height of the heel is a relative and not an absolute matter. A flat foot with low instep and small arch requires a low heel, while a foot with a high instep and a high arch will be comfortable only in a shoe having a heel of medium height. The defective circulation in the feet which is the cause of cold feet in winter may be temporarily aided by the use of a hot water bag or the wearing of bed socks and may be permanently improved by a daily cold spray and by vigorous leg exercises such as deep knee bending. Persons suffering from this discomfort should not wear low shoes and sheer hose. Warmth giving and warmth retaining hosiery of gauze weight should be worn; such hosiery will absorb moisture without making the wearer feel chilly.

Additional exercises.—Those who suffer from foot strain due to weak or broken arches should, in addition to practising the three exercises which have been described and which can be performed at odd moments throughout the day, endeavor to devote ten minutes upon arising in the morning to special exercises for the amelioration of this condition. With your toes pointing inward, rise on your toes and hold this position for half a minute. Raising your heel as if it were painful, walk on your toes for several minutes. Standing with your feet parallel, raise the inner side of your feet and throw your weight on the outer side. Supporting your leg on a chair, bend your toes downward, next turn your foot inward so that your sole faces inward and then bend your foot upward. Balance the weight of your body on one foot, throwing your weight on the outer border of the foot.

HEIGHT.

Do you get the full benefit of your height? Do you appear as tall as you really are? It is the tendency of animal life to improve or to deteriorate. In the case of stature we are either increasing or decreasing in height. The physiological changes which cause the skin of our faces to wrinkle and the arteries to harden as the years roll by, cause us also to grow shorter. We can counteract this tendency by maintaining good health by means of wholesome food, pure air, sufficient exercise, and proper relaxation. The height of an individual is determined almost entirely by heredity. Races of small stature and individuals of small stature have children of small stature and conversely large men and large women generally have large children. The importance of this principle is so well established that in the process of natural selection larger men have a preference for small women and vice versa, in order that neither a race of giants nor a race of dwarfs may be propagated. Neither a child nor the parents of a child can do much to increase the normal stature of the child. Much may, however, be done by both to make certain that the child will reach its normal stature. Under the complex conditions of modern life the stature of many children is stunted and when so stunted during childhood the loss cannot be repaired at a later date. Stunting may be prevented by ensuring to the child good food, good air, sufficient exercise, and adequate rest. There is no food which can be prescribed to make a person grow. What is required is an abundance of wholesome food of any kind. An underfed child is almost invariably stunted. A child who lacks a sufficiency of pure air because of close confinement in insanitary rooms is also stunted. Suitable exercise and sufficient rest for proper recuperation complete the requirements for the attainment of normal stature.

An adult man or woman can do little to increase the actual stature but may do much to maintain the stature or to increase the apparent height. An unusual amount of rest sometimes increases the height temporarily. Candidates who lack half an inch of the prescribed stature sometimes are enabled to pass an examination by resting in bed for twenty-four hours before the examination. Such a gain in height is temporary only and is lost even more rapidly than it is gained. Attempts to increase the actual stature are generallly unsuccessful. A candidate for the police force who lacked one inch of the required stature attempted to pass the examination by inducing an obliging but cruel friend to beat him over the head until the swelling gave him the required additional height. Applicants also sometimes resort to the use of mechanical stretching machines. These machines seldom much good and frequently cause serious bone lesions. The subcutaneous injection of paraffin under the scalp, false hair or special heels concealed in the shoes are devices which are sometimes used by applicants who lack the minimum height, but these practices are so crude that they are invariably detected.

Much may be accomplished by every one in permanently increasing his apparent height by suitable physical exercise. Many of us lose from one to as much as three inches of our height by our posture, which is technically called "slouchy." A slouchy person loses some of his apparent height because he fails to hold himself in an erect position. Exercises which tend to improve the carriage will also increase the apparent height. In the everyday affairs of life men and women are interested in each other's apparent height rather than in their actual height. For increasing the apparent height all stretching and most hanging exercises may be used. Practise the stretching exercises in bed and in practising the hanging exercises use the leg movements in preference to the arm movements.

Stretching.—Lie on your back in bed fully extended, with the arms and the legs reaching as far out as possible. First lie in such a position that the arms fail to reach the head of the bed by about one inch. Bend the arms slightly at the elbow and extend them forcibly in an effort to reach the head of the bed. Try first the right arm, then the left arm; next alternate the arms, and finally use both arms. Next lie on your back in bed fully extended, with the arms and legs reaching as far out as possible, in such a position that the toes fail to reach the foot of the bed by about one inch. Bend the legs slightly at the knees and extend them forcibly in an effort to reach the bottom of the bed. Try first the right leg, then the left leg; next alternate the legs, and finally use both legs.

Hanging.—Hang from a horizontal bar with the arms fully extended. Raise the knee slightly and then extend it forcibly as if endeavoring to reach the floor. Point the toes downward forcibly. Do not move the arms at all and keep the back in an erect position throughout the exercise. Exercise first the right leg, then the left leg; next alternate the legs, and finally exercise both legs.

Bending.—Sit on a table and place the heels of both feet straight in front of you, with the legs fully extended. Have a friend hold your feet firmly at the ankles. Bend your head and your body downward over the edge of the table, with the arms fully extended above the head until the tips of your fingers touch the floor. Return to the sitting position on the table. Perform this exercise slowly and carefully. It is especially valuable, because, in addition to increasing the height by stretching, it relieves pelvic congestion and tends to reduce the waist. To secure the best results a person who seeks to increase his apparent height should at all times be extremely careful of his posture. He should always stand, sit, walk, and lie in a rigidly erect military position, so that a straight line may be drawn from his head to his heels which will touch his back at the shoulders and at the buttocks and nowhere else. There must be no relaxation of this rigidly erect carriage at any time.

Prophylactic Value of Antityphoid Vaccination.—M. Sammartano (*Gazzetta degli Ospedali e delle Cliniche,* September 23, 1917) from personal experience with many thousand Italian troops finds that the reaction is quite variable following the injections, amounting to a truly morbid condition in some cases with high fever, headache, vomiting, diarrhea, etc. This reaction is almost absent in men who have had typhoid fever. While some cases of typhoid arose in the vaccinated, the mortality therefrom was nil, while in the unvaccinated it was fifteen per cent. Sammartano found no occasion to verify the claim of Hirsch that vaccination practised during the incubation period of a true typhoid aggravated the condition and course of the disease; neither did he observe anything to affirm the statement of Chantemesse that the vaccination is capable of lighting up a latent tuberculous focus.

Medicine and Surgery in the Army and Navy

FROZEN FEET, OR TRENCH FOOT, SO CALLED.

Second Communication: Treatment.

By Henri Authelain, M. D.,
France.

The most usual means employed by soldiers for protecting their feet against cold is by greasing them with oil, vaselin, or lard. A good method is also to wear two pairs of socks, one of cotton and one of wool, the former being put on next to the skin. Thus there is a layer of air between the two pairs of socks, while the cotton prevents irritation of the skin from the wool. The socks must not be too thick, otherwise the foot may be compressed if the boot fits too closely, in which case they would be more harmful than useful. Some soldiers have found it advantageous to envelop their footgear and boots in various woolen materials, while others have interposed strips of paper rolled around the feet after freely greasing the skin, and then drawn on the sock and boot. It is hardly necessary to add that fats, paper, or woolens employed for this purpose should be preserved from all contact with earth in order to avoid the entrance of the tetanus bacillus. To prevent the boots from shrinking or soaking up water they should be well greased, preferably with petroleum.

Of all these preventive means, the most efficacious is to avoid prolonged immobility and any constriction of the feet. Therefore, the length of time in the trenches should be shortened, the men being relieved as often as possible. At all events, all men exposed to cold, particularly damp cold, should be obliged to remove their footgear at least once or twice a day and to massage the feet. They should also be instructed when relieved, not to go before a fire and if they complain of numbness in the feet they should sleep with the legs elevated. The footgear should be the object of particular attention on the part of the surgeon. The boot should be wide and sufficiently long so that the toes can be moved in every direction just as if the foot was naked. In order to keep the toes from coming in contact with the end of the boot, there should be a free space at the tip of at least one good inch. The anterior end of the foot is, in point of fact, the part the most accessible to vascular compression and the most exposed to cold. It is the initial site of gangrenous accidents. Perfect liberty of the foot is therefore an absolutely necessary condition in order that an active circulation may take place and this is unquestionably the best protection against cold, as well as avoiding constriction resulting from swelling of the feet. The prophylactic treatment of frozen feet may be summed up as follows: daily greasing of the feet; removal of all footwear once or twice a day; mobilization of the toes as frequently as possible; short stays in the trenches; and keeping the latter as dry as circumstances will permit. Unfortunately, these measures cannot by any means always be followed but they should be put in practice whenever possible.

It is not my intention to describe all the forms of treatment which have been resorted to for frozen feet and I shall rapidly consider the treatment of the mild and medium severe cases, reserving more detail for the severe types. The treatment of slight cases without ulceration or mortification should aim at a gentle reestablishment of the circulation. Heat should be avoided as its action is too violent and it greatly increases the tendency to sloughing. Inunctions with greasy substances and very gentle friction, becoming more energetic as the skin shows a rosy tint and evidence of returning vitality, are the most efficacious. Piedallu has advised the use of a grease which is easily made, because the constituents are always obtainable: Tallow, ninety parts; purified hoof oil, eight parts; petroleum, two parts.

To clean the feet, after the anesthesia has disappeared, tepid boiled water to which camphorated alcohol and soap have been added, may be used. In many hospitals physiological salt solution baths at 33° to 35° C. have been used to advantage, repeated daily and sufficiently long. During the interval the feet are enveloped in a thick cotton batting boot. After three or four days the baths are replaced by frictions with camphorated alcohol. Friction is an excellent means to restore the circulation and often in itself revives completely exsanguinated parts. It may be given dry with a piece of wool or flannel, but methodical massage is still better than friction. When the supply of drugs is ample, Championnière's ointment is an excellent means of disinfection and for use as a first dressing. It is composed as follows:

℞	Ess. geranium,	
	Ess. thym,	
	Ess. marjoram,	
	Ess. vervein,	āā gtts xv;
	Microcidine,	0,30;
	Vaselin steril,	100 grams.

In my first paper I pointed out that pain was a very distressing symptom in mild cases of frozen feet, particularly at night. The general treatment should be that of any algia, namely, antipyrin, chloral, veronal, or morphine if necessary. A dressing which appears to act with advantage is the following:

℞	Alcohol, 70°,	80 c. c.;
	Glycerini,	20 c. c.;
	Tincturæ iodini,	1 c. c.

In the interval of the dressing local tepid baths are given, preceded by massage which, while they cause a return of the circulation, shorten the painful phase and the painful hyperparesthesic reactions.

Then we have Jacquet's biokinetic method which has given good results in the process under consideration. The essential principle is the active mobilization by forced elevation of the limb involved. The patient himself should mobilize his frozen members actively. The trunk and the head being flat on the bed, he passes both hands under one thigh and raises the lower limb vertically, causing it to make a right angle with the level of the bed. Then he tries little by little to execute all the possible movements of flexion, extension, and circumduction in the toe joints and the joints of the foot. The joints are stiff at the beginning but progressively become limber and the movements increase both in force and amplitude. This automassage should be practised for four to five minutes at a time and repeated eight to ten times a day at least. The patients obtain great relief in a short time and they have all told me the same story. After a few days the paroxysms become fewer and then disappear. But besides the palliative action of this treatment, it also causes the edema to disappear, reestablishes the circulation, and hastens recovery. It can be employed not only in the mild cases but in all cases of frozen foot as an adjuvant of the treatment resorted to.

For the treatment of the severer type of frozen foot with blisters and limited sloughing areas, dressings quite as numerous as varied have been resorted to. Among all the ointments and powders used I would mention the 1:50 iodine dressings; the above ointment of Championnière; Reclus's ointment; ointment of camphorated salol; and Championnière's compound powder. Whatever dressing is used, one should always be careful to envelope the foot loosely in wadding and avoid roller bandages which when properly applied interfere with the circulation. At all events, great attention should be paid to strong antiseptics which may have a disastrous effect. Thus, carbolic acid, even when combined with alcohol or glycerin, forms a caustic varnish which causes necrosis of the skin. Solutions of bichloride of mercury are not to be recommended. Aromatic wine, a traditional remedy of the wars of the First Empire, is far from being valueless, especially if it is applied tepid or even slightly hot. A one per cent. solution of picric acid has been employed in quite a number of hospitals with good results.

Finally, I would particularly emphasize a treatment that I have seen carried out by Locquin at Dijon which gives unquestionably excellent results. Its principle is based on tanning of the skin. The blisters are just evacuated and then the surface of the foot is gently rubbed with the following mixture:

℞ Alcohol,	200;
Glycerin,	100;
Formol,	15.

Compresses soaked with this solution are also placed on the necrosed parts, but in this case the formula is slightly changed, that is to say:

℞ Alcohol, Glycerin,	āā 150;
Formol,	15.

Between dressings, the biokinetic method can be employed. At the end of a month or six weeks the slough commences to become detached and then tepid baths are given and pieces of slough are removed with scissors. This treatment thus carried out, gives rapid and very satisfactory results.

In the treatment of very severe cases of frozen foot with gangrene, everything possible should be done in order to avoid early surgical treatment. Too many amputations have been done in the past for this morbid process and many men might have kept their legs had proper treatment been carried out, because to carry out a typical amputation with some chance of a successful result the site of the amputation must be as far as possible from the disease so that a great sacrifice of limb must be made. For example, to remove the metatarsus when only the toes need be sacrificed or do a tibiotarsal disarticulation, when in reality the tarsus can be preserved, is not good surgery.

On the other hand, infection appears so early that there is great risk that suppuration will arise instead of union *per primam,* in which case cicatrization takes a very long time. One may also cut through muscles which were thought to be still healthy, only to find them soaked in pus. Therefore, one must either make great sacrifices by amputating very far away from the limits of the disease or else perform a limited amputation, in which case the chances are pretty sure that infectious bacteria will be transported beyond their original focus and infect the operative wound. Such are the inconveniences of early surgical treatment of these cases. Conservative treatment should be adopted at the very beginning because not infrequently the parts will revive and only some parts of a foot will be lost, which when first seen would have been supposed to be totally lost from gangrene. One should remember that conservative treatment is often successful in cases where amputation is most tempting.

Now, what should be the treatment? Elimination of the diseased structures may be allowed to take place naturally, and while waiting for the separation the parts are dressed antiseptically, but strong antiseptics are to be looked upon with suspicion. A very excellent treatment is by embalming, the results of which are very good, it having been used in a number of hospitals. It is carried out as follows: The foot is washed with soap and tepid water and then with ether. The skin being next well dried, compresses soaked in gomenol oil ten per cent., or balsam of Peru, are applied and these are covered by ordinary cotton wadding. The dressings are changed every two or three days. Doctor Mencière's formula may also be used:

℞ Iodoform,	10.0;
Guaiacol,	10.0;
Eucalyptol,	10.0;
Bals. Peruv.,	30.0;
Ether,	100.0.

When once the line of demarcation is well established and all suppuration has ceased, it is often good practice to even off the parts with the knife; all surgical treatment is limited to this, but large flaps must be made, because the tissues are bad and easily slough. This treatment, although giving good results, takes a long time and distant foci of suppuration may arise which are the more serious in direct ratio to the length of time the process takes to become eliminated. For this reason I would like to refer briefly to Longin's hot air treatment, which I find greatly superior to all others in the severer forms of the morbid process in question. As soon as the patient enters the hospital, the epidermis is removed by scissors wherever it is loose. Then a long application of hot air is given at a hyperemia temperature for fifteen minutes to one half an hour. This is repeated daily until the diseased structures have become dry. Usually two to three days are enough for the line of demarcation to form, and when it has, air at carbonizing temperature—700°

to 750° C.—is applied. The parts are then dressed and the resulting superficial slough becomes detached in a couple of days, leaving red, healthy tissue. The hot air at hyperemic temperature is then continued in order to hasten tissue repair and between treatments the parts are dressed with balsam of Peru. It would be too long to describe the apparatus constructed for Longin by Gaiffe, of Paris, but I may say that it is simple and easily handled. By the hot air treatment recovery is rapid and I would advise all surgeons having to deal with severe cases of frozen feet to resort to it.

MEDICAL NEWS FROM WASHINGTON.

Success of Antityphoid Campaign in the Army.—Moving Pictures in Instruction in Latest Surgical Technics.—Court Martial for Refusal to Undergo Operation Irregular.—Defects in System for Maintaining Physical Fitness of Naval Officers.—Drastic Physical Examinations of General Officers of the Army Preliminary to Foreign Service.—Progress in Cooperation Between Public Health Service and Civil Authorities.

WASHINGTON, *December 19, 1917.*

Typhoid fever, which has been the scourge of armies of previous times, has been almost entirely absent from our military forces since entry of this country into the war. Owing to the antityphoid prophylactic treatment, which has been successful in eliminating the disease from the forces, typhoid fever is not one of the diseases that gives the army medical authorities any concern whatever. While a few cases have been reported, they are not in appreciable numbers, and almost without exception they were in men who had the disease or carried it at the time of entering the service. Because of the prophylactic administered to all soldiers, all such cases as have occurred have been comparatively light. The recent outbreak of typhoid at Schofield Barracks, Hawaii, previously noted in these columns, is the first of any magnitude that has occurred in the army since adoption of the preventive treatment, and the medical authorities at first were at a loss to account for it. A board consisting of Lieutenant Colonel Horace D. Bloombergh, Major George R. Callender, and First Lieutenant Charles M. O'Connor, Medical Corps, was appointed to ascertain the causes, and a report of the board has reached the surgeon general of the army. It was found that a Japanese, who was suffering from the disease or was a carrier of it, had been working on water supply system of the post, and that in this way the germs were introduced into the water and distributed to users at the post.

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The army medical authorities are leaving nothing undone in keeping abreast of the latest advancements in medicine and surgery, and they are giving particular attention to new antiseptic preparations for the dressing of wounds. When it is decided to adopt one of them—or anything else new, for that matter—the personnel is given thorough instruction in its use. Frequently, the proper employment of such preparations can be demonstrated best by the use of moving picture films, some of which are taken in the hospitals in France to illustrate the methods employed in the treatment of those brought in from the battlefields. Such films are being exhibited at the general, base, and camp hospitals in this country, and also films showing other surgical and medical activities are employed in the same manner, for the benefit of the medical and surgical personnel. Among the antiseptic wound dressing preparations to which such demonstrations have been applied is "dichloramin-T," which was brought out about a year ago, and films illustrating the technic of its use recently were run off at the Walter Reed General Hospital, D. C., under the supervision of Captain William H. Furness, of the University of Pennsylvania, and First Lieutenant Walter F. Lee, of Philadelphia, both of the Medical Reserve Corps.

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Considerable attention has been attracted to a recent court martial case at Camp Shelby, Miss., where an enlisted man of Company G, 150th Infantry, was convicted for refusal to undergo a surgical operation prescribed by Major James E. Baylis, the examining surgeon. The accused was sentenced to confinement for two months, and the record of the case was sent to the War Department. The Secretary of War, in considering the case, took the position that it must appear in the charges in such a case that the examining surgeon not only prescribed the operation, but certified that it was without risk of life of the soldier and was necessary for the removal of a disability that prevented the full performance of any and all military duties that properly can be required of the soldier. It is held, in this particular case, that the specification did not charge a crime against any military law or regulation, and the proceedings were pronounced irregular and void.

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While the question of maintaining the physical fitness of naval officers is not likely to engage the serious attention of the naval authorities during the period of the war, as far as the imposition of requirements of regular exercise is concerned, some consideration lately has been given to defects in the present system of maintaining the health and vigor of the personnel. Surgeon R. W. McDowell, of the navy, in a recent report made to the Bureau of Medicine and Surgery, commented on the marked physical deterioration manifest in many young officers of his acquaintance since he first was associated with them at the Naval Academy. As a measure to stimulate interest in physical exercise out of doors and to compel officers to take it, he makes the suggestion that, instead of the monthly walks hitherto prescribed for officers, and suspended since beginning of the war, they be permitted to choose the form of exercise they prefer, as walking, tennis, golf, swimming, horseback and bicycle riding, rowing, skating, handball, basketball, baseball, etc., and be required to be engaged in some sort of exercise for a minimum number of hours a month, based on their ages. For example, officers between twenty and thirty years of age might be required to do a minimum of fifteen to twenty hours' exercise a month; those between thirty and forty a minimum of twelve hours a month, and so on.

The monthly walk, required up to commencement of the war, was universally regarded as more of a task than a benefit. If he went alone with his thoughts, or if he went with another officer with whom he was sure to discuss features of military life, the officer usually came back physically weary and mentally unrefreshed. Therefore, it is thought that, when the monthly physical exercise is resumed, it would be the part of wisdom to consider carefully the physical side of the subject and to authorize and encourage those forms of physical exercise that call into play something more than the mechanical movements of walking.

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It is not thought that many general officers of the army will be entirely separated from active service as a result of the physical examinations ordered in the cases of such officers before they are sent to France. So far, only one such officer, Brigadier General Edgar A. Wedgewood, of the National Army, has been discharged as a result of being physically disqualified for further service by the examining board. It is certain, however, that a number will be retained on duty in this country as not physically qualified for the rigors of a foreign campaign. Of course, disability may be found that would keep an officer at home and yet not justify his transfer to the retired list in the case of a member of the regular army or discharge in the case of a member of the National Army or National Guard.

There are indications that the War Department will have no sentiment in taking action on these cases, which will be drastic and without consideration for individual desire or destiny. Therefore, no results are looked for from appeals that may be taken from the findings of the examining board, the members of which are composed of those standing high in the medical profession—Brigadier General William H. Arthur, Medical Corps, National Army, who is one of the foremost medical experts of the regular service, and Majors Theodore C. Janeway and Charles H. Mayo, of the Medical Reserve Corps—comments on the high standing and achievements of whom are unnecessary. Least of all will it be of avail to employ political influence to disregard the findings of the board. Therefore, if there is the slightest suspicion that an officer is not physically qualified to remain long on duty in France, he will be kept at home.

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Many beneficial results have attended the cooperation of the Public Health Service with the medical authorities of the army in the way of improved sanitary conditions. The service has assumed administrative control in the areas surrounding Newport News, Va.; Camp Lee, Va.; Camp Jackson, S. C.: Camp Gordon, Ga.; Camp Pike, Ark.; Camp Sherman, Ohio; Camp Zachary Taylor, Ky.; Camp Dodge, Iowa; Camp Funston, Kan.; Camp Lewis, Wash.; Camp Greene, N. C.; Camp Wadsworth, S. C.; Camp McClellan, Ala.; Camp Sevier, S. C.; Camp Wheeler, Ga.; Camp Sheridan, Ala.; Camp Shelby, Miss.; Camp MacArthur, Tex.; Camp Bowie, Tex.; Camp Beauregard, La.; and Camp Logan, Tex. In addition sanitary operations are being carried on at Fort Leavenworth, Kan., and Fort Oglethorpe, Ga. Usually the zones of control are about ten miles in diameter, including not only rural districts, but municipalities and smaller centres of population as well.

The aim at each of these places has been to establish an adequate system of health control. This includes special measures for the collection of morbidity and mortality data, intense rural sanitation operations, the installation of sanitary devices for excrement and garbage disposal, the maintenance of purity of water, milk, and food supplies, the medical inspection of schools, the conduct of special operations for prevention of spread of venereal diseases, recognition, isolation, disinfection, and other necessary measures to prevent the spread of communicable disease, and, in fact, the employment of every means for the maintenance of the health of the civil population. In this way, the unusual sanitary situation caused by the sudden influx of a large population has been met. Malaria, typhoid fever, smallpox, and many other diseases that threaten the military and civil population alike have been prevented. The spread of disease to extrastate points has been controlled, the efficiency of communities upon which the military forces must rely for food has been increased, and local health organizations built up that will continue to function long after the Federal forces have been withdrawn. This, without doubt, is the largest health demonstration that our country ever has witnessed.

EXPANSION OF THE SURGEON GENERAL'S OFFICE.

The following note on the Hospital Division in the Surgeon General's Office should have formed a part of the article which was brought to a conclusion in the New York Medical Journal for December 22d:

The Hospital Division develops all plans for hospital buildings and hospital trains. It is, also, concerned with the organization of all hospitals, hospital trains, and ambulance companies. This division selects the administrative officers and calls upon the Special Divisions for the physicians and surgeons and various other specialists required to complete the organizations. Fifty base hospitals have already been organized for service abroad through the cooperation of the Red Cross, and fourteen of these are on active duty in France—six with the British Expeditionary Forces and eight with the American Expeditionary Forces. Fifty more base hospitals are now being organized by this division and fifty evacuation hospitals. Thirty-two base hospitals have about been completed according to plans provided by this division. The organization has been completed and these hospitals are now in operation, one in each cantonment and National Guard encampment. The capacity of these varies from 500 to 1,000 beds. Several existing government hospitals have been enlarged to provide additional hospital facilities. The following officers are on duty in this division: Colonel J. D. Glennan, M. C.; Major H. H. Johnson, M. C.; Major Winford H. Smith, M. R. C., superintendent, Johns Hopkins Hospital; Major Floyd Kramer, M. C.; Major W. L. Hart, M. C.; Major Laurens S. Eckels, M. C., and Captain C. L. Brown, S. C.

Editorial Notes and Comments

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EDITORS
CHARLES E. DE M. SAJOUS, M.D., LL.D., Sc.D.,
Philadelphia,
SMITH ELY JELLIFFE, A.M., M.D., Ph.D.,
New York.

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SOME LIGHT UPON MALINGERING.

When the impact of the war shall have passed and toll can be taken of loss and gain, we shall learn many things and find much opened up for future consideration. More definite and clearer will be the knowledge of that factor which has always loomed large but obscure in medical practice calling for special adjustments in regard to patients or would be patients. It is not that it is especially prevalent among men of the army nor is it expected that the hard conditions of war are supposed to drag to light a body of slackers, seeking to evade the duties and hardships into which their own pride or external conditions have forced them. It is not this sifting of chaff from the grain which is to be looked for, but on the contrary an admission that malingering has a much closer relation to the whole of man's psychical makeup than physicians and others have been disposed to grant. As a matter of fact here where the greatest pressure from within and without urges a man to supreme selfforgetfulness, sacrifice comes more easily and temptations to malingering fall away. On the other hand it is no less true that each human soldier shrinks instinctively from danger, loss, pain, and misery which service entails, and is tempted by hook or crook to seek a way to escape from it. Furthermore, men of all sorts fill the army as they do civil life, and among them will be those who are born malingerers, those who, lacking in sufficient strength and adaptiveness, achieve in selfdefense one or several forms of malingering, or unresistant cannot prevent malingering from being thrust upon them.

It is therefore timely to learn something more about it, where and how to recognize it and how to deal with it. This is the opportunity to extend our conception of it to include the broader and deeper psychic determinism which underlies all reactions and makes this, like other phenomena, explicable and more fundamentally real than has been thought. A volume recently published [*Malingering or the Simulation of Disease,* by A. Bassett Jones and Llewellyn J. Llewellyn], presents the subject with an extensive outline and discussion of its forms of manifestation, methods and means of detecting it, comparison with diseases which it may simulate, all in the spirit of a broad recognition which sees in it an instinctive human trait, old as the ingenuity of the race in its own behalf. The medical, economic, and moral problems which lie within this subject increase with importance as society grows more complex in its adoption of medical questions. They enter particularly into the greatest event of the time, the war and its intricate administration. Hence the necessity of an understanding which not only weeds the false from the true in this question, but which gives some basis of action.

This is the reason that it must be considered in the light of the fullest psychic determinism. Psychical examination, analysis of the mental makeup, and only that which includes the affective life, the unconscious past of experience and unconscious striving of each man's energy and effort toward selfpreservation on the one hand and selfexpression on the other, these alone can make this subject of malingering a more practically effective one for medical investigation and adjustment. This will grant an understanding of the patient who may be consciously practising deceit, or may be the victim of unconscious selfdeception or, more subtly still but none the less effectively, the sufferer from actual disease and disabling conditions produced by desire and striving which are unconscious and actually unknown to himself. All of this the peculiarly intensive conditions of the war should do much to bring to the attention of medical observers and ultimately to the light of a better understanding.

There is special and ample opportunity here not only for such study and illumination but for work toward a higher psychological and moral standard among men in general, the would be malingerers, for this comes through an understanding and control through understanding of these inner determinants. It means a higher morale of knowledge and appreciation on the part of the medical profession, a wider conception of the determinants both of disease as it is generally defined and of character maladjustment, which is included in disease more broadly termed. The authors suggest this in discussing the detection of varying grades of deception classed under malingering. "The physician . . . must, so to speak, reconstruct the psychological content of the person. He must penetrate 'the blind labyrinths and crooked turnings of human composition,' and so place himself in a position to analyze and appreciate the nature and cogency of the actuating motives." Only it is high time that the unconscious is also taken into consideration in order to understand the full meaning both of malingering and of the diseases it stimulates and the reasons for stimulation. Then it will not be said, as this book has said, "The hysteric may and often does act without motive, the malingerer never." Rather, motive behind each disease or other reaction will be found, and all motives and therefore all reactions will become better appraised.

DIAGNOSIS AND PROGNOSIS OF CIRSOID ANEURYSM.

No matter what the origin, traumatic, angiomatous, or spontaneous, a cirsoid aneurysm develops slowly without attracting attention and only when it becomes large, particularly when pulsations are felt, does the case come under observation. The first difficulty encountered is to differentiate the cirsoid tumor from other pulsating growths, the first of which is an ordinary arterial aneurysm, which is an easy matter, and afterward to eliminate the erectile tumors, particularly pulsating arterial tumors.

If the tumor is venous the diagnosis is made at once, as these growths rarely pulsate. If it is arterial the diagnosis will be more delicate. They can be differentiated by the absence of peripheral arterial dilatations and of efferent venous varices, while in angiomata the pulsations are not so strong, the souffle is softer, and the thrill usually absent. The differential diagnosis between cirsoid and arteriovenous aneurysm is very difficult for they are similar in many respects. In the latter process compression over a limited area corresponding to the communicating orifice between artery and vein suspends the thrill and pulsations. Cirsoid aneurysm is more common than the arteriovenous type frequently following an angioma. Occasionally it is painful and is accompanied by vascular lesions in the neighborhood which sometimes are very extensive. All these symptoms are generally absent in arteriovenous aneurysm.

Exceptionally a cirsoid aneurysm may be mistaken for the serpentine arterial dilatations encountered in elderly people, but the age of the subject and the evidences of arteriosclerosis should be sufficient to come to a correct decision. One could hardly mistake the true nature of a hematoid cancer, but a differential diagnosis must be made with encephalocele. This pathological process is usually congenital, the tumor is more circumscribed and seated at certain given points on the skull, while it is less varicose and does not present any serpentine dilatation of the peripheral vessels. Occasionally, both types of tumor may coexist which may cause an error in diagnosis.

The prognosis of cirsoid tumors is serious. The evolution of the lesion is continuous and sometimes very rapid but in a few instances a spontaneous cure has been known to take place. The most frequent complication is severe hemorrhage which may result fatally, or by frequent small losses of blood the patient's condition may be rendered most precarious. The extent of the tumor, its site, and the complications to which it gives rise must be considered in the prognosis. No matter what treatment is employed a cure is always a matter of uncertainty and all the pathological phenomena may recur, even after a considerable lapse of time.

PROGNOSIS IN JUVENILE DIABETES.

The long cherished idea that prognosis in diabetes improved with the age of the sufferer and that prognosis in the young was almost universally bad no longer obtains under the newer conceptions concerning this disease. It is true that in the aged, aside from certain inconveniences, some degree of invalidism and the danger of such serious complications as diabetic gangrene and tuberculosis, life need not necessarily be much shortened because of the disease. When the mode of living, diet, etc., are regulated to conform with the indications the disease is less formidable than some of the degenerative disease common to older individuals. With the better understanding of some of the important factors in this disease, chemical, dietetic, and secretory, the general prognosis of the disease has been rendered much more hopeful even for complete recovery. Treatment by starvation, the so called Allen treatment, and the administration of certain glandular extracts has shown marked results in the hands of many observers. The chief danger of this disease which directly causes the fatalities is acidosis induced by the taking up or the lack of basic minerals. The understanding that the carbohydrate free diet is the cause of bringing on acidosis has obviated this difficulty in many instances. Indeed, in the dietetic treatment of diabetes the appearance of acid in the urine is the danger signal of carbohydrate starvation, and carbohydrates must be administered forthwith. In the treatment of diabetes it is the acidosis that must be prevented or overcome rather than a reduction in the sugar output of the urine.

The restriction against a carbohydrate free diet must be more tightly drawn in children than in adults if the outlook in them would be much improved. A child is always much nearer the brink of an acidosis than an adult because he requires in his normal metabolic processes more basic minerals than the adult. Many of the vague metabolic disturbances so common in children are due to this lack of minerals and the acid conditions produced thereby. The most definite expression of acidosis in children, cyclic vomiting, is probably such a manifestation in explosive form. Moreover, the child needs a great deal more sugar in his nutritive scheme than does the adult, and is provided normally with a greater capacity for the assimilation of this sugar. As the individual grows older his capacity for sugar assimilation grows less. It is for this reason that the older the diabetic the longer or the better he can stand a carbohydrate free diet without acidosis.

The hopeless prognosis in the young patients is due in great part not altogether to an intrinsic severity of the disease but to the tardiness with which the disease is discovered in them. Most juvenile cases of diabetes are seen for the first time in an advanced stage when the whole metabolic balance is too badly disorganized for help. The greater size and capacity of the liver in the young, however, in proportion to the body weight even then gives hope of an ability for readjustment under proper treatment because of the greater capacity for sugar assimilation. This proportion is probably greatest in infants. One must remember that diabetes is often the result in young children of a hereditary predisposition, like gout and nephric disturbances, and that the whole constitutional foundation of the child is already much inferior. His recuperative and regenerative powers are perforce so much lessened that the reaction to any disease or disturbance would be bad. There is no doubt that much of the newer findings in diabetes, heretofore not understood as applying to the hopeless juvenile form, will apply probably with better effect than to adults who so often suffer from the effects of other diseases or chronic intoxication, provided always that the diagnosis is made sufficiently early. A case of diabetes in children should at least not have a worse prognosis than that in adults.

PURE ALCOHOL NOT OBTAINABLE.

The United States Food Control Act which became effective on August 10, 1917, imposes very rigid restrictions on the purchase, use, and sale of alcohol. Numerous conflicting regulations were issued by the Bureau of Internal Revenue, but these have been revised so that they are at least comprehensible although very exacting. Physicians will be surprised to learn that the pharmacist is forbidden to sell any pure alcohol, even on the prescription of a physician. The pharmacist can, however, dispense a physician's prescription in which pure alcohol is an ingredient, provided the prescription contains "active medicinal ingredients, for which the alcohol is a solvent or necessary diluent."

The only way in which a pharmacist can dispense alcohol is in the form of medicated alcohol, the medication to be introduced at the time of, and not in advance of, the sale. The medication which may be used must conform to one of the following ten formulas:

1. Carbolic acid, 1 part; alcohol, 99 parts.
2. Formaldehyde, 1 part; alcohol, 250 parts.
3. Bichloride of mercury, 1 part; alcohol, 2,000 parts.
4. Bichloride of mercury, 0.8 gram; hydrochloric acid, 60 c. c.; alcohol, 640 c. c.; water, 300 c. c.
5. Bichloride of mercury, 1½ grains; hydrochloric acid, 2 drams; alcohol, 4 ounces.
6. Formaldehyde, 2 parts; glycerin, 2 parts; alcohol, 96 parts.
7. Carbolic acid, 1 dram; tannic acid, 1 dram; alcohol, 1 pint; water, 1 pint.
8. Alum, ½ ounce, formaldehyde, 2 drams; camphor, 1 ounce; alcohol and water, each 1 pint.
9. Lysol, 1 part; alcohol, 99 parts.
10. Liquor Cresolis Comp. (U. S. P.), 10 c. c.; alcohol, 1,000 c. c.

The alcohol thus medicated must bear a poison label. It is quite important that physicians should bear these facts in mind as they will find themselves confronted with this law and these regulations whenever ordering alcohol for their patients.

Aside from this particular phase of the regulations a number of very onerous conditions are imposed on the retail pharmacist preliminary to his obtaining permission to sell alcohol even in the medicated form. As a consequence of these restrictions many pharmacists have wholly abandoned the sale of alcohol, and physicians may find some difficulty in obtaining even the medicated form in some sections. It is much to be regretted that the Government has taken such a narrow view in its efforts to enforce the Food Control Act, as it would seem that regulations might have been drawn up which would have made it possible for physicians to prescribe alcohol when needed without restricting them to the use of the particular forms of medicated alcohol provided for in the above regulations. We commend this matter to the consideration of the legislative committees of the various medical associations, who should be able to devise and have adopted some modification of the regulations which would meet the requirements of the Government without imposing such objectionable restrictions upon the practice of medicine.

THE OUTPOST TONSILS.

The tonsils are the sentinel outposts of the human system. They are by no means designed to repel an overwhelming attack of the enemy germs upon the physiological structure which they protect, but they are intended, temporarily at least, to resist the foe's advance guard, and to sound the alarm, permitting reinforcements to be brought forward and avoiding complete rout. Real knowledge of the frequent local origin of many constitutional diseases thus suggests that treatment in the acute tonsillar affections should be prompt and energetic. As a large proportion of these ailments occur in children and quickly assume a most dangerous character, there should be no temporizing, but a quick decision in diagnosis and the institution of prompt remedial measures. By adopting an attitude of suspicion in every case of tonsillar trouble in children, many lives may be saved that are sacrificed to delay, for the element of time is of the greatest import. In twenty-four hours, a suspicious looking throat may exhibit the full blown type of malignant disease.

Preventive treatment in these cases concerns education of the mother in regard to securing prompt aid in every case of even apparently slight indisposition. Another very important point in dealing with tonsillar trouble is the matter of safeguarding against general infection and the avoidance of a long drawn out struggle with rheumatic fever and its complications. It is often difficult to impress the patient with the necessary means of safety in this direction. We recall a six months' invalidism which a sufferer from an attack of acute follicular tonsillitis brought upon herself by disregarding an absolute order to avoid exposure during convalescence because her Christmas shopping had to be attended to. The attack of acute articular rheumatism which ensued made her careful to obey orders ever afterward.

WEEDING OUT INCOMPETENTS.

Among the 18,000 physicians who have applied for commissions in the Medical Reserve Corps, there are naturally a certain proportion of men who are not suited for the service. The mere fact that a man is a good physician does not necessarily imply that he will make a good medical officer, for the medical officer must be amenable to discipline, competent to command, and capable of comprehending and carrying out those somewhat onerous routine duties which are classified under the general head of red tape by civilians. There are also many men who are physically unfitted for the strain of active service with the troops, although able to pass the preliminary physical examination. The practitioner who has been confined himself to office work for many years may discover to his surprise that he is physically not fit to march all day with the command and then work half the night. Recognizing these facts Major General William C. Gorgas, Surgeon General of the United States army has issued the following order:

> The Surgeon General of the Army has ordered that steps be taken for the elimination from the service of all incompetent medical officers. In this category will be placed officers not fully qualified to perform their duties because of mental and physical incapacity, bad habits, or laziness. By the provisions of this order, effective December 14th, officers assigned to duties that they cannot competently perform because of unsuitable previous training will be transferred and tried in other positions. If then unable to do satisfactory work, they will be reported to the Surgeon General as unfit and sent before a board with a view to their discharge from service.
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> Recognizing that a proportion of medical officers are not fully qualfied to perform their duties because of physical disability, mental incapacity, temperamental unfitness, laziness, inability to command men, lack of education or proper training, all division surgeons, commanding officers of base hospitals, and other medical officers having subordinates are directed to list those whose work has not been satisfactory. If mental incapacity is suspected, psychological examinations will be given to determine the fact. Systematic instruction in military hospitals is recommended to remedy incompetency, due to poor training in the technique of professional work. The medical officers' training camps are relied upon to correct deficiencies other than professional incapacity.
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> Medical officers who have been transferred will be given proper instruction in their new work, and will not be discharged from the service until their superiors are convinced that they cannot become competent within a reasonable time. No action for discharge will be taken until they have failed in two lines of work, viz., the professional care of the sick and disabled and medical field work, the latter including camp sanitation, handling of men, first aid, and transportation of wounded.

Our troops are to be congratulated on having at the head of the Medical Department an officer who is so prompt to recognize and act upon any emergency which may arise in that department, for upon the efficacy of the Medical Department not only the lives of the troops but victory or defeat itself may depend. Therefore it is most important that only picked men be allowed to remain in the Medical Department, and the vigorous and straightforward language of the Surgeon General shows that he is alive to his responsibilities and will fulfill them.

VERONAL AND NOVOCAIN TO BE MADE IN AMERICA AS BARBITAL AND PRO-CAINE.

The Federal Trade Commission which has already issued licenses to three manufacturers to make salvarsan in the United States under the name of Arsphenamine, has recently issued a non-exclusive license for the manufacture of veronal to the Abbott Laboratories, of Chicago. It is stipulated that the name "Barbital" shall appear on the package together with the scientific name diethylbarbituric acid. The name veronal may also be used on the package in an explanatory sense. The commission has also issued licenses to the Rector Chemical Company, of New York, and to the Farbwerke-Hoechst Company, of New York, for the manufacture of novocain under the German patent, with the stipulation that it shall be designated as Pro-Caine. The licensees are required to pay five per cent. of their gross receipts to the Federal custodian of alien property. The commission reserves the right to fix the prices on these drugs if it should become necessary. These three synthetics are the first for which licenses to manufacture have been issued under foreign patents by the Federal Trade Commission, and physicians would do well to make a note of the new names assigned to the drug by the commission.

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News Items.

War Training at Vassar.—A committee of the trustees of Vassar College has been appointed to cooperate with the Committee of the Council for National Defense in working out plans for using Vassar College as a school for the intensive training of prospective nurses next summer.

Endowment for Eugenic Records.—Mrs. E. H. Harriman has donated half a million dollars, an office building, a residence, and eighty acres of land at Cold Spring Harbor, L. I., to the Carnegie Institute to carry on the work of the eugenic records which was begun about five years ago. The institution employs about 100 persons in carrying on its researches.

Malnutrition of New York School Children.—The Commissioner of Health of the City of New York states that something like 30,000 New York school children are so badly undernourished that they require medical attention and that 125,000 are suffering from undernutrition. The department is endeavoring to instruct the parents of the children as to the proper nutrition to administer to their children.

An American Tuberculosis Hospital in Paris.—The Edward L. Trudeau Tuberculosis Sanitarium was opened in Paris on Christmas Day. There are only eight beds now, but it is hoped to increase the number to 1,200 within the next year. Dr. James I. Gamble, of Baltimore, and American Red Cross nurses comprise the staff. This is the first tuberculosis hospital in France created wholly by the American Red Cross.

Employment Bureau for Cripples.—The Red Cross Institute for Crippled Soldiers and Sailors has opened an employment bureau for crippled men and boys at 311 Fourth Avenue. The bureau deals with cases of amputation, paralysis, Pott's disease, hip disease, etc. It will endeavor to supply employees who will be really useful in certain directions even though crippled, and solicits inquiries from employers who are willing to give such unfortunates a trial. It is hoped that the experience gained in finding employment for cripples now will be of service in finding employment for soldiers and sailors crippled in the war.

Lakewood Hotel to Become a War Hospital.—The United States War Department has taken over the Lakewood Hotel, which is the largest resort hotel in the pine woods of New Jersey, and will convert it into a reconstruction hospital for wounded soldiers. Pending the arrival of patients it will be used as a concentration point and training school for army nurses.

American Red Cross Work in France.—Homer Folks, secretary of the New York State Charities Aid Association, is in Paris acting as director of the Red Cross in civil affairs. In a recent report Mr. Folks says that he now has a staff of 201, nearly all of whom are experts. The several bureaus have been rearranged so as to expedite its work, and the work of a number of independent organizations has been taken over by the Red Cross Society.

A Merger of Ophthalmic Journals.—Announcement is made that beginning with January, 1918, there will be published a new monthly ophthalmic journal called the *American Journal of Ophthalmology,* merging the *American Journal of Ophthalmology,* the *Annals of Ophthamology,* the *Ophthalmic Record, Ophthalmology,* the *Ophthalmic Year Book, Ophthalmic Literature,* and the *Anales de Oftalmologia.*

Personal.—Dr. Thomas Darlington, formerly health commissioner of the City of New York, has been called to Halifax by the relief committee to act in an advisory capacity regarding the sanitation and housing in the reconstruction of the devastated areas.

Dr. John R. Ross, for four years assistant superintendent of the Dannemora State Hospital for the Criminal Insane, has been appointed acting superintendent to succeed Dr. Charles H. North, who was killed by an insane convict recently.

Dr. S. W. Boorstein, of 529 Courtlandt Avenue, New York, has been appointed adjunct assistant visiting surgeon in Fordham Hospital.

The Health of the Troops.—In a series of reports to the Secretary of War beginning November 29th and continuing over December 17th, which have only recently been made public, the Surgeon General of the United States Army severely criticized the conditions existing in many of the camps and cantonments which affect the health of the troops. In specific reports he points out the high morbidity in pneumonia in several of the camps, and the prevalence of various infectious diseases, due in large measure to the failure of the War Department to supply segregation hospitals, where new levies could be kept under observation during a period of possible infection before joining their commands.

Gifts and Bequests to Hospitals.—The will of Dr. Ramon Guiteras disposes of an estate valued at approximately $100,000. Of this $10,000 is bequeathed to the Columbus Hospital, $5,000 to the New York Academy of Medicine, and $5,000 to the Post-Graduate Hospital.

Under the will of the late William H. White, of Cold Spring Harbor, L. I., St. Luke's Hospital has become a residuary legatee of the estate, receiving probably $500,000 to $1,000,000. Among other public bequests made in the will are the following: St. John's Hospital, Brooklyn, $20,000; Huntington Hospital, $25,000; Staten Island Hospital, $40,000; Nassau Hospital, Mineola, $10,000; St. Luke's Hospital, San Francisco, $20,000.

Hearings on Narcotic Legislation.—The joint committee of the Assembly and Senate of the Legislature of the State of New York on narcotic legislation has continued its hearings during the past week at the mayor's office. A number of addicts appeared and testified as to the difficulty and expense they had undergone in obtaining treatment for drug addiction. Several officials of various organizations interested in sociological work testified that there was no specific drug or course of treatment known which would cure drug addiction, and that the cost of treatment in the private institutions was prohibitive for a great many addicts. Several physicians and pharmacists testified that on account of the manner in which the law was enforced the majority of physicians refused to treat addicts and a great many pharmacists refused to dispense legitimate prescriptions for narcotics for addicts for fear they would involve themselves in some technical violation of the law. In consequence the addicts went in large numbers to those few physicians who were willing to treat addicts and whose knowledge of the law enabled them to do so without its infraction.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

TREATMENT OF ACUTE MERCURY BICHLORIDE POISONING.

By Louis T. de M. Sajous, B. S., M. D.
Philadelphia.

(*Continued from page 1193.*)

Carter's antidote, a mixture of three parts of sodium phosphite and two parts of sodium acetate, proved in experimental investigations conducted by Fantus to be the best chemical antidote for mercury bichloride taken internally. Sodium phosphite, however, is not recognized in the U. S. Pharmacopœia, whereas sodium hypophosphite is official. The antidote yielding next best results to Clark's combination in Fantus's experiments, viz., a mixture of one part of sodium hypophosphite with five parts of hydrogen peroxide, is therefore likely, where the resources of the average drug store have to be depended on, to be more easily obtainable than the Carter antidote.

While the advantages of these new antidotes, when available, are not to be questioned, it should be borne in mind that delay in securing any antidote may prove a most serious handicap and in many instances it will be advisable to resort as a preliminary measure to the inferior substitutes, egg albumen and sodium bicarbonate, generally at hand in the household itself. Sodium acetate, given alone in an amount 100 times greater than that of the poison taken, was shown by Fantus to be superior to either the albumen or bicarbonate, but is not likely to be obtainable any more easily than sodium hypophosphite and hydrogen peroxide, to which it was plainly inferior.

Among the chemical antidotes other than those already referred to, sulphur and sulphur containing compounds have received most attention. In 1907 Salvatani recommended sulphur or calcium sulphide internally in small, repeated doses, attributing their value to the formation of insoluble and nonabsorbable sulphides of mercury. He also advocated the giving of sodium thiosulphate intravenously or hypodermically as an antidote to absorbed mercury, and even recognized the utility of hydrogen sulphide in the form of enemas or inhalations, or by mouth. More recently, various authors have presented definite clinical and experimental reports on calcium sulphide. Thus, B. M. Ricketts, 1916, records several instances of recovery following the use of this antidote; in one of these cases eighty grains of the poison had been ingested. The procedure he recommends is to give one grain of the sulphide for every grain of corrosive sublimate, to be repeated every two hours until five doses have been taken. Even in cases already of two days' standing he deems it helpful to administer the remedy in a vein, injecting one grain in an ounce of water for each grain of the poison. J. H. Wilmus, 1916, has reported a single case in which calcium sulphide, seven and a half grains, was given intravenously fourteen hours after ingestion of seven and a half grains of mercury bichloride. Although "all the symptoms" of toxic action were noted on the day after the poisoning, the patient soon recovered. Fantus, in the course of the research already referred to, performed a single experiment with calcium sulphide, administering 0.1 gram—one and a half grains—of this substance to a kilogram of animal to a rabbit through a stomach tube. Motor weakness and a convulsion appearing within a few minutes, with subsequent depression, death on the fourth day, and punctate gastric hemorrhages at the autopsy, Fantus deemed the sulphide disadvantageous for use as a bichloride antidote by reason of its high toxicity, and did not carry experimentation with it any further. His results appear, however, to be somewhat at variance with actual clinical observations such as those of Ricketts and Wilmus, in which toxicity on the part of calcium sulphide seemingly did not interfere with successful therapeutic use. Probably, therefore, calcium sulphide should not be completely discarded, but is still deserving of a place in the list of chemicals which may, in the absence of other active antidotes, prove serviceable.

Meyerstein, in 1911, having noticed rapid and complete precipitation of a solution of mercury bichloride upon addition of colloidal silver, tested the latter as an antidote in animals, and found that rabbits given bichloride followed by collargol survived longer than others receiving bichloride alone. After nonfatal doses, albuminuria and toxic symptoms were less marked in the collargol animals, especially when the silver preparation was administered on several successive days. Pathological changes were much less advanced in the treated than the control animals. Meyerstein did not, however, report clinical trials of the remedy.

Apart from chemical antidotes, the advisability of gastric lavage in internal bichloride poisoning is obvious. According to Daland, Ashton, and Dever, 1914, one should resort first to emesis in cases seen immediately after a poison tablet has been swallowed, as the tablet may not pass through the stomach tube. Reporting a fatal case with complete absence of toxic lesions from the stomach and small intestine, these authors point out also that many bichloride tablets dissolve with great slowness, possibly reaching the cecum before they break up. The possibility may thus be afforded, in certain cases, of forestalling much of the toxic action by free purgation. Even in the event of successful use of a chemical antidote, causing precipitation of the mercury as calomel or in some other form, followed by evacuation of the stomach, brisk catharsis with castor oil or some other agent is likely to be helpful, especially where there has been some delay in the application of treatment. Accordingly Linhart, 1913, advised the use of magnesium citrate to remove from the system the calomel produced through the action of the antidote recommended by him, a solution formed by suspension of sodium phosphite in water and its treatment with a saturated solution of sodium bicarbonate. We may note incidentally, bearing in mind the composition of Carter's antidote, that Linhart enjoins great care in the purchase of commercial sodium phosphite—chiefly sodium dihydrogen phosphite—as the substance is frequently impure, not having, up to the time of publication of Linhart's article, been used medicinally. This is manifestly an additional feature which may militate at times in favor of the use, in lieu of an unobtainable pure Carter antidote, of Fantus's second best combination—a mixture of the official, and hence medicinally pure, sodium hypophosphite with hydrogen peroxide.

The measures discussed, having for their purpose to remove, precipitate, or otherwise neutralize the poison *en masse*, are manifestly calculated to prevent prompt death through shock from extensive tissue injury; in fact, they are probably much more effectual in preventing this uncommon form of fatal ending than in obviating the customary protracted intoxication. The recent observation of Burmeister and McNally that mercury can be detected in the blood within a few minutes after administration of bichloride has already been mentioned. As this entails the possibility of a very prompt injury to the kidneys from absorbed poison, measures to protect these organs constitute, after attempts at precipitation and removal, an important second line of defense.

(*To be continued.*)

Toxic Factors of Some Common Anesthetics.—Evarts A. Graham (*Journal A. M. A.*, November 17, 1917) points out that many of the unexpected and disastrous results which follow operations are due to the effects of narcosis in a more or less direct way. These effects may result promptly or may be several days in coming on. Narcosis is always associated with a state of diminished oxidations and more or less severe tissue asphyxia, and, secondarily to these two factors with a more or less marked acidosis. Nitrous oxide has very slight tendency to induce these toxic effects, ether has a somewhat greater tendency, and chloroform has a very marked tendency to their production. This is due not only to the effects of the narcosis itself in the case of chloroform, but also to the fact that this agent is very unstable and is readily broken down with the production of hydrochloric acid. The morphological changes in the tissues in late chloroform poisoning are almost wholly due to the effects of the hydrochloric acid. This is shown by the fact that the drug readily yields this acid; that hydrochloric acid induces similar changes in experimental animals; that free chlorine and free hydrogen ions can be recognized in excess in the livers of animals poisoned with chloroform; that other chlorine substitution products of methane vary in toxicity with the amount of hydrochloric acid which they can liberate; and that the simultaneous administration of suitable amounts of alkali and chloroform results in a marked diminution in the tendency for poisoning to result. Further confirmation is found in the fact that the iodine and bromine substitution products of methane can produce effects indistinguishable from those of chloroform. The halogen substitution products of ethane are similarly capable of causing the same type of lesions. In addition to these toxic effects resulting from the production within the body of a strong mineral acid, or of an asphyxial acidosis, other factors such as acetone may play a part. And, finally, it is to be remembered that the common anesthetics are often capable of dissociating in a way which leaves unsaturated, bivalent carbon compounds which may be toxic.

Action and Use of Sodium Chloride.—J. S. Sutcliff (*Journal of the Kansas Medical Society*, October, 1917) recalls the fact that sodium chloride is one of the most important mineral constituents of the human body, going far in the maintenance of the normal osmotic states, aiding in removing toxic materials, and promoting the functions of the individual cells. About sixteen grams of this salt is excreted from the human body every twenty-four hours, and the diet must contain enough to replace this loss. If the supply of salt becomes insufficient all of the functions are interfered with to a greater or less extent. If salt is given in the form of capsules it induces thirst, promotes peristalsis and diuresis, and thus favors elimination, as well as aids the vital processes. It is of special value given in this way by hypodermoclysis, or per rectum, in many febrile, infectious, and septic diseases. In many such conditions it is more valuable than any other form of medication. This is probably due to the fact that in such conditions the appetite is lost or the diet reduced so that there is soon a salt deficiency.

Screw Fixation in Joint Fractures.—Astley P. C. Ashhurst (*Medicine and Surgery*, October, 1917) points out that the reduction and maintenance of position are usually simple and easy in joint fractures by manipulation and change in the position of the extremity. There is, however, a small number of cases in which this reduction cannot be accomplished and which operation alone will remedy. In such cases it is necessary to employ some form of mechanical fixation of the two fragments, for which many methods have been tried. In the author's experience the most satisfactory method and the one at the same time free from the majority of disadvantages is by the use of Lambotte's self cutting screws. These do not require the drilling of holes and their insertion can be made with an ordinary carpenter's brace and a screw driver. They are suitable for use only through cancellous bone and are hence largely restricted to cases of joint fractures. With open operation and exposure of the fracture, the two fragments are brought into alignment and held by a bone clamp. Then one or more screws are placed through both fragments, two being preferable to one, since, if placed at a slight angle to each other, they prevent rotation. The insertion is begun with the brace and when the screw has a good bight it is driven home with an ordinary screwdriver. It is not necessary to bury the head by a preliminary countersinking. After the wound is closed the part may be treated by massage and mild passive movement, which materially aid in the maintenance of function and hasten union.

Osteoarthritis of the Hip Joint.—Ozarki (*Boston Medical and Surgical Journal,* November 15, 1917) bases his conclusions on the study of the end results of forty cases of operation on the hip joint. Twenty-six of these cases were of osteoarthritis, ten of old tuberculosis, three of old congenital dislocation, and one of old fracture of the neck of the femur. Of the cases of osteoarthritis, twenty-three were diagnosed clinically as hypertrophic arthritis, and three as old infectious arthritis. His conclusions are: In monarticular, nontuberculous cases it is always possible to relieve the disability of the leg by an arthrodesis, which can be repeated if necessary. When both hips are involved, the motion in one of them must be restored by some such operation as decapitation of the femur. In cases of tuberculosis definite relief cannot be expected to the same degree as in osteoarthritis, but the operation has produced no bad effect on the general or local condition, and has given marked benefit in the majority of the cases. Arthrodesis appears to beneficial in cases which have arrived at a stage of disability where the patient demands a more serviceable leg. The leg will be stronger and less troublesome after the operation. This is the operation of choice when only one hip is involved.

Closure of Wounds in Home Hospitals.—James Phillips (*Lancet,* October 6, 1917) says that most of the wounds have already been opened up and many have previously been treated by the Carrel method. Nevertheless the majority are heavily infected and are suppurating. Where there are pus pockets, loose pieces of bone, or foreign bodies the wound should be opened up and thoroughly cleansed under anesthesia. The Carrel method of treatment should then be applied and cultures taken every fourth day until two reports of an average of less than three organisms in a microscopic field have been obtained. In flesh wounds the skin about the wound is then cleansed in the usual way as for an operation, the patient given a general anesthetic and the wound area further sterilized with 1:500 biniodide of mercury in alcohol. The edges are trimmed evenly all around for less than a quarter of an inch, all scar tissue is carefully cut away, the skin edges undercut, bleeding vessels tied, large raw surfaces of muscle closed by suturing the deep fascia after having been thoroughly rubbed with bismuth, iodoform paraffin paste, and the skin and deeper layers closed by interrupted sutures of thick, No. 5 pedicle silk which has been boiled and soaked in tincture of iodine for twenty-four hours. The closure is made so that no dead space is left, and if necessary tension may be relieved by a deep suture which is a combination of a mattress and plain suture. The skin edges are finally brought together properly by a continuous catgut suture. The suture line is rubbed with Moynihan's cream and a simple dry gauze and wool dressing is applied. Moynihan's cream is a thick paste of bismuth subcarbonate in a 1:1,000 solution of biniodide of mercury. The dressing is not touched for two weeks. It is then removed, the wound surface cleaned, another dressing applied and allowed to remain for a week, when it is removed and the stitches taken out. Seven or eight out of every ten wounds will have healed by first intention, one or two will have gaped a little and one will be a failure. In compound fractures of long bones Rutherford Morison's method is adopted and in compound fractures of small bones the Carrel method is followed.

Lumbar Puncture in Alcoholism.—Francis M. Barnes and Emil E. Hein (*Journal of the Missouri State Medical Association,* November, 1917) report a study of seventy-six cases in the St. Louis City Hospital in thirty-four of which the only treatment was a lumbar puncture, and in the other forty-two treatment was by magnesium sulphate, paraldehyde, and bromides, with digitalis if the pulse was rapid. The cases treated by simple lumbar puncture without medication remained in the hospital on the average three days, the same as the others but they left virtually recovered, whereas those treated otherwise left in shaky, nervous condition. The average amount of fluid withdrawn was twenty-eight c. c. with a maximum of fifty and a minimum of ten c. c.; the average pressure was 109 (water) with a maximum of 220 and a minimum of 65. The iodoform test revealed the presence of alcohol with certainty in thirty of the thirty-four cases; it was questionably present in three, and absent in one. The Nonne-Apelt and Noguchi tests were positive in twenty-nine of the thirty-four cases. The writers believe that lumbar puncture is of valuable service in the treatment of acute alcoholism and delirium tremens and that results justify further investigation along those lines.

Lumbar Puncture in War Surgery.—Willems and Albert (*Presse médicale,* October 11, 1917) believe more attention should be paid to this procedure than has hitherto been the case. Not only is it of diagnostic value in trauma to the skull without apparent external wound, alone supplying information as to whether simple concussion exists or there is a basal fracture, but in simple hypertension in the cerebrospinal system it is curative. Likewise in fracture of the base it constitutes the best means available of decompressing the base of the brain. In grave cases twenty to forty mils of cerebrospinal fluid should be removed daily. In Jacksonian epilepsy known to be due to brain irritation by a missile, bone fragment, exostosis, or scar, surgical removal of the irritant body is the only logical procedure, but where the origin of the condition is obscure, lumbar puncture is a valuable measure, causing the convulsive attacks to become less frequent and finally to disappear entirely. For the reduction of an incipient cerebral hernia, nothing succeeds as well as lumbar puncture, the hernia subsiding entirely if plenty of fluid is removed at the first puncture. Upon repeated daily puncture, the hernia will be observed to become gradually smaller and less tense, and after eight or ten days, it will disappear. It may reappear later, but another course of punctures will then overcome it again; by way of prophylaxis, the opening in the skull should be closed after the first successful series of punctures. In posttraumatic meningitis and meningoencephalitis, repeated copious lumbar evacuations are of actual curative value, especially if combined, where the occasion presents, with intraspinal antistreptococcic serum therapy.

Local Treatment of Meningococcus Carriers.—P. Fildes and P. B. Wallis (*Lancet,* October 6, 1917) made a series of investigations on a considerable number of meningococcus carriers under conditions of accurate control with a view to determining the relative value of the local antiseptics in curing the condition. They found that about one third of the cases were cured immediately with no treatment or with only one or two applications of an antiseptic. Of those who remained carriers about half were cured, irrespective of the method employed, and no method seemed to have any material advantage over any other. No patient was regarded as cured until he gave four consecutive negative throat cultures at intervals of one week. Even among these a considerable proportion later relapsed. The antiseptics employed were five per cent. chloramine-T in steam, two per cent., in the form of a nasopharyngeal spray, and sprays of 1:500 acriflavine, 1:200 phenol, 1:200 formalin, 1:1,000 potassium permanganate, and 1:64 boric acid solution.

Intravenous Foreign Protein in Psoriasis.—Francis J. Scully (*Journal A. M. A.,* November 17, 1917) used intravenous doses of 75 to 100 million killed typhoid organisms at intervals of three or four days in a number of very resistant cases of psoriasis. The first one or two doses reduced the inflammation in the lesions, diminished the scaling, and seemed to prevent the formation of new lesions. This was the extent of the improvement from this injection alone, but in two cases which had been receiving treament by chrysarobin the lesions cleared up rapidly and completely. In others the addition of chrysarobin treatment was followed by prompt and complete recovery, although it had previously failed. The use of chrysarobin was also observed to cause less tendency to dermatitis. The treatment proved to be more effective than that by chrysarobin alone, but the addition of foreign protein injection did not result in any diminution of the tendency to relapse and had the disadvantage of producing rather severe reactions so that the injections could not be recommended for office use.

Surging Galvanic Current in Paralysis.—E. P. Cumberbatch (*Lancet,* October 13, 1917) finds that if the galvanic current is applied to paralyzed muscles showing the reaction of degeneration in such a way that there is a more or less gradual increase of strength to a maximum and a similar progressive fall these muscles can be made to contract while the normal ones of the same part will not. This is a great advantage in that it provides a means of stimulating paralyzed muscles without at the same time damaging them by the stretching produced by the simultaneous contraction of their healthy antagonists. The method can be applied by means of electrodes applied over the muscles or in the form of local baths, but the current should always be made to pass through the affected muscles longitudinally. Its use has given good results in a number of cases in which it has been tried. The precise technic of application, as well as the construction of a simple and effective water rheostat for the control of the current, is described.

Emergency Head Surgery.—Charles E. Dowman (*Medical Record,* November 3, 1917) considers that in all head injuries a most careful and repeated examination is imperative if a correct diagnosis is to be made. Concussion of the brain is a purely functional condition and should not be diagnosed when there is evidence of intracranial organic trouble. The pulse, respiration, and blood pressure are most valuable guides in diagnosis, while engorged retinal veins and eventual choked disk indicate increased intracranial pressure. A lumbar puncture should be done in doubtful cases although the possibility of a herniation of the medulla into the foramen magnum should be borne in mind. The x ray is of value only in certain depressed fractures. Expectant treatment in cases with increased intracranial pressure results in a mortality of fifty to sixty per cent., while a large percentage of those who recover without operation suffer from neuroses such as depression, irritability, headaches, epilepsy, etc. Well timed and well placed decompression operations will lower the mortality to from thirteen to twenty-three per cent. and will prevent, to a large extent, distressing sequelæ.

Treatment of Myelocytic Leucemia by Radium.—Herbert Z. Giffin (*Boston Medical and Surgical Journal,* November 15, 1917) discusses thirty consecutive cases of myelocytic leucemia treated by means of the surface application of radium element over the enlarged spleen. A dosage of fifty and 100 mgm. was used. The protection finally adopted was two millimetres of lead and half an inch of wood. The splenic area was mapped out in squares and the radium applied over each square for from two to four hours, with a total exposure usually of twenty-four to thirty-six hours. The exposures were repeated every week until a satisfactory remission was obtained. A certain degree of general improvement, together with a reduction of the size of the spleen and of the leucocyte count, occurred in every instance, even in the most advanced and toxic cases. Marked temporary improvement occurred in twenty-six patients and a remarkable improvement in thirteen. Hemorrhage ceased as a rule after one or two series of exposures. In two instances hemorrhage occurred after radium exposures when it had not occurred before. In these instances the hemorrhage seemed to be the result of overexposure. Anemia also developed. Both the hemorrhage and the anemia were successfully combated by means of transfusion. In twenty-five patients there was a definite improvement of the anemia concomitant with the improvement of the general condition. The reduction of the number of leucocytes was due chiefly to not only an absolute, but also a striking relative fall in the myelocytes; there was a striking fall in the absolute count of polymorphonuclears, while their percentage remained approximately the same. There was also a marked fall in the absolute count of small lymphocytes. Finally he concludes that surface exposures of radium over the spleen in myelocytic leucemia usually effect a very rapid reduction of the size of the spleen and a fall of the leucocyte count. Together with transfusion, it constitutes at present the most effective temporary treatment.

Miscellany from Home and Foreign Journals

Diagnosis of Amebic Abscess of the Liver.—William Allan (*Archives of Diagnosis*, July, 1917) asserts that the greatest obstacle to the diagnosis at present is the lack of appreciation that amebic abscess is one of the common maladies. The clinical picture, however, is rarely complete. Fever, of varying type, is one of the earliest and most constant signs. Pain was noted in sixteen of the writer's nineteen cases, but did not appear as early as fever. The pain may be a steady soreness, or may be intermittently sharp when the parietal peritoneum becomes involved. Diaphragmatic involvement causes a dry, hacking cough and at times a distressing singultus. Hepatic enlargement, either upward or downward, is the most significant physical finding, and there is generally tenderness over the enlarged liver, with discomfort in the left lateral decubitus, as in rightsided pleural effusion. Slight jaundice is occasionally met with. To eliminate pleural effusion the x ray is best, showing rightsided elevation of the diaphragm, with its respiratory excursion considerably reduced. Aside from evident cardiac decompensation, causes of enlarged liver other than abscess are infrequent. Blood examination, wherever malaria is a possibility, is indispensable. In amebic abscess it almost invariably shows leucocytosis or increase of polynuclears, or both. If examination of the stools is positive for amœbæ, the latter must be differentiated, a large part of the population in many localities carrying the nonpathogenic Amœba coli. Tuberculosis, unless a complication, is, like malaria, eliminated by the blood examination. With the liver enlarged downward, one must consider pyogenic abscess from appendix or gallbladder disease and enlargement from syphilis, neoplasm, or cirrhosis. The pyogenic infections, whether within or out of the liver, can be eliminated by emetine, a large percentage of amebic abscesses subsiding completely under it. Use of the aspirating needle or knife, whether for diagnostic or therapeutic purposes, is unjustifiable until emetine has been carefully tried. The drug will settle a doubtful diagnosis oftener than puncture and cure more abscesses than surgery. It is particularly valuable diagnostically in the cases of liver abscess occurring without hepatic enlargement or dysentery.

Effects of Cold Upon the Body.—Norman C. Lake (*Lancet*, October 13, 1917) conducted an extensive series of experiments to determine the effects of cold upon both animal and human tissues in culture, in their normal relations to the body, and in various conditions of modified relation to the circulation and nerve supply. The critical temperature was found to lie about -6° C., irrespective of the type of experiment, whether on normal tissues or on those in culture. At and below this point some destructive physical change took place, while above it what changes developed were of degree and of a chemical nature. More intense changes were observed at about 15° C. than above or below, except below -6° C. This was explained on the hypothesis that at this level the anabolic processes had been checked while the catabolic ones proceeded slowly. In true frostbite there was actual destruction of the tissues. In the mild cases the destruction of the capillary walls led to exudation of the fluids and even cells of the blood. Tissue extracts might also be liberated and lead to extensive intravascular clotting. These various factors combined to produce more or less extensive gangrene. It was found that the blocking of the nerves to the part by cocaine, or the temporary shutting off of the blood supply had no influence in preventing the results of freezing of the tissues. But the local vasoconstriction of cocaine or epinephrine was observed to delay greatly or even entirely prevent the secondary exudation, or to lessen its amount. It was suggested that the use of vasoconstrictors might prove of value in reducing the ultimate effects of frostbite, but as yet their local application in man seemed to have many drawbacks. Prolonged exposure of the normal tissues of the feet to temperatures above the critical point might cause extensive exudation, gangrene, and various other manifestations of damage to the tissues. The experiments performed suggested that these results were due to a primary extreme local vasoconstriction, followed, as the part was warmed, by an extreme degree of vasodilatation which led to exudation into the several tissues of the part. This might be so extensive as to cut off the circulation and lead to actual gangrene. This condition was also found to be modified favorably in animals by the local use of vasoconstrictors to prevent the sudden rise of intracapillary pressure on warming. Such a pathological state was facilitated by the presence of constricting clothing during the period of exposure to the cold. No actual, practical treatment had been worked out on the basis of these experiments, but the way seemed to be indicated for an effective method of treatment.

Von Pirquet Reactions to Human and Bovine Tuberculin.—H. J. Gauvain (*Lancet*, October 6, 1917) studied the von Pirquet reactions in a series of eighty children afflicted with bone or joint tuberculosis to determine the response to Koch's old tuberculin made from the human as well as from the bovine strain. The tests were applied simultaneously to the two legs and several dilutions of each tuberculin were used in each test. All precautions were taken to eliminate sources of error. The pus from the lesions was examined and cultivated and in all but six the tubercle bacillus was isolated, fifty showing the human, twenty-two the bovine, and two atypical strains. Local reactions to the tuberculin tests were positive in all cases and for both strains wherever the tubercle bacillus had been isolated. The intensity of the reaction did not differ materially with the two strains and could not be used for differential diagnosis of the infecting strain. The degree of the reaction varied widely in different cases and apparently without reference to the severity or extent of the infection. Cachectic and weak patients usually reacted feebly, while the strong and vigorous ones showed wide variations in intensity.

Nocturnal Incontinence of Urine. — Uteau, Schwab, and Raton (*Paris médical,* October 20, 1917) note that essential urinary incontinence, existing in the absence of any detectable pathological lesion, is observed so commonly in military practice as to have been termed by some the bane of urologic dispensaries. Generally rebellious to all treatment, it is by no means incompatible with apparent robust health. Yet careful study has led the authors to conclude that these patients are regularly instances of physical debility. In the first place there exists renal debility in a slight degree, as shown by a tendency to diminished urinary acidity and lowered elimination of phosphates, especially on nights when bedwetting occurs. This renal debility justifies assimilation of the incontinence to attacks of renal neurosis, a term used by Janet in relation to phosphaturia. A marked debility of the bladder wall and sphincteric musculature was, furthermore, regularly noted. Finally, these cases are also deficient cerebrally, and this deficiency may underlie the other disturbances. This is especially noticeable as regards the pseudoinsufficiency of bladder capacity, which alone will explain the imperious impulse to urinate. In this connection occur evidences of insufficiency of inhibition, a frequent phenomenon in degenerates. Nocturnal incontinence is not an isolated symptom, but is part of a special clinical syndrome, systematic study of which in the individual case will assist in the differentiation of actual from simulated incontinence.

Syphilis of the Bladder.—H. A. Fowler (*Journal A. M. A.,* October 27, 1917) points out that syphilis of the bladder has been considered a rare affection and has been little discussed in textbooks on account of its presumed rarity. During the past sixteen years a considerable number of cases has been reported in isolated and widely scattered papers. These cases are now brought together for study and a new one added so that there is enough material for a presentation of the symptomatology and pathology of syphilis in this location. The bladder may be involved in the secondary or tertiary lesions or along with parasyphilitic manifestations. The secondary lesions usually develop within a few months after infection and are commonly associated with cutaneous lesions. They may occur at almost any age and in either sex. The anatomical lesions and the cystoscopic appearances are in no way characteristic and a diagnosis cannot be made from cystoscopy alone. The secondary lesions include macules, papules, and ulcers with injection and edema of the bladder epithelium. In the tertiary form the common lesions are the gummas, with or without ulceration. The tertiary syphilitic bladder lesions are much more frequent than the secondary. In both secondary and tertiary cases the symptoms are very variable, depending upon the type of lesion, its extent, and the presence of secondary infection. The symptoms include those of cystitis of varying degrees of intensity, combined, especially in the tertiary lesions, with terminal hematuria. The diagnosis is made by the presence of bladder symptoms; cystoscopic demonstration of the lesions; history of infection; Wassermann reaction; and the response to specific treatment, which is very rapid.

Gastric Conditions in Spastic Constipation.—William G. Morgan (*Journal A. M. A.,* November 17, 1917) says that deductions of practical value can be drawn only from a study of many hundred cases of spastic constipation, and apologizes for the presentation of the results of study in only forty-four cases. Care was used to exclude all but true spastic constipation from this series. Of the group twenty-four had pyrosis before meals, the remainder no pyrosis; twenty-seven had acid eructations from one half to two hours after meals; ten had vomiting and thirteen nausea; and thirty-nine had normal or increased appetite. Fluoroscopically twenty-six showed spastic contraction of the stomach; gastric evacuation was normal in time in forty-three cases and retarded in one; the gastric shape and mobility was normal in all; and there was more or less ptosis in only eight cases. There was moderate hyperacidity and hypersecretion in seventeen; subacidity in ten; and normal acidity in seventeen. Abnormal amount of mucus was present in thirty-four cases. Finally, there was a positive benzidine test in eighteen, showing that there was engorgement of the mucosa.

Papillary Stasis in Wounds of the Head.—A. Cantonnet (*Paris médical,* October 6, 1917) states that ophthalmoscopic examination in the numerous cases of concussion or skull fracture met with in recent military practice has gradually brought to light the fact that papilledema is rather frequent in such cases. He has seen five cases of true papilledema, three bilateral and two unilateral, and two cases of lesser degrees of stasis among men subjected to a decompression operation. Among others, not decompressed and suffering merely from concussion, without clinical signs of skull fracture, he has met with six cases of true papillary stasis and eight additional cases of engorgement. The mode of development of papilledema in the case of a large open wound of the skull, evidently in the absence of high pressure of the cerebrospinal fluid, seems obscure. In violent concussion of the skull or spine without other injury, cerebrospinal hyper tension may easily produce papilledema. This is proved by the fact that, all the cases having been subjected to lumbar puncture, three fourths of the series showed at least slight hypertension, and further, by the therapeutic results from the punctures, the first puncture generally being followed by slight improvement in the choked disc and the second by very marked improvement, together with relief from headache. In a few cases a third puncture proved necessary. Routine ophthalmoscopic examination in skull injuries is advocated as often yielding valuable therapeutic indications, whether there be actual papillary stasis or tortuosity of the retinal veins alone. In papillary stasis in such cases the prognosis as to preservation of vision is nearly always excellent. All the author's patients regained perfect vision. If the cerebrospinal hypertension and choked disc remain undetected, however, headache and papillary stasis persist because no lumbar puncture is done. That grave and persistent visual impairment may result from prolonged papilledema is well known. Ophthalmoscopy also revealed the condition in two cases suspected of malingering.

THE AMERICAN LARYNGOLOGICAL ASSOCIATION.

Thirty-ninth Annual Meeting, Held at Atlantic City, N. J., May 28, 29, 30, 1917.

The President, Dr. JOSEPH L. GOODALE, in the Chair.

(*Continued from page 1203.*)

Vincent's Angina.—Dr. THOMAS HUBBARD, of Toledo, stated that reports of fatalities, in a disease that was usually transient and curable, indicated that a large number of cases were not diagnosed. Laboratory study of all ulcers and false membranes was necessary to positive, timely diagnosis. Perborate of sodium was an efficacious local medicament. The nascent hydrogen dioxide penetrated and disintegrated necrotic tissue and would be, theoretically, an ideal inhibitor of anaerobic bacterial growth. The local treatment resolves itself into careful applications limited to the diseased tissue. The glycerole of iodine—iodide of zinc, 2; iodine, 3; aqua distillata, 5; glycerin, 10—applied to the tonsil crypts, was probably the most efficacious antiseptic. Theoretically the arsenical group was specific in action, and the writer believed that experience was proving favorable. He reported a case which presented such a hopeless condition prior to the administration of neosalvarsan, and the improvement following was comparable only to that in diphtheria cases following a proper dose of antitoxin. In cases that did not yield promptly to this treatment cacodylate of sodium should be given, 2.5 to five grains repeated in twenty-four or forty-eight hours, if kidneys were not affected. In the malignant type, not improving under the above treatments, give neosalvarsan 0.6 gram intravenously.

Dr. EMIL MAYER, of New York, took exception to the originality of the use of glycerin of iodine. When he first called attention to this affection he spoke of the use of iodine, iodide of potassium, and glycerin as a local application. He has since learned to know the tremendously valuable effect of the salve, either injected intravenously or applied locally.

Infection in the Remains of Incompletely Removed Tonsils.—Dr. HANAU W. LOEB, of St. Louis, said that a portion of the tonsillar lymphoid tissue left after operation, especially if it happens to contain a crypt, might never occasion any unpleasant result, but it was susceptible to infection, reduced though it may be. What is considered an atrophied tonsil usually signifies that the tonsil tissue has become somewhat more covered by the anterior pillar and has in part simply disappeared from view. The writer presented five cases showing infection orginating in such tonsillar remains, with remote effects similar to those which follow acute tonsil infections. Such cases must be common enough to constitute a fairly definite clinical entity; they presented a decisive argument against any form of operation which did not contemplate the entire removal of the tonsil, especially where there has already been some infective processes originating in the tonsil. They suggested the advisability of following up cases of tonsillectomy to determine whether any portion remained and whether it had become a focus of infection.

Dr. GEORGE B. WOOD, of Philadelphia, pointed out the difficulty in recognizing when a tonsil was responsible and when it was not responsible for a given infectious condition. Inspection in the majority of cases was of little use in this determination. Of much more value was the history of repeated attacks of tonsillitis, their relation to the general infection, and the presence of cervical adenopathy. The bacteriological study of the contents of the crypts of the tonsil would often give important data. This study could be carried further by determining the relation of the bacteria obtained from the crypts to the blood reactions of the individual. In a person suffering from chronic tonsillar absorption a certain amount of immunity against these organisms might been established. If agglutination of the bacteria from the crypts or a complement fixation can be demonstrated, there would be good reason to believe that a certain amount of absorption had taken place through the tonsil. This reaction had been found in a certain number of chronic cases, though in acute tonsillar infections the immune bodies could not be demonstrated, probably because sufficient time had not elapsed for their formation.

Dr. THOMAS HUBBARD, of Toledo, reported a case in which there was perfect enucleation of the tonsil, and yet the patient had recurrent attacks resembling those which she previously had. She returned with a distinct swelling. A probe was passed into a fistulous tract, which evidently led into the muscular tissue. There was no tonsillar tissue left at all. The small fistulous tracts were sometimes left which were part of the peritonsillar suppuration at some previous time.

Dr. J. PAYSON CLARK, of Boston, emphasized the possible relation of unsuspected conditions of the teeth to general infection. In several cases where the capsule was perfectly smooth and the fossa quite empty after operation, a year or more afterward there has been a structure like a tonsil on one or both sides. He believed that some of the lymphoid tissue of Waldeyer's ring in the healing process had been drawn up into the region of the tonsil. The tissue drawn up differed from ordinary tonsillar tissue in that no crypts appeared in it. There was no inflammatory process.

Dr. HENRY L. SWAIN, of New Haven, said that during an epidemic of streptococcic sore throat, due to milk infection, out of 120 cases there were between twenty and thirty patients who had had thorough removal of the tonsils. The five cases which gave the most trouble, with abscess formation and edema of the larynx, were in cases of complete tonsillectomy. The probability of general infection such as Doctor Halsted speaks of was illustrated in a patient who had a simple sore throat and general poisoning from the effects of inflammation. As a result of that he had a large abscess at the back of the neck which seemed to have a formation of membrane in it, so that one expected to find pseudodiphtheritic discharge. He was given autogenous vaccines in large doses. Six weeks after the original sore throat he came down with another sore throat in which he had exudate over four distinct strips of tissue; both tonsils and both lateral columns of the pharynx were covered by a false membrane. Cultures from this showed it to be streptococcus. He did not have a distinct streptococcemia.

Dr. Greenfield Sluder, of St. Louis, stated that the future course of the case was frequently influenced by the infiltrate about the tonsil. Lately he had seen a few cases in which the infiltrate behaved like the tonsil—began with a sore throat and suppurated in both cases. Three months ago, in the presence of a very large infiltrate, he removed the tonsil with a guillotine and found something which looked like the tonsil still in the throat. He then took out an infiltrate, the size of the original tonsil, and the infiltrate on the opposite side remained. Subsequently sore throat developed in the infiltrate that was left. The side from which the infiltrate was removed escaped.

Dr. Harmon Smith, of New York, believed that Nature required a certain amount of lymphoid tissue in the tonsil region. Just as on removal of the soft palate for malignancy, the posterior tips of the turbinate hypertrophy to prevent regurgitation of food in the pharynx, so the remaining lymphoid tissue undertook to carry on that element of protection which the tonsils previously did. If you removed tonsils and left lymphoid tissue at the base of the tongue, in such infections as from milk, the lymphoid tissue at the base of the tongue would produce tonsillitis just the same as the original tonsil.

Tumor of Pituitary Gland.—Dr. Robert C. Lynch, of New Orleans, presented a pathological specimen of a large tumor of the pituitary. The patient was a male quadroon, about six feet one inch tall, with hands and feet somewhat larger than usually seen, though not sufficiently so to be suggestive. He was well developed to the point suggesting fat, with a fairly developed chest and mammary glands and small hips, resembling the feminine type. About the end of July, 1916, he had profuse nose bleed, following heavy work, with recurrences daily, when the nose began to block up, voice became hoarse, and the eyes began to protrude. Upon examination the septum was deviated strongly to the left, the right nostril filled with an irregular spongy red mass which bled easily upon manipulation; pupils were dilated and did not respond to light or accommodation; pulse, eighty; eye grounds showed slight pallor with double temporal hemianopsia or loss of vision over the outer half of each eye. The laboratory reported a sarcoma. The patient in December had the same symptom complex apparent, only slightly aggravated. The exophthalmos was very marked, the superior maxillary prognathism was apparent. The mass in the nose could be seen in the nasopharynx.

An attempt to remove the mass through the nose was unsuccessful. Upon the second trial a facial decortication was done and the right antrum was opened. When the roof of the nose and over both orbits were found pulsating and when Doctor Lynch felt the meninges and saw the dura, he was convinced that it was time to stop, fearing lest the sudden loss of support would produce a hernia. The nose was packed, a large postnasal plug introduced, and the attached string tied to the ear. The patient was returned to bed in good shape, but upon waking from the anesthesia he caught the string and pulled it, forcing the postnasal plug through the exposed dura and into the brain. He died from a basilar meningitis. The specimen was presented for observation, together with the x ray plates and a microphotograph of the tumor which is characteristic of pituitary gland.

Abscess of the Frontal Lobe of the Brain.—Dr. Robert C. Lynch, of New Orleans, reported the following case: Mrs. L. had been a sufferer for more than fifteen years with headache from time to time which confined her to bed for varying periods frequently so intense as to cause convulsions accompanied by a severe rigor and a bending backward, so that whiffs of chloroform were used to bring about relaxation. In 1907, following right sided abdominal pain, an ovary was removed with no improvement. In 1909, a panhysterectomy was performed; following this a period of relief ensued, but in 1912 the headaches grew so intense that a rhinologist was consulted. A right maxillary sinuitis was irrigated for nearly a year with only varying relief. A colleague removed the right middle turbinate, opened the right frontal intranasally, and curetted the ethmoid cells. There followed a long period of treatment without relief. Late in 1913 an acute exacerbation in the right frontal sinus occurred, demanding an external operation. There seemed to be no improvement afterward. Three years later Lynch found that the right antrum had a large opening through the inferior meatus, and irrigation of this cavity showed slight pus at times, but which bore no relation to the headaches. The postethmoid region seemed full and bulging, and he was able to wash nearly a teaspoonful of nonoffensive pus from the sphenoid sinus. Treatments of this character seemed to be followed by considerable relief from headaches and relieved the chronic hawking and spitting complained of, though she had during the period of this treatment one of the chill temperature headache attacks, which seemed to have a certain regularity as to recurrence, regardless of the treatment employed. There ensued now a gradual decline in body strength and a slight dullness of mentality, with no desire for food and persistent headaches of increasing intensity, blood counts rising to 17,000 with 90 polymorphonuclears; blood pressure, 110; no focal symptoms of any kind as determined by a most searching examination. The decline reached the state of involuntary micturition and defecation, mental dullness to almost coma, and inability to suck fluids through a straw, to be roused only on the greatest excitement, and speech then inaudible —still no focal symptoms.

On her return to the hospital, some months later, Lynch determined that the symptoms were those of brain abscess in the frontal lobe; accordingly, he opened up the old frontal sinus wound, which was apparently perfectly healthy and sound, but to his surprise found a small cavity holding about fifteen drops of milky pus, looking much like an old mucocele. On removing the membrane from the posterior wall the bone looked normal and was quite intact. He could not feel satisfied, however, that the findings were sufficient explanation for the symptoms, and took down the posterior sinus wall. The meninges seemed normal and not adherent in any direction, and there was no bulging or undue pressure apparent. He split the dura, and the brain surface seemed normal; so he explored with aspirating syringe and large needle, applying suction as soon as the needle was below the surface. At about a depth of one inch, following the line of the base of the skull and away from the longitudinal sinus and under the anterior horn of the ventricle, there gushed into the syringe about three drams of yellow green pus. He withdrew the needle and prepared the bone opening and area for the reception of one of Mosher's wire gauze drains; reintroduced the needle and withdrew four drams of pus. Then he opened with a scalpel what he thought was an abscess cavity, but try as he might with needle, knife, or forceps, he could find no evidence of the abscess. Finally, he passed a small rubber tissue drain into the brain, in the direction and to the depth of which he had aspirated pus and dressed the wound. Upon recovery from the anesthetic the patient was conscious, and in six hours addressed him voluntarily, complaining of some soreness about the wound, but not of much headache. The pus showed Staphylococcus aureus in pure culture, but not active, growing feebly on culture.

Dr. THOMAS H. HALSTED, Syracuse, reported the case of hypophyseal cyst in a little girl, eight years of age, who had as the leading symptoms two years ago great increase in size of her head, great increase in weight; weakness; constant shaking of head with incoordination of movements, so that she was unable to feed herself; optic neuritis; sharp headaches; very striking change in color and texture of hair; polyuria; and disturbed mental acuity. The operation was done through the nose under local anesthesia; it was the modified Hirsch operation, and the growth proved to be a cyst of the hypophysis. The patient was much improved temporarily. Some months later the cyst recurred and a second operation was refused by the parents. The child is now reported to have an aggravation of all the symptoms, she has become very fat and large with great weakness, and the blindness is nearly total.

Dr. HENRY L. SWAIN, of New Haven, asked Doctor Lynch what was the condition of the brain of the first patient. He saw a case in which there was bitemporal hemianopsia which was due to a tumor of the pineal gland, in which there were headaches somewhat similar to the second case.

Doctor LYNCH, closing the discussion, in reply to Doctor Swain's question, said that the brain did not show anything pathological at all, except that the coverings represented the usual findings of death from meningitis. Three other cases of pituitary tumor in New Orleans showed on x ray a very marked enlargement and beginning protrusion backward of the sella turcica. They all showed the same phenomena as regards the eyebrows, and they all showed the symptoms of lack of function of the pituitary gland.

Sodium Bicarbonate in Ether Anesthesia.—Dr. GEORGE B. WOOD, of Philadelphia, pointed out that both ether and chloroform anesthesia, when prolonged for over thirty minutes, were accompanied by a distinct lowering of the alkali reserve of the blood. It was probable that this mild transient acidosis was a most important factor in the production of postoperative vomiting. The alkali reserve of the blood could be increased by the administration of sodium bicarbonate, and it was, therefore, a most rational procedure to use this drug as a routine as a preoperative prophylactic measure against excessive postoperative vomiting.

Dr. EMIL MAYER of New York, asked Doctor Wood what dose of bicarbonate of soda he found best in children prior to operation.

Dr. ROBERT C. LYNCH, of New Orleans, said that lately citrate of soda had been substituted for bicarbonate of soda as being more agreeable to the patients. He began three or four days ahead of the anesthesia and gave doses of one quarter of a teaspoonful three times a day of bicarbonate of soda or five grains of citrate of soda. Where he was suspicious of an inclination toward acidosis, he followed the anesthesia always with a Murphy drip, five per cent. glucose solution, one half pint. He found also, that the administration of codeine and morphine after operation would increase the quantity of acetone in the urine and predispose to the cyclic vomiting.

Doctor WOOD, closing the discussion, in answer to Doctor Mayer's question, stated that the dose should be approximately one and one half grains of sodium bicarbonate for each year of the child. It should be started the day before the operation, given preferably one half hour before meals, the last dose being given one or two hours before the operation. He did not usually use sodium bicarbonate after the operation unless there was evidence of acidosis, as manifested by constant vomiting or other symptoms, when it should be given by the Murphy drip. One other preoperative measure was important. The restriction of food should only be sufficient to assure an empty stomach when the ether was given. The most severe case of acidosis following anesthesia which he had seen was one in which the family physician had, without Doctor Wood's knowledge, practically starved the child for twenty-four hours previous to the administration of the ether.

Three Bronchoscopic Cases the Result of Dental Procedure.—Dr. BURT R. SHURLY, of Detroit, said that statistics showed that possibly 600 cases of the sudden inhalation of foreign bodies during dental procedure had occurred in the United States and Canada. It was therefore, important to devise a special protective device.

In the first case the patient stated that her cough dated immediately after the extraction of tooth and gas anesthesia. Radiogram showed tooth, The trachea was not cocainized and bronchoscopy failed.

Tracheotomy and subsequent bronchoscopy resulted in removal and cure.

In the second case cough followed nitrous oxide and tooth extraction. There was a marked odor of rubber. The air supply of the lower part of the lung was cut off, and a piece of hard rubber, which had been part of a dental mouth gag, was brought up to the trachea, slipped from forceps, but fortunately coughed up soon after by the patient.

In the third case, the patient was receiving treatment from a dentist preparatory to filling a tooth. The cavity was treated with a dental burr, which was held between the thumb and forefinger during the process of application. This tiny instrument suddenly slipped and was inspirated into a lower division of the left bronchus. After this remained in the bronchus for ten days, the x ray examination with anteroposterior and lateral plates showed a shadow in the lower left thoracic region, which it was believed was a metallic foreign body in the lower left bronchus. After a thorough application of novocaine to the respiratory passage, with cocainization advanced as the tube was introduced and followed to within the lowest terminations possible, this foreign body was extracted, which was pointing with the needle part upward. The patient recovered completely without symptoms.

Interesting cases of the swallowing or inhaling of various articles of dental equipment were reported by Dr. THOMAS HUBBARD, of Toledo; Dr. HARMON SMITH, of New York; Dr. CARL E. MUNGER, of Waterbury, Conn.; Dr. ALBERT C. GETCHELL, of Worcester; Dr. BRYSON DELAVAN, of New York; Dr. EMIL MAYER, of New York; Dr. ROBERT C. LYNCH, of New Orleans; Dr. STANTON FRIEDBERG, of Chicago.

Dr. JOHN F. BARNHILL, of Indianapolis, reported the case of a young woman who coughed out a complete turbinated body that had in some way been inhaled during a nasal operation.

Doctor SHURLY, closing the discussion, stated that he was of the opinion that many cases of lung abscess, the details of which had not been properly looked into, would prove to be of foreign body origin.

(*To be continued.*)

Letters to the Editors.

HOMER NODS.

VINELAND, N. J., *November 30, 1917.*

To the Editors:

I feel like paraphrasing the words of a little girl friend of mine who ended her evening prayer with the words, "And now Dear Lord please take good care of yourself, for if anything should happen to you, we would all go to smash." Please, Mister Editor, be very careful of your editorials for if they are not sound they lead a great many of us astray.

Your editorial, Psychiatry and the Missing Link in the number for November 3, 1917, has such an unfortunate slip in it that I cannot refrain from asking you to correct it by publishing this letter, if you see fit. Even Homer sometimes nods, and if you have been victimized by following some unreliable author, you have the satisfaction of knowing not only that you are not the only one who has been thus misled. I will not now quarrel with you over your statements that we must turn to the feebleminded as the root of psychiatry, for although feeblemindedness has no more to do with psychiatry than has child psychology, yet it will do no harm for the medical man to turn to the study of feeblemindedness, and when he does he will find out the facts, whatever they are. But your statement on the top of page 853 that, "Here we encounter the rather inexplicable fact that we seem to have three large groups with large gaps between," is so sure to lead so many readers astray that it becomes a matter of no little importance that the real facts should be stated. Instead of there being three groups with large gaps between, feeblemindedness shows a perfect continuum, not only between the different groups but between feeblemindedness and normal intelligence. The division between idiot, imbecile and moron is purely arbitrary and there are cases that no one can say with certainty whether they are high grade idiots or low grade imbeciles, high grade imbeciles or low grade morons. The American Association for the Study of the Feebleminded has adopted a classification which calls all those who have an intelligence of two years or under, idiots, and those who have an intelligence of from three years to seven years inclusive, imbeciles, and those whose intelligence ranges from eight years to approximately twelve—possibly it should be fourteen—morons, and at the upper limit of moronity we run into normal intelligence by such gradual gradations that the borderline cases, as we call them, are often extremely puzzling.

What you say one would naturally expect, "a scale running by almost imperceptible gradations from one year to the adult," is actually the fact. Every institution for the feebleminded shows all of these gradations.

Respectfully yours,
HENRY H. GODDARD.

Book Reviews.

[*We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.*]

Problems of Subnormality. By J. E. WALLACE WALLIN, Director of the Psycho-Educational Clinic, Board of Education, St. Louis. Yonkers-on-Hudson: World Book Company, 1917. xv-485. Price $3.00.

This very detailed survey of subnormality is characterized by a peculiar directness and soundness of appeal. Doctor Wallin is qualified by experience in this line of work and is earnestly desirous of introducing exact and efficient methods in the handling of these problems. The first chapter is given over to the history of the recognition, care, and treatment of the subnormal child. This is followed by a discussion of diagnosis and designation of mental condition, the education and care of these children, and the progress in their care as a class and, more important, as individuals. The problem of epilepsy is given special attention; though this subject is still very obscure, it is regarded as a disease process and therefore apart from feeblemindedness or other merely mental defect. The preventive phase in the question subnormality, included in the problems of eugenics, receives also ample notice.

Greatest emphasis is laid upon the necessity for a more careful and a broader diagnostic supervision than has prevailed up to the present time. This problem should be first a medical one for the trained medical psychologist rather than the half trained psychologist, who understands only the limited application of static tests, or the teacher whose time, experience, and equipment are necessarily insufficient to include this properly medical work. The exclusive reliance upon the limitations of standard tests such as the Binet-Simon are severely criticized, the author's judgment regarding this being supported by full quotations from the statements on the part of these very examiners in regard to the limitations which they recognized and the broader psychology in which they reached beyond these. Such an attitude demands of physicians, educators, and all interested in this important phase of social improvement, a far more elastic scheme of classification. This should admit all the refinements of mental diagnosis and the establishment of many more varied types of educational classes to separate the actual feebleminded from those only backward or suffering some special sensory defect or any of the many conditions which differentiate children and their educational and custodial needs, rather than group them loosely under one great class. Thus alone can effective educational training be instituted and carried out for their improvement and progress according to the varying ability of each one. There is barely a suggestion in the book of a deeper psychological plane upon which these children may be better understood and diagnosed, and upon which education can be planned. The discussions, however open the way to such more intensive psychical work, which reaches deeper than mere intellectual testing and grading, and they are presented with a truly progressive dynamic outlook.

Acute Lobar Pneumonia. By Oswald T. Avery, M. D., H. T. Chickering, M. D., Rufus Cole, M. D., and A. R. Dochez, M. D. Monograph No. 7, Rockefeller Institute. New York, 1917. Pp. 110.

One of the most valuable pieces of research undertaken by the Rockefeller Institute in some time is now sufficiently complete to warrant publication. The first problem which the Rockefeller research workers set for themselves was to determine the bacteriological peculiarities of a large series of strains of the Diplococcus pneumoniæ. It was shortly found that the organisms could be divided into four groups, separable by the morphology of the capsule, cultural characteristics, and immunity reactions. That there was a difference in the strains of pneumococci has long been known, and Neufeld had made some studies on the results of antipneumococci serums, but this work has been very greatly expanded by the Rockefeller workers, and an interesting series of novel facts have been obtained. In 454 cases of pneumococcus pneumonia, Type I was found in thirty-three per cent.; Type II in twenty-nine per cent.; atypical forms of Type II in four per cent.; Type III in thirteen per cent.; and Type IV in twenty per cent. of the cases. Serum treatment is only applicable to cases due to infection with organisms belonging to Type I. The method of identifying the organism and of preparing and standardizing the serum, the mode of its administration, the dosage, and results obtained are given with great completeness. It is shown that the administration of antipneumococci serum quickly improves the patient's condition, and unless the infection has been overwhelming, there occurs a fall in temperature, improvement in pulse rate with a general amelioration of the patient's symptoms, and a return to normal in a few days. About 107 cases have been treated in the Rockefeller Institute with a mortality of 7.5 per cent., as contrasted with a mortality of twenty-five to thirty per cent. in cases not treated by serum therapy.

After Office Hours.

* * *

Speaking of great detectives, Penrod the inimitable has begun his career as a sleuth hound in the January *Cosmopolitan.* We predict exciting, if not always glorious, adventures for him.

* * *

The *Metropolitan* continues to dabble in spiritualism. In the January number Conan Doyle discusses The New Revelation. It is indeed a revelation. That a man who studied medicine, became a successful practitioner, then a successful author, and finally created Sherlock Holmes, so great a character that he passed into the language, should be misled by the cheap chicane of the medium, is almost incredible.

* * *

We have all had our trials as expert witnesses and know how a clever lawyer can make us seem foolish. In the *Smart Set* for January a clever story called The Six Senses shows how the evidence given by five people, each one relying on one of the five senses and the intangible, inexplicable "sixth sense" of a blind man, can be vitiated by a clever lawyer so that each witness is ready to confess that he cannot believe the evidence of his senses.

* * *

A DOG'S PHILOSOPHY.

I love my life—you know it's true—
I love my master, mistress, you;
I love the child who pulls my tail—
I love it though it makes me quail.
I'd love to live my whole life long,
For life to me is just a song.
But don't you think I'm soldier, too,
And don't you think I'd die for you,
My master, mistress, children, mate?
At vivisection's door I'd meet my fate;
As well to call me there as anywhere.
You would not hesitate, at my poor fate,
To let me die at your sharp cry for help—
To help when whelp or robber bold
Would call you to your Maker's fold,
Or drown in some icy river's run,
To save the life of one you'd won.
So be not harsh with doctors bold
Who send me to my Maker's fold,
But just remember this one thing:—
I'd gladly give my life, that life to others I may bring.

Harold L. Morris.

Births, Marriages, and Deaths.

Married.

Gaylord-Jones.—In Suffield, Conn., on Saturday, December 17th, Dr. James Frederick Gaylord, of Springfield, Mass., and Miss Helen Southworth Jones.

Died.

Blighton.—In North Tonawanda, N. Y., on Sunday, December 16th, Dr. William Van Rensselaer Blighton, aged eighty years.

Carleton.—In Lawrence, Mass., on Monday, December 17th, Dr. Charles Greenleaf Carleton, aged seventy-four years.

Harwood.—In Petersburg, Va., on Tuesday, December 11th, Dr. William E. Harwood, aged seventy years.

Hegeman.—In Brooklyn, N. Y., on Thursday, December 20th, Dr. Thomas B. Hegeman, aged fifty-nine years.

Helm.—In New Providence, Pa., on Saturday, December 8th, Dr. Amos H. Helm, aged seventy-two years.

King.—In Derry, Pa., on Tuesday, December 4th, Dr. William H. King, aged sixty-eight years.

Laughlin.—In Hallendale, Cal., on Thursday, December 13th, Dr. J. Royer Laughlin, of Hagerstown, Md., aged forty-five years.

Mesirow.—In Chicago, Ill., on Monday, December 17th, Dr. Elias B. Mesirow, aged fifty-six years.

Moore.—In Evanston, Ill., on Wednesday, December 12th, Dr. Samuel M. Moore, aged forty-seven years.

Neff.—In Dunkirk, O., on Tuesday, December 11th, Dr. Harry Clifton Neff, aged forty-three years.

Nichols.—In Manhattan Beach, Cal., on Tuesday, December 18th, Dr. Frank Nichols, aged eighty-four years.

Payne.—In Liberty, N. Y., on Wednesday, December 12th, Dr. Charles S. Payne, aged fifty-seven years.

Plummer.—In Malden, Mass., on Saturday, December 15th, Dr. Frank W. Plummer, aged forty-eight years.

Reasons.—In Waldo, Ark., on Wednesday, December 5th, Dr. S. A. Reasons, aged forty-nine years.

Rousseau.—In Troy, N. Y., on Monday, December 10th, Dr. Zotique Rousseau, aged seventy-five years.

Sherman.—In Detroit, Mich., on Sunday, December 9th, Dr. Andrew T. Sherman, aged fifty-two years.

Shinaberry.—In Scranton, Pa., on Monday, December 10th, Dr. Rollen L. Shinaberry, aged thirty years.

Snodgrass.—In Kenton, O., on Monday, December 10th, Dr. Jesse Snodgrass, aged forty-five years.

Tracy.—In Meriden, Conn., on Monday, December 10th, Dr. Andres W. Tracy, aged seventy-one years.

Weems.—In Columbia, Tex., on Tuesday, December 11th, Dr. Mason Locke Weems, Sr., aged eighty-six years.

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LIST OF CONTRIBUTORS TO VOLUME CVI.

Those whose names are marked with an asterisk have contributed editorial articles.

Albee, Fred H., M. D.
Alexander, M. E., M. D., Waterbury, Conn.
*Alexander, L. C., Philadelphia.
Allport, Frank, M. D., Chicago.
*Arrowsmith, Hubert, M. D., Brooklyn.
Austin, F. D., M. D., Charlotte, N. C.
Authelain, Henri, M. D. France.
Axilbund, Samuel, M. D., Philadelphia.

Baier, George F., Jr., M. D., Philadelphia.
Baker, Valentine C., M. D.
Barling, Gilbert H., C. B., A. M. S., Lieutenant Colonel, Royal Army Medical Corps.
Barnett, Charles H. J., M. D., Philadelphia.
Bassler, Anthony, M. D.
Bates, William H., M. D.
Beach, William M., A. M., M. D., F. A. C. S., Pittsburgh.
Beasley, Thomas J., M. D., Indianapolis, Ind.
Behney, Charles Augustus, A. B.. M. D., Philadelphia.
Benedict, A. L., A. M., M. D., F. A. C. P., Buffalo.
Bentley, David F., Jr., M. D., Philadelphia.
Bettman, Ralph Boerne, M. D., Chicago.
*Bibb, Lewis B., M. D., Lieutenant, Medical Reserve Corps, United States Army.
Bissell, Joseph B., M. D.
Bogan, Robert, M. D.
Boggs, Russell H., M. D., Pittsburgh.
*Bolduan, Charles Frederick, M. D.
Bowers, Rose Alexander, M. D., Michigan City, Ind.
Brav, Aaron, M. D., Philadelphia.
Brav, Herman A., M. D., Philadelphia.
Brewer, David R., Philadelphia.
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Bull, Carroll G., M. D.

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Cohen, Maurice, M. D., Montclair, N. J.
Cohen, Myer Solis, M. D., Philadelphia.
Cornwall, Leon H., M. D., First Lieutenant, Medical Corps, National Guard.
Craig, Henry K., M. D., Washington, D. C.
*Cumston, Charles Greene, M. D., Geneva, Switzerland.

Cunningham, William P., M. D.
Cyriax, Edgar F., M. D., London, England.

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Detwiler, A. K., M. D., Omaha, Neb.
*Donnelly, William H., M. D., Brooklyn.
Douglas, C. J., M. D., Boston, Mass.

Eastman, Joseph Rilus, M. D., Indianapolis, Ind.
*Eggleston, Cary, M. D.
*Elliott, George, M. D., Toronto.
Elmer, Walter G., M. D., Philadelphia.
Epstein, J., M. D.
Esser, J. F. S., M. D., Vienna, Austria.
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Fisher, Lewis, M. D., Philadelphia.
*Foster, Matthias Lanckton, M. D., New Rochelle.
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French, Thomas R., M. D., Brooklyn.
*Friedman, Henry M., M. D., LL. D., LL. M.
Fuld, Joseph E., M. D.
Fuld, Leonhard Felix, LL. M., Ph. D.
Furbush, C. L., Major, Medical Reserve Corps, U. S. A.

Goddard, H. M., M. D., Philadelphia.
Goddard, H. H., M. D., Vineland, N. J.
Goodwin, T. H., C. M. G., D. S. O., Colonel, Royal Army Medical Corps.
Gordon, Alfred, M. D., Philadelphia.
Gottlieb, Mark J. M. D.
Grady, W. R., M. D., Meridian, Miss.
Gray, Charles Perley, M. D., Medical Corps, New York National Guard.
Gray, H. M. W., C. B., A. M. S., Colonel, Royal Army Medical Corps, Aberdeen, Scotland.
Griffith, J. P. Crozer, M. D., Philadelphia.
Gross, Morris H., M. D.
Grossman, Morris, M. D.
Groszmann, Maximilian P. E., Pd. D., Plainfield, N. J.
Guilfoy, William H., M. D.

Hance, Irwin H., M. D., Lakewood, N. J.
*Haneman, Frederick T., M. D., East Orange, N. J.
Hassin, G. B., M. D., Chicago.
Hays, Harold. M. D., F. A. C. S. Lieutenant, Medical Reserve Corps, United States Army.
Hays, Melville A., M. D.
Heist, George D., M. D., Philadelphia.
Held, I. W., M. D.
Hellman, Milo, D. D. S.
Herrman, Charles, M. D.
Heyd, Charles Gordon, B. A., M. D.
Hickey, J. P., M. D., San Francisco, Cal.
Hill, R. S., M. D., Montgomery, Ala.
Hinsdale, Guy, M. D., Hot Springs, Va.
Hirsch, I. Seth, M. D.
Hirsch, Nathan, M. D., Brooklyn.
*Hoff, John Van R., M. D., Colonel, Medical Corps, United States Army.
Hoff, Louis L., M. D., Holyoke, Mass.
Hunger, Edwin A., Rochester, N. Y.
Hyde, Charles E., M. D., Bridgeport, Conn.

Immermann, Samuel L., M. D., Philadelphia.
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Jackson, William R., M. D., F. A. C. S., Mobile, Ala.
*Jelliffe, Smith Ely, A. M., M. D., Ph. D.
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Kaiser, Albert David, M. D., Rochester, N. Y.
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Kusama, Yoshio, Stanford University, Cal.

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*Lind, John E., M. D., Washington, D. C.
Lintz, William, M. D., Brooklyn.
Loew, Henry K., M. D., Medical Reserve Corps, United States Army.
Loewy, G., M. D.

McCaskey, G. W., A. M., M. D., Fort Wayne, Ind.
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Minnig, Arnold, A. B., M. D., Denver, Colo.
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Murphy, John P. H., M. D., Washington, D. C.
Myles, Robert Cunningham, M. D.

Nascher, Ignatz L., M. D.
Newton, Richard Cole, M. D., Montclair, N. J.
Nice, Charles M., M. D., Birmingham, Ala.
Nichols, Henry J., M. D., Major, Medical Corps, United States Army.
Nicoll, Alexander, M. D., F. A. C. S.
Nydegger, J. A., M. D., Baltimore, Md., Surgeon, United States Public Health Service.

Oberndorf, C. P., M. D.
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O'Neil, R. F., M. D., F. A. C. S., Boston.
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Osnato, Michael, M. D.

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Pottenger, Francis M., A. M., M. D., LL. D., Monrovia, Cal.

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Rafsky, Henry A., M. D.
Rayevsky, Charles, M. D., Liberty, N. Y.
Redfield, Casper L., M. D., Chicago.
Reno, William W., A. M., M. D., Lieutenant Colonel, Medical Corps, United States Army.
Rhein, John H. W., M. D., Philadelphia.
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Rudis-Jicinsky, J., M. D., Chicago.

Safian, Joseph, M. D.
*Sajous, Charles E. de M., M. D., LL. D., Sc. D., Philadelphia.
*Sajous, Louis T. de M., M. D., B. Sc., Philadelphia.
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*Scarlett, R. B., M. D., Trenton, N. J.
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Shuster, Benjamin H., M. D., Philadelphia.
Silk, Samuel A., Ph. G., M. D., Washington, D. C.
Skelton, Eugene W., A. B., M. D., Brooklyn.
Sledge, E. S., M. D., Captain, Medical Corps, United States Army.
Smith, Ernest Ellsworth, Ph. D., M. D.
Smith, J. Wheeler, Jr., M. D.
Smith, Mildred K.
Solomon, Meyer, M. D., Chicago.
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Stevens, A. Raymond, M. D.
Stevens, William E., M. D., San Francisco, Cal.
Stewart, F. E., Ph. G., M. D., Phar. D., Philadelphia.
*Strickler, A. E., M. D., Philadelphia.

*Talbot, Winthrop, A. B., M. D.
Taylor, J. Madison, A. B., M. D., LL. D. Philadelphia.
Thoms, Herbert, M. D., New Haven, Conn.
Thorne, Frederic H., M. D., Morris Plains, N. J.
*Tilton, Benjamin T., M. D.
Tompkins, Ernest, M. D., Los Angeles, Cal.
Torrance, Gaston, M. D., Birmingham, Ala.
Treacy, Alfred J. M., A. B., M. D., Philadelphia.
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Upham, Roy, M. D., Brooklyn.

*Van Buren, Frederick T., Jr., M. D.
*Vedin, Augusta, M. D.
Von Dworzak, Zdenko, M. D., Denver, Colo.
Von Unruh, C., Captain, Medical Reserve Corps, United States Army.
*Voorhees, Irving Wilson, M. D.

Wang, Charles W., M. D., Philadelphia.
*Warburton, Gladys Bagot.
Waterson, Davina, El Paso, Texas.
Watson, Ernest M., A. M., M. D., Buffalo, N. Y.
Watson, Leigh F., M. D., Chicago.
Watterston, Charles, M. D., Birmingham, Ala.
Waugh, William, M. D., Palacios, Texas.
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*Whitford, William, Chicago.
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Wood, Francis Carter, M. D.
Woolston, Wesley J., M. D., Chicago.
Wright, Jonathan, M. D., Pleasantville, N. Y.
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